KMCT
DENTAL COLLEGE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the information in the attached document is verified by me and is true to the best of my knowledge.

Principal

Principal
KMCT Dental College
Manassery, Mukkam

MCT Medical College Campus, Mukkam, Kozhikode - 673602
0495-2292000 dental@kmct.edu.in
www.kmctdentalcollege.org

KMCT
DENTAL COLLEGE

DETAILS OF SPECIAL PROGRAMS FOR SLOW LEARNERS AND ADVANCED LEARNERS

Dr. MANOJ KUMAR.K.P
Principal
KMCT Dental College
Manassery, Mukkam

KMCT Medical College Campus, Mukkam, Kozhikode - 673602
0495-2292000 dental@kmct.edu.in

KMCT
DENTAL COLLEGE

DETAILS OF SPECIAL PROGRAMS FOR ADVANCED LEARNERS

Dr. MANOJ KUMAR R.K.P
Principal
KMCT Dental College
Manassery, Mukkam

KMCT
DENTAL COLLEGE

DETAILS OF SPECIAL PROGRAMS FOR ADVANCED LEARNERS

KMCT Dental College offers an array of special programs designed to cater to advanced performers, fostering their growth and expertise in various aspects of dentistry.

1. **Scientific Presentations:** Advanced performers are encouraged to present their scientific research and findings at conferences, both within the college and at national/international levels. This platform allows them to showcase their knowledge and contribute to the academic community.
2. **Undergraduate Conferences and Workshops:** Special provisions are made for advanced students to attend conferences and workshops specifically tailored for undergraduates. This exposure broadens their perspective, keeps them updated with the latest advancements, and encourages networking with peers and professionals.
3. **Participation in Research Projects and Publications:** Advanced performers are actively involved in research projects under the guidance of faculty. Their contributions to research are often published in scientific journals, enhancing their academic profile and fostering a culture of academic excellence.
4. **Exposure to Complex Clinical Situations and Procedures:** These students are provided opportunities to observe and assist in complex clinical cases and procedures. This hands-on experience under supervision enhances their clinical skills and confidence.
5. **Seminar Presentations:** Advanced performers are encouraged to deliver seminars on specialized topics, allowing them to delve deeper into particular subjects, share their expertise, and develop their presentation skills.
6. **Access to Additional Books, Journals, and E-Library:** The college ensures that these students have access to an extensive collection of books, journals, and online resources, providing them with comprehensive materials to further their knowledge beyond the standard curriculum.
7. **Clinic Pathological Club Participation:** The provision to attend and actively participate in the Clinic Pathological Club allows advanced performers to engage in discussions, case studies, and analyses, further enhancing their understanding of clinical scenarios and pathologies.

These programs collectively create an enriched learning environment for advanced performers at KMCT Dental College, nurturing their academic, clinical, and research-oriented skills, and preparing them to excel in their future careers as dental professionals.

KMCT Medical College Campus, Mukkam, Kozhikode - 673602
0495-2292000 dental@kmct.edu.in

KMCT
DENTAL COLLEGE

1. SCIENTIFIC PRESENTATIONS, UG CONFERENCES AND WORKSHOPS

Dr. MANOJ KUMAR R.K.P
Principal
KMCT Dental College
Manassery, Mukkam

CT Medical College Campus, Mukkam, Kozhikode - 673602
0495-2292000 dental@kmct.edu.in
www.kmctdentalcollege.org

INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTRE

KMCT
DENTAL COLLEGE



KMCT
DENTAL COLLEGE

KMCT Medical College Campus, Mukkam, Kozhikode - 673602

Dr. MANOJ [illegible]
Principal
KMCT Dental College
Manassery, Mukkam

KMCT
DENTAL COLLEGE

Congratulations



Ashlin Sunny
House Surgeon

For securing **First Prize for Scientific Paper Presentation at Revive '23, The 53rd IDA State Conference** held at Adlux International Convention Centre, Angamaly, Kerala.

KMCT
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KMCT Medical College Campus, Mukkam, Kozhikode 673602
www.kmctdentalcollege.org

Principal
KMCT Dental College
Manassery, Mukkam

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Congratulations!



Nafeesa Hamna

House Surgeon

For securing **First Prize for Clinical Case Presentation at Revive '23, The 53rd IDA State Conference** held at Adlux International Convention Centre, Angamaly, Kerala.

KMCT
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Dr. MANOJ KUMAR K.P
Principal
KMCT Dental College
Manassery, Mukkam

AMRITA VISHWA VIDYAPEETHAM School of Dentistry and Kairali Society of Oral & Maxillofacial Pathologists (KSOMP)

"ORAL PATH GENIUS 2022"

The 4th JACOB ZACHARIAH MEMORIAL

Gold Medal Examination for Undergraduate Students

CERTIFICATE OF PARTICIPATION

This certificate is awarded to

MALAVIKA P A

In appreciation of having participated in the 'Gold Medal Selection Round Examination'

Conducted as part of the 4th Jacob Zachariah Memorial Gold Medal Competition

On Wednesday, the 28th October 2022 (3.00pm - 4.00pm)

Dr. NIVEDITHA BAIJU
Hon. President-KSOMP

Dr. ANILA KARUNAKARAN
Hon. Secretary-KSOMP

Dr. BALAGOPAL VARMA R
Chief Patron & Principal-ASD

Dr. RAKESH S
Organizing Chairperson & HOD

Dr. MAHIJA JANARDHANAN
Organizing Secretary

Dr. VINDHYA SAVITHRI
Scientific Convenor

CHALAKUDY 53rd Kerala State Dental Conference

REVIVE '23

LET'S RECONNECT...

2023 JAN 20, 21, 22

9 CREDIT POINTS

CERTIFICATE

OF PARTICIPATION

Presented to HARLEY JAISON

For His/Her participation in the 53rd Kerala State Dental Conference of Indian Dental Association - Kerala State Branch, held from the 20th to 22nd of January 2023 at Adlux International Convention Centre.

DR. SHIBU RAJAGOPAL
PRESIDENT
IDA, KERALA

DR. DEEDU J MATHEW
HON. SECRETARY
IDA, KERALA

DR. G S ABHILASH
CONFERENCE SECRETARY
IDA, KERALA

DR. GEORGE SEBASTIAN PULLAN
ORGANIZING CHAIRMAN
IDA, KERALA

DR. SABU S THAZHATH
ORGANIZING SECRETARY
IDA, KERALA

DR. SANTHOSH THOMAS
PRESIDENT
KERALA DENTAL COUNCIL

Hosted by

Professor & HOD
DEPT OF PROSTHODONTICS
CALICUT

CHALAKUDY 53rd Kerala State Dental Conference

REVIVE '23

LET'S RECONNECT...

2023 JAN 20,21,22

9 CREDIT POINTS

CERTIFICATE

OF PARTICIPATION

Presented to SWARAG B SUNIL

For His/Her participation in the 53rd Kerala State Dental Conference of Indian Dental Association - Kerala State Branch, held from the 20th to 22nd of January 2023 at Adlux International Convention Centre.

DR. SHIBU RAJAGOPAL
PRESIDENT
IDA, KERALA

DR. DEEBU J MATHEW
HON SECRETARY
IDA, KERALA

DR. G S ABHILASH
CONFERENCE SECRETARY
IDA, KERALA

DR. GEORGE SEBASTIAN PULLAN
ORGANIZING CHAIRMAN
IDA, KERALA

DR. SABU S THAZHATH
ORGANIZING SECRETARY
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CHALAKUDY 53rd Kerala State Dental Conference

REVIVE '23

LET'S RECONNECT...

2023 JAN 20,21,22

9 CREDIT POINTS

CERTIFICATE

OF PARTICIPATION

Presented to SREELEKSHMI

For His/Her participation in the 53rd Kerala State Dental Conference of Indian Dental Association - Kerala State Branch, held from the 20th to 22nd of January 2023 at Adlux International Convention Centre.

DR. SHIBU RAJAGOPAL
PRESIDENT
IDA, KERALA

DR. DEEDU J MATHEW
HON SECRETARY
IDA, KERALA

DR. G S ABHILASH
CONFERENCE SECRETARY
IDA, KERALA

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ORGANIZING CHAIRMAN
IDA, KERALA

DR. SABU S THAZHATH
ORGANIZING SECRETARY
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CHALAKUDY 53rd Kerala State Dental Conference

REVIVE '23

LET'S RECONNECT...

2023 JAN 20, 21, 22

9 CREDIT POINTS

CERTIFICATE

OF PARTICIPATION

Presented to..... ASHIQUE RAHIMAN .....

For His/Her participation in the 53rd Kerala State Dental Conference of Indian Dental Association - Kerala State Branch, held from the 20th to 22nd of January 2023 at Adlux International Convention Centre.

DR. SHIBU RAJAGOPAL
PRESIDENT
IDA, KERALA

DR. DEEBU J MATHEW
HON SECRETARY
IDA, KERALA

DR. G.S. ABHILASH
CONFERENCE SECRETARY
IDA, KERALA

DR. GEORGE SEBASTIAN PULLAN
ORGANIZING CHAIRMAN
IDA, KERALA

DR. SABU S THAZHATH
ORGANIZING SECRETARY
IDA, KERALA

DR. SANTHOSH THOMAS
PRESIDENT
KERALA DENTAL COUNCIL

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idai Indian Dental Association

KMCT
DENTAL COLLEGE

2. PARTICIPATION IN RESEARCH PROJECTS AND PUBLICATIONS.

Dr. MANOJ KUMAR K.P
Principal
KMCT Dental College
Mukkam

UG RESEARCH GRANT APPLICATION

KMCT DENTAL COLLEGE

UG RESEARCH TOPICS SUBMITTED FOR ICMR GRANT APPLICATION

SL NO.	Student	Year	Department/ Mentor	Topic
1	Rishika P	3rd year	OMFS Dr.Vipin Das	EFFECT OF STOPPING ANTI-PLATELET DRUGS ON BLEEDING TIME FOR EXTRACTION OF TEETH AMONG CARDIAC OR CVA PATIENTS
2	Rinsha Raj UK	3rd year	OMFS Dr.Ashwathy Vinod	ANALYSIS OF POSITION AND COURSE OF MANDIBULAR CANAL USING CBCT RECORDS IN MANDIBLE
3	Ashwathy J Raj	3rd year	Periodontics Dr.Subisha	KNOWLEDGE,ATTITUDE AND PRACTICES RELATING TO ORAL HEALTH AMONG CHRONIC KIDNEY DISEASE PATIENTS VISITING A TERTIARY HEALTH CARE CENTRE IN SOUTH INDIA
4	Ninshida Mohammed	Part 1	Oral Pathology Dr.Sithara	ASSOCIATION OF APHTHOUS ULCER OCCURRENCE AND STRESS WITH HORMONAL TURN OVER AMONG NORMALLY MENSTRUATING WOMEN.
5	Amna Mohammed Abdulsalam	3rd year	Pedodontics Dr.Anju	ASSESSMENT OF AWARENESS ON AETIOLOGY AND PREVENTIVE PRACTICES OF EARLY CHILDHOOD CARIES AMONG MOTHERS WITH CHILDREN BELOW 5 YEARS IN PERI URBAN AREA
6	Anna Joseph	3rd year	Orthodontics Dr.Amrutha	PREVALENCE OF ORAL HABITS IN CHILDREN AGED 6-12 YEARS WITH CLASS 2 MALOCCLUSION AND AWARENESS AMONGST THEIR PARENTS IN A PERI-URBAN POPULATION
7	Hana Abdul Kareem	3rd year	Conservative Dentistry Dr.Sarin	AWARENESS OF TRANSMISSIBLE DISEASES AND PREVENTIVE MEASURES AMONG DENTAL AUXILIARIES IN DENTAL SCHOOLS IN KERALA-A CROSS SECTIONAL STUDY
8	Akshay VR	3rd year	OMR Dr.Prejith Sampath	PREVALENCE OF CHRONIC MEDICAL CONDITIONS AND COMMONLY USED MEDICATIONS AMONG ELDERLY PATIENTS VISITING DENTAL COLLEGE IN NORTH KERALA-A CROSS SECTIONAL STUDY

SL NO.	Student	Year	Department/ Mentor	Topic
9	Abhijith PA	3rd year	OMR Dr.Hamesh	ASSESSMENT OF THE QUALITY OF PRESCRIPTION WRITING AMONG MEDICAL AND DENTAL PRACTITIONERS IN NORTH KERALA
10	Ashitha Rajan	Part 1	OMR Dr.Niyas	EFFICACY OF A MODIFIED POSTERIOR FILM HOLDER FOR BISECTING ANGLE TECHNIQUE IN REDUCING CONE CUT ERRORS
11	Nahala Sherin	Part 1	OMR Dr.Tim Peter	ORAL HEALTH IN GERIATRIC PATIENTS: AN OBSERVATIONAL STUDY
12	Praveena K	Part 1	PHD Dr.Arun	STUDENTS AND FACULTIES PERSPECTIVE ON THE IMPLEMENTATION OF BLENDED LEARNING IN DENTAL EDUCATION:A CROSS SECTIONAL STUDY

OMFS- Oral & Maxillofacial Surgery
OMR- Oral Medicine & Radiology
PHD- Public Health Dentistry

KMCT DENTAL COLLEGE

UG RESEARCH TOPICS SUBMITTED FOR ICMR GRANT APPLICATION

SL NO.	Student	Year	Department/ Mentor	Topic	Reference ID
1	Rishika P	3rd year	OMFS Dr.Vipin Das	EFFECT OF STOPPING ANTI-PLATELET DRUGS ON BLEEDING TIME FOR EXTRACTION OF TEETH AMONG CARDIAC OR CVA PATIENTS	2023-02155
2	Rinsha Raj UK	3rd year	OMFS Dr.Ashwathy Vinod	ANALYSIS OF POSITION AND COURSE OF MANDIBULAR CANAL USING CBCT RECORDS IN MANDIBLE	2023-00964
3	Ashwathy J Raj	3rd year	Periodontics Dr.Subisha	KNOWLEDGE,ATTITUDE AND PRACTICES RELATING TO ORAL HEALTH AMONG CHRONIC KIDNEY DISEASE PATIENTS VISITING A TERTIARY HEALTH CARE CENTRE IN SOUTH INDIA	2023-00842
4	Ninshida Mohammed	Part 1	Oral Pathology Dr.Sithara	ASSOCIATION OF APHTHOUS ULCER OCCURRENCE AND STRESS WITH HORMONAL TURN OVER AMONG NORMALLY MENSTRUATING WOMEN.	2023-01009
5	Amna Mohammed Abdulsalam	3rd year	Pedodontics Dr.Anju	ASSESSMENT OF AWARENESS ON AETIOLOGY AND PREVENTIVE PRACTICES OF EARLY CHILDHOOD CARIES AMONG MOTHERS WITH CHILDREN BELOW 5 YEARS IN PERI URBAN AREA	2023-05127

SL NO.	Student	Year	Department/ Mentor	Topic	Reference ID
6	Anna Joseph	3rd year	**Orthodontics Dr.Amrutha**	PREVALENCE OF ORAL HABITS IN CHILDREN AGED 6-12 YEARS WITH CLASS 2 MALOCCLUSION AND AWARENESS AMONGST THEIR PARENTS IN A PERI-URBAN POPULATION	2023-02767
7	Hana Abdul Kareem	3rd year	**Conservative Dentistry Dr.Sarin**	AWARENESS OF TRANSMISSIBLE DISEASES AND PREVENTIVE MEASURES AMONG DENTAL AUXILIARIES IN DENTAL SCHOOLS IN KERALA- A CROSS SECTIONAL STUDY	2023-02130
8	Akshay VR	3rd year	**OMR Dr.Prejith Sampath**	PREVALENCE OF CHRONIC MEDICAL CONDITIONS AND COMMONLY USED MEDICATIONS AMONG ELDERLY PATIENTS VISITING DENTAL COLLEGE IN NORTH KERALA-A CROSS SECTIONAL STUDY	2023-00422
9	Abhijith PA	3rd year	**OMR Dr.Hamesh**	ASSESSMENT OF THE QUALITY OF PRESCRIPTION WRITING AMONG MEDICAL AND DENTAL PRACTITIONERS IN NORTH KERALA	2023-00421
10	Ashitha Rajan	Part 1	**OMR Dr.Niyas**	EFFICACY OF A MODIFIED POSTERIOR FILM HOLDER FOR BISECTING ANGLE TECHNIQUE IN REDUCING CONE CUT ERRORS	2023-02762
11	Nahala Sherin	Part 1	**OMR Dr.Tim Peter**	ORAL HEALTH IN GERIATRIC PATIENTS: AN OBSERVATIONAL STUDY	2023

SL NO.	Student	Year	Department/ Mentor	Topic	Reference ID
12	Praveena K	Part 1	PHD Dr.Arun	STUDENTS AND FACULTIES PERSPECTIVE ON THE IMPLEMENTATION OF BLENDED LEARNING IN DENTAL EDUCATION:A CROSS SECTIONAL STUDY	2023-00444
13	Fathimath Shahadiya	Part1	Periodontics Dr.Navya	TO ASSESS THE AWARENESS OF PERIODONTAL HEALTH,DISEASES AND ITS PREVENTION AMONG UNANI PRACTITIONERS-AN ONLINE SURVEY	2023-02729

OMFS- Oral & Maxillofacial Surgery
OMR- Oral Medicine & Radiology
PHD- Public Health Dentistry

MCT DENTAL COLLEGE CALICUT

Dr. MANOJ KUMAR
Principal
MCT Dental College
Nemmeery, Mukkam

Gmail

Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Fwd: STS-2023 Proposal Submission 2023-02130

1 message

sarin k <sarinkoroth@gmail.com> Fri, Jan 27, 2023 at 4:36 PM
To: niyasummer@kmctdentalcollege.org

---------- Forwarded message ---------
From: <sts@hq.icmr.org.in>
Date: Fri, 27 Jan 2023 at 11:58 AM
Subject: STS-2023 Proposal Submission 2023-02130
To: <hanahazza@gmail.com>
CC: <sarinkoroth@gmail.com>

Dear Ms. Hana Abdul Kareem

You have successfully uploaded your proposal for STS-2023.

In case of any queries please send email to stshrd2017@gmail.com
OR
Telephone No. 26588895, 26588980, 26589794, 26589336, 26588707 Extn. 369

For technical support related to online submission you may call on 26588980, 2658889, 26588707 or 26589335 Extn. 306 and speak to our IT team Sh. Vikas Kataria.

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Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Fwd: STS-2023 Proposal Submission 2023-00421

1 message

Hamesh Gangadharan <hamesh4u@gmail.com> Fri, Jan 27, 2023 at 2:58 PM
To: niyasummer@kmctdentalcollege.org

---------- Forwarded message ---------
From: **Abhijith Anil** <abhijithpanil2000@gmail.com>
Date: Fri, 27 Jan 2023, 14:45
Subject: Fwd: STS-2023 Proposal Submission 2023-00421
To: <hamesh4u@gmail.com>

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Fri, 27 Jan 2023, 2:41 pm
Subject: STS-2023 Proposal Submission 2023-00421
To: <abhijithpanil2000@gmail.com>

Dear Student

'You have successfully uploaded your proposal for STS-2023.'
This is an automated email. Please do not reply to this e-mail. In case of any queries please send email to stshrd2017@gmail.com

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1 message

Prejith Sampath <presam77@gmail.com> Fri, Jan 27, 2023 at 12:59 PM
To: niyasummer@kmctdentalcollege.org

Confirmation email for Akshay V.R.

---------- Forwarded message ---------
From: **akshay vr** <akshayvr451@gmail.com>
Date: Fri, Jan 27, 2023 at 12:55 PM
Subject: Fwd: STS-2023 Proposal Submission 2023-00422
To: <presam77@gmail.com>

---------- Forwarded message ---------
From: <sts@hq.icmr.org.in>
Date: Fri, Jan 27, 2023, 11:56 AM
Subject: STS-2023 Proposal Submission 2023-00422
To: <akshayvr451@gmail.com>

Dear Mr. Akshay V.R.

You have successfully uploaded your proposal for STS-2023.

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<niyasummer@kmctdentalcollege.org>

Fwd: STS-2023 Proposal Submission 2023-05127

1 message

Dr. Anju.R.V Sr. Lecturer <anju@kmctdentalcollege.org> Fri, Jan 27, 2023 at 12:58 PM

To: niyasummer@kmctdentalcollege.org

---------- Forwarded message ---------
From: <sts@hq.icmr.org.in>
Date: Fri, 27 Jan 2023, 12:03
Subject: STS-2023 Proposal Submission 2023-05127
To: <rvmohammed@hotmail.com>
Cc: <anju@kmctdentalcollege.org>

Dear Ms. Amna Mohammed Abdusalam

You have successfully uploaded your proposal for STS-2023.

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Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Reg: Nahala (BDS IV Yr Part II) STS ICMR Registration: Jan 2023

1 message

Tim Peter <drtimpeteromr@gmail.com> Fri, Jan 6, 2023 at 1:48 PM
To: "niyasummer@kmctdentalcollege.org" <niyasummer@kmctdentalcollege.org>

Thanks & Regards

Dr. Tim Peter Thermadam PhD, MDS, BDS
Associate Professor
Dept. of Oral Medicine and Radiology
KMCT Dental College, Calicut, Kerala.
Ph: (0)9633344683.

http://www.kmctdentalcollege.org/



Screenshot 2023-01-06 at 1.45.03 PM.png
801K

Gmail

Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Regarding registeration for icmr

1 message

40.Praveena K <praveenagopalkrishnan@gmail.com> Fri, Dec 23, 2022 at 9:44 AM
To: niyasummer@kmctdentalcollege.org

Sir,
Myself Praveena K (Part 1student). I have done my registration for icmr research program.



IMG_20221223_094006.jpg
309K

Gmail

Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Fwd: STS-2023 Registration 2023-00422

1 message

Prejith Sampath <presam77@gmail.com> Thu, Dec 22, 2022 at 8:03 PM
To: niyasummer@kmctdentalcollege.org

---------- Forwarded message ---------
From: **akshay vr** <akshayvr451@gmail.com>
Date: Thu, 22 Dec, 2022, 5:25 pm
Subject: Fwd: STS-2023 Registration 2023-00422
To: <presam77@gmail.com>

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Thu, Dec 22, 2022, 1:59 PM
Subject: STS-2023 Registration 2023-00422
To: <akshayvr451@gmail.com>

Dear Mr.Akshay V.R.

Your email ID has been registered for STS 2023.Your mobile no. 9645945083 is for future correspondence Please note the following details-

Login ID: akshayvr451@gmail.com
Password: EKQVJR
Reference ID: 2023-00422

Kindly use the above information to LOGIN and SUBMIT your STS-2023 Proposal between 20th-December-2022 and 27th-January-2023 (till 11.59 P.M).
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Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Fw: STS-2023 Registration 2023-02762

1 message

Dr Niyas Ummer <drniyas@hotmail.com> Thu, Jul 27, 2023 at 12:31 PM
To: "Dr. Niyas Ummer Sr. Lecturer" <niyasummer@kmctdentalcollege.org>

Warm Regards,

Dr Niyas Ummer
Consultant Maxillofacial Radiologist

www.drniyas.com

From: stsicmremail@gmail.com <stsicmremail@gmail.com>
Sent: Wednesday, December 28, 2022 1:52 PM
To: ashithaswathhikam@gmail.com <ashithaswathhikam@gmail.com>
Cc: drniyas@hotmail.com <drniyas@hotmail.com>
Subject: STS-2023 Registration 2023-02762

Dear Ms.Ashitha Rajan

Your email ID has been registered for STS 2023.Your mobile no. 9746824358 is for future correspondence Please note the following details-

Login ID: ashithaswathhikam@gmail.com
Password: ZCYBXM
Reference ID: 2023-02762

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This is an automated email. Please do not reply to this e-mail. In case of any queries please send email to stshrd2017@gmail.com
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Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Fwd: STS-2023 Registration 2023-00444

1 message

40.Praveena K <praveenagopalkrishnan@gmail.com> Thu, Jan 26, 2023 at 2:42 PM

To: niyasummer@kmctdentalcollege.org

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Thu, 22 Dec, 2022, 2:47 pm
Subject: STS-2023 Registration 2023-00444
To: <praveenagopalkrishnan@gmail.com>
Cc: <praveenaknair1999@gmail.com>

Dear Ms.Praveena K

Your email ID has been registered for STS 2023.Your mobile no. 9847874990 is for future correspondence Please note the following details-

Login ID: praveenagopalkrishnan@gmail.com
Password: ZK6JM7
Reference ID: 2023-00444

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Dr. Niyas Ummer Sr. Lecturer
<niyasummer@kmctdentalcollege.org>

Fw: STS-2023 Registration 2023-05127

1 message

Mohammed AbduSalam <rvmohammed@hotmail.com> Wed, Jan 4, 2023 at 1:21 PM

To: "niyasummer@kmctdentalcollege.org" <niyasummer@kmctdentalcollege.org>

From: stsicmremail@gmail.com <stsicmremail@gmail.com>
Sent: Wednesday, January 4, 2023 7:48 AM
To: rvmohammed@hotmail.com <rvmohammed@hotmail.com>
Cc: endlessdaydream4@gmail.com <endlessdaydream4@gmail.com>
Subject: STS-2023 Registration 2023-05127

Dear Ms.Amna Mohammed Abdusalam

Your email ID has been registered for STS 2023.Your mobile no. 9847325749 is for future correspondence Please note the following details-

Login ID: rvmohammed@hotmail.com
Password: F4LNX9
Reference ID: 2023-05127

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Fwd: STS-2023 Registration 2023-02130

1 message

sarin k <sarinkoroth@gmail.com> Mon, Jan 2, 2023 at 3:44 PM
To: niyasummer@kmctdentalcollege.org

---------- Forwarded message ---------
From: **Hana Abdul Kareem** <hanahazza@gmail.com>
Date: Sun, 1 Jan 2023 at 11:54 AM
Subject: Fwd: STS-2023 Registration 2023-02130
To: <sarinkoroth@gmail.com>

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Fri, 30 Dec 2022 at 4:51 PM
Subject: STS-2023 Registration 2023-02130
To: <hanahazza@gmail.com>

Dear Ms. Hana Abdul Kareem

Your email ID has been registered for STS 2023. Your mobile no. 9746098045 is for future correspondencePlease note the following details-

Login ID: hanahazza@gmail.com
Password: JDWT8Q
Reference ID: 2023-02130

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<niyasummer@kmctdentalcollege.org>

Fwd: STS-2023 Registration 2023-02767

1 message

Amrita Ashok <amrita.ashok4@gmail.com> Thu, Dec 29, 2022 at 9:52 AM
To: "niyasummer@kmctdentalcollege.org" <niyasummer@kmctdentalcollege.org>

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Wed, 28 Dec, 2022, 2:01 pm
Subject: STS-2023 Registration 2023-02767
To: <annajoseph678@gmail.com>
Cc: <amrita.ashok4@gmail.com>

Dear Ms.Anna Joseph Padinjakkara

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Login ID: annajoseph678@gmail.com
Password: LJ82CP
Reference ID: 2023-02767

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Fwd: STS-2023 Registration 2023-00842 Aswathy J Raj

1 message

Subisha SB <drsubisha@gmail.com> Wed, Dec 28, 2022 at 12:50 PM
To: "niyasummer@kmctdentalcollege.org" <niyasummer@kmctdentalcollege.org>

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Fri, Dec 23, 2022, 2:51 PM
Subject: STS-2023 Registration 2023-00842
To: <aswathijanakaraj@gmail.com>
Cc: <drsubisha@gmail.com>

Dear Ms.Aswathy J Raj

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Login ID: aswathijanakaraj@gmail.com
Password: Q72KWP
Reference ID: 2023-00842

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Fwd: STS-2023 Registration 2023-02729

1 message

perio kmct <kmctperio@gmail.com> Wed, Dec 28, 2022 at 12:48 PM
To: "niyasummer@kmctdentalcollege.org" <niyasummer@kmctdentalcollege.org>

Fathima Sahadiyya

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Wed, Dec 28, 2022, 12:56 PM
Subject: STS-2023 Registration 2023-02729
To: <fathimathsahadhiyya@gmail.com>
Cc: <kmctperio@gmail.com>

Dear Ms.Fathimath Sahadiyya K

Your email ID has been registered for STS 2023.Your mobile no. 9207847299 is for future correspondence Please note the following details-

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Password: 7QGCRN
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Fwd: STS-2023 Registration 2023-01009

1 message

Sithara K <sitharakoraprath@gmail.com> Fri, Dec 23, 2022 at 10:32 PM
To: niyasummer@kmctdentalcollege.org

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From: **Ninshidha Mohammed** <ninshidhamohdgrace@gmail.com>
Date: Fri, 23 Dec, 2022, 10:11 pm
Subject: Fwd: STS-2023 Registration 2023-01009
To: sitharakoraprath@gmail.com <sitharakoraprath@gmail.com>

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Fri, 23 Dec, 2022, 9:52 pm
Subject: STS-2023 Registration 2023-01009
To: <ninshidhamohdgrace@gmail.com>

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Password: GKR6ZL
Reference ID: 2023-01009

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Fwd: STS-2023 Registration 2023-00977

1 message

AISWARYA ANIL <aishuanil1110@gmail.com> Fri, Dec 23, 2022 at 8:45 PM

To: "niyasummer@kmctdentalcollege.org" <niyasummer@kmctdentalcollege.org>

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From: **AISWARYA ANIL** <aishuanil1110@gmail.com>
Date: Fri, Dec 23, 2022 at 8:40 PM
Subject: Fwd: STS-2023 Registration 2023-00977
To: nivfra90@gmail.com <nivfra90@gmail.com>

---------- Forwarded message ---------
From: <stsicmremail@gmail.com>
Date: Fri, Dec 23, 2022 at 8:39 PM
Subject: STS-2023 Registration 2023-00977
To: <aishuanil1110@gmail.com>
Cc: <nivfra90@gmail.com>

Dear Ms.Aiswarya Anil

Your email ID has been registered for STS 2023.Your mobile no. 8606184323 is for future correspondence Please note the following details-

Login ID: aishuanil1110@gmail.com
Password: KZUPHG
Reference ID: 2023-00977

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UG PUBLICATIONS

Original Research

BIOMEDICAL WASTE MANAGEMENT KNOWLEDGE, ATTITUDE AND PRACTICES - A CROSS SECTIONAL SURVEY OF STUDENTS OF A DENTAL TEACHING INSTITUTE IN KERALA

*Dr Dhanya Muralidharan, **Dr Arun Paul, ***Dr Shahla A, ***Dr Shadiya K, ***Dr Shibini Shareef

Abstract

Dental waste consists of both hazardous and infectious wastes which can be harmful to the public and environment if not disposed carefully. Dentists' need to be aware of correct methods of waste segregation and disposal in order to prevent health hazards. The present study was undertaken to determine the dental student's Knowledge, Attitudes and Practices of Biomedical Waste Management of a dental teaching institution in Kerala. A cross-sectional descriptive online questionnaire study was conducted for a period of four months from August to November 2021. A total of 414 students participated for the study with a mean age of 23.66±2.042. The current study revealed Dental students had positive attitudes towards Biomedical waste management but definite inadequacies in their Knowledge and Biomedical waste management Practices. Modifications in the dental curriculum stressing on importance of Biomedical waste management as early as in the pre-clinical years will help improve understanding of Biomedical waste management concepts and its application.

Key words: Biomedical waste management, Dental students, Knowledge, Attitudes, Practices

Corresponding author: Dr Dhanya Muralidharan, email: kappoordhanya@hotmail.com

*Professor and Head, **Reader, ***Intern, Department of Public Health Dentistry, KMCT Dental College, Kozhikode, Kerala

KMCT DENTAL COLLEGE

Original Research

ASSESSMENT OF POST INSERTION PROBLEMS AMONG REMOVABLE DENTURE WEARERS IN THREE DENTAL INSTITUTIONS OF CENTRAL MALABAR

*Aswathi Mahesh,*Lubaiba Manat, **Dr.Abu Nazar N,**Dr. Monisha VS,
*Amal Ajith, *Fathima V.V, *Prajitha T, *Shahiya K.S

Abstract

Background: Removable partial dentures are an economic and easy treatment modality for edentulous patients, but some patients may encounter few complications during their adaptation period. If these complaints are not addressed properly it can lead to patient disappointment and ultimately removable dental prostheses failure. The present study intends in providing a structure-functional assessment of complete denture complaints as reported by patients of three Dental Colleges in the Malabar region. **Aims and objectives:** To evaluate the incidence of common post insertion problems and to point out and minimize common post insertion complaints of removable dentures fabricated in dental institutions of central Malabar. **Materials and Methods:** A questionnaire based study was conducted in three dental institutions of Central Malabar. The study was carried out on 120 patients who had undergone prosthetic rehabilitation with removable dental prosthesis from these dental colleges and the post insertion complications were evaluated between them. The questionnaire consisted of questions based on various post insertion complications like pain on insertion and removal, ulceration, aesthetics, difficulty in speech, ill-fitting dentures, difficulty in mastication, reduced tongue space. **Results:** According to the study, 95% were satisfied with the denture and only 4.2% showed dissatisfaction. 48.3% complained about ill-fitting dentures, 42.5% about loss of retention, only 27.5% about pain and discomfort ,10% about cheek bite,2.6% about radiating pain .92.5% were satisfied with the denture esthetics, 87.5% were satisfied with teeth shape, 90% with teeth size and 100% with the lip support and 5.8% had a negative response about the sunken cheek appearance. **Conclusions:** Ill filling dentures were the most frequent complaint among denture wearers in the present study followed by lack of retention. Most of the patients were content with the aesthetic aspect of the denture. The most common reason why patients wanted rehabilitation of the lost dentition was for mastication. The quality of denture in the department can be assessed and further efforts can be made on improving the aspect of denture fabrication by undergraduates and postgraduates.

Key Words: Removable partial denture, Post insertion complaints, Denture wearers, Retention
Corresponding Author: Dr. Abu Nazar N

Title: "Comparison of Pre-recorded Video Classes vs Traditional Lectures for Teaching Radiology to Dental Undergraduate Students"

Authors:

1. **Malavika K U**
   House Surgeon, KMCT Dental College, Kozhikode, Kerala, India
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3. **Gopika K S**
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   Email – drniyas@hotmail.com
   Ph: +91 9447 725 209

Introduction

Lectures, one of the oldest methods of teaching based on the philosophy of idealism, are considered as the basic foundation of learning. Other types of lectures include illustrated talk, briefing, formal speech and teaching lectures. A lecture refers to the process of explaining topics to the students, during which the teachers are more actively involved while students are passive participants.

In a scheduled lecture class, the students need to visualise the concept and interpret the content within a limited time window. Most often, the potential of the entire class of students are not taken into consideration. The students who are academically weaker tend to lose interest in the subject, and may distract others eventually ending up in a no man's land, even after the arduous efforts of the instructor.

Another form of learning is didactic or self-learning, wherein knowledge is acquired without the guidance of experienced educators such as teachers and professors, or attending

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A survey of commonly used impression materials and techniques for fixed partial denture among dentists in Malabar region – Kerala: A cross sectional study

Niveditha S Prasad[1], Nivea T Francis[2], Anu M Paul[3], Athira Maheendran[4], Ayishal Ishan K[5], B Shebina[6]

[1-2]Assistant Professor, Department of Prosthodontics crown and bridge, KMCT Dental college, Manassery P O Mukkam, Kozhikode 673602.

[3,4,5,6]Interns, KMCT Dental college, Manassery P O Mukkam, Kozhikode 673602.

Date of Submission: 28-03-2023 Date of Acceptance: 05-04-2023

ABSTRACT:

Introduction: There are multiple concepts and techniques in fixed prosthodontic practice and several studies have concluded that clinicians definitely deviate from the recommended clinical protocols. If this happens during treatment with fixed prosthesis, the quality of fixed prostheses is compromised which affects its longevity. Aim of this study was to evaluate the use of impression materials and techniques in fixed partial denture among dentists in Malabar region - Kerala. Materials and Method: A cross-sectional, questionnaire-based online survey was done amongst dentists in Malabar region - Kerala through Google forms. Data from the completed questionnaires were analysed using the SPSS version 22. All statistical analyses were carried out at a significance level of $P < 0.05$. Out of 225 participants, 190 (84.4%) dentists always made diagnostic impression for fabrication of study cast. 102(45.3%) dentists used Addition silicone and 93(41.3%) used Alginate for final impression making. Most commonly used elastomeric impression technique was Putty Resin/Dual mix Technique (36%). Regarding retraction cord, 82.6% of dentists used Plain gingival retraction cord. Conclusion: The study found that most of the responses on use of impression materials and techniques were significantly associated with the level of knowledge, proficiency and clinical experience.

KEYWORDS: Fixed prosthodontics, Impression materials, Impression techniques, Retraction cord, Alginate

I. INTRODUCTION:

Twentieth century witnessed remarkable changes with regard to human life expectancy worldwide, and the twenty first century is set to carry forward the gain in life expectancy further, both in the developing and developed world[1]. Various impression materials and techniques came into use since times earlier till today. All of them have some pros and cons and are suitable for specific conditions.

Most of the dental practitioners pay more attention to patient's flow, cost and treatment time and less focus towards the appropriate technique, material and armamentarium which are required for long- term success[2]. There are numerous technique described for making impression , including copper band technique , mono - phase technique , single step technique , or the double - step technique and several types of impression materials that can be used in fabricating prostheses which including alginate , condensation silicone , polysulfide , polyether and polyvinyl siloxane[3].

As Fixed Prosthodontic procedures are widely practiced for dental rehabilitation, it is very important to evaluate the details of basic steps in the field of fixed prosthodontics and the way of practicing this important branch of dentistry. Therefore, knowledge of dental professionals regarding materials and techniques used is important for the successful outcome of dental treatment[4]. The ability to identify and analyze inaccurate impressions and to understand how to avoid them is key to successful treatment[5]. This study is a questionnaire-based survey to assess and know the impression materials and techniques for fixed partial dentures that are being followed by the dentist in Malabar region.

II. MATERIALS AND METHODS:

This study was conducted among general dentist and specialist among dentists of Malabar region form 15/11/2022 to 15/01/2023. 225 dentists practicing in the Malabar region were selected for the study. Approval of Institutional Ethics Committee, KMCT Dental College, Mukkam, Calicut was obtained before starting the

PERCEIVED SOURCES OF STRESS AMONGST DENTAL STUDENTS IN DENTAL COLLEGE: A CROSS SECTIONAL STUDY

*Abhishek S Nair, *Aparna PM, **Dr.Arun Paul, ***Dr.Dhanya Muralidharan, *Namitha Padmakumar, *Reshma Prasad, *Aysha Suha MN

Abstract

Background: Stress is believed to cause detrimental effects on academic performance of students. Identification of the sources of stress is important in dental education program, as it gives opportunity to takevarious measures to prevent stress in the dental school environment. The rationale of the present study was to identify the various sources ofstress among dental school students in a private dental institution in Kerala, India. **Materials and Methods:** A questionnaire based crosssectional study was conducted among final year students and interns of the dental college. Questionnaire used in the study comprised themodified version of Dental Environmental Stressquestionnaire. A four pointlikert scale was used to record the responsesfrom the subjects. A total of 150 subjects participated in the study. Statistical analysis was done using SPSS package version 20.**Results:** Among the participants, 24.6% (37) were males and 75.4% (113) were females. Major stress factor was academic related ($p=0.04$), lack of confidence in clinical decision making ($p=0.006$) and insecurity regarding dental career ($p=0.03$). Mean stress scores were high for academic related 3.5±1.0, followed by career related 2.9±1.0 questions. **Conclusion:** It is evident that dental studentsencounter high levels of stress. Present study identified that the major stressors were academic related and career relatedrather than personal issues. Our study also focuses the importance of stress management programs to minimize the impact of stress on both academic and personal lives of the students.

Key Words: Dental students, stress, academic, interns

Corresponding Author: Dr. Arun Paul

**Intern, **Reader, ***Professor & Head., Dept. of Public Health Dentistry, KMCT Dental College, Manassery, Kozhikode 673602*

Introduction

The term stress describes external demands (physical or mental) on an individual's physical and psychological well-being. It is normal for everybody to experience stress to some extent, but too much stress may be harmful. Attending a school, college or university is a rewarding experience but it is also a time of considerable anxiety and stress for students. Students are subjected to different kinds of experiences which makes them vulnerable to undergo a lot of stress.[1]

Stress in dental students may be multi-factorial, arising from both the academic and socio-cultural environment, and

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Continuous Monitoring and Individual Attention by Mentors: Each student receives personalized attention from assigned mentors who regularly monitor their academic progress, identify areas of improvement, and provide guidance and motivation.

Special Classes with Subject Experts: Slow performers attend additional classes conducted by subject experts. These sessions focus on clarifying concepts, addressing doubts, and providing extra guidance on challenging topics.

Encouragement of Collaborative Study with Advanced Learners: Collaborative study groups are formed, pairing slow performers with high-achieving peers. This fosters a supportive learning environment where advanced learners mentor and assist their peers in understanding complex subjects.

Counseling for Students and Parents with Psychologists: Professional counselors conduct regular sessions for both students and parents to address academic concerns, study-related stress, and provide guidance on effective study techniques, enhancing mental well-being. This is done under **Happiness Department**

Periodical Assessments with Class Tests and Evaluation: Regular class tests and assessments are conducted to track progress, identify weak areas, and provide timely feedback. This helps students understand their strengths and weaknesses.

Rapid Revision and Revision Tests Before University Examinations: Special revision sessions are organized before exams to quickly recap the syllabus, focusing on key topics. Revision tests simulate exam conditions, aiding students in practicing time management and boosting confidence.

Dr. MANOJ KUMAR.K.P
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Mukkam

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Encouraging Reading Books with Simple Language: To improve comprehension and understanding, students are encouraged to read supplementary materials or simplified textbooks that explain complex topics in simpler language.

Provision of Special Notes: Specialized study materials, including simplified notes and summaries, are provided to slow performers, aiding in better understanding and retention of crucial concepts.

Customized Learning Plans: Tailored learning plans are designed to cater to specific learning styles, pace, and requirements, ensuring a more personalized learning experience.

These comprehensive programs and support systems at KMCT Dental College aim to address the specific needs of slow performers, ensuring they receive the necessary attention, guidance, and resources to improve their academic performance and succeed in their dental education.

Dr. MANOJ KUMAR K.P
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3. ENCOURAGMENT OF COLLOBORATIVE STUDY WITH ADVANCED LEARNERS



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4. COUNSELING FOR STUDENTS AND PARENTS WITH PSYCHOLOGISTS.



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5. ACCESS TO ADDITIONAL BOOKS, JOURNALS AND E – LIBRARY





5. PERIODIC ASSESSMENTS WITH CLASS TESTS AND EVALUATION

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① Role of pedodontics in diet counselling
② Morphological difference primary and permanent dentition.
③ modification of pediatric treatment strategies.
Significance of carrying oral habits.
④ Preventive phase in comprehensive case history taking

9/25

② primary dentition:

→ total number of teeth. is 20
→ premolar is absent
→ 2 molar in each quadrant

permanent dentition.

→ total number of teeth is 32.
→ 8 premolar is present.
→ 3 molar in each quadrant

morphology of crown-

→ more bulbous.
→ less attrition
→ mesio-distal diameter is more than cervico-occlusal diameter.
→ more whitish
→ mamelons are absent

→ cervical constriction is less
→ contact areas are prominent
→ occlusal table is narrow

→ less bulbous.
→ more attrition.
→ cervico-occlusal diameter is more than mesio-distal diameter.
→ less whitish.
→ mamelons present in newly erupted teeth.
cervical constriction is more.
→ contact points are prominent.
→ occlusal table is wider.

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Long & slender.

→ short and robust -

→ root & axe flare and developing thread present on it

→ physiological resorption is present

~~short & robust.~~
Long & slender.

→ less flare.

→ pathological resorption is present.

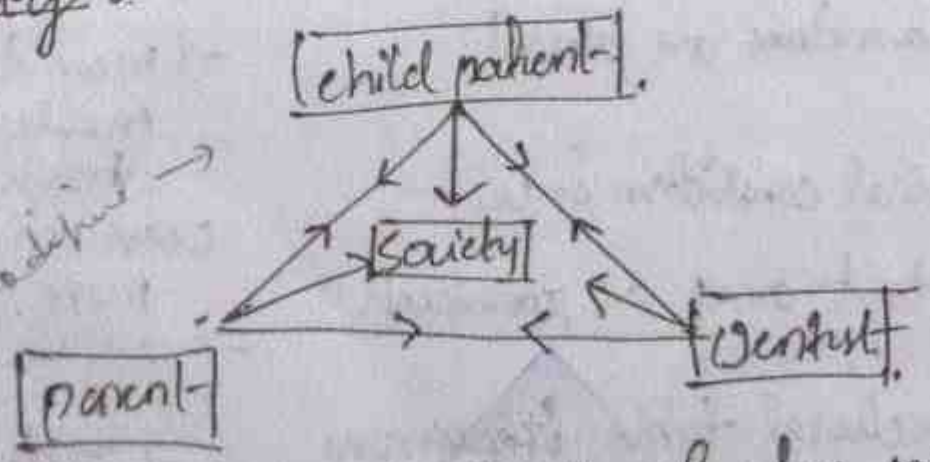
diff in pic!

modification of pediatric triangles.

conventional

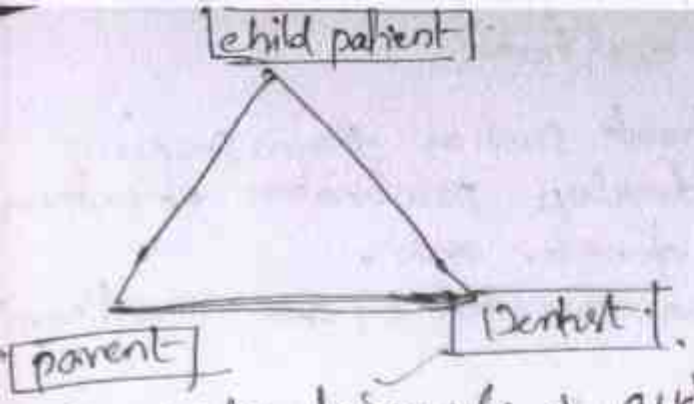
→ Mc donald developed.

→ society is



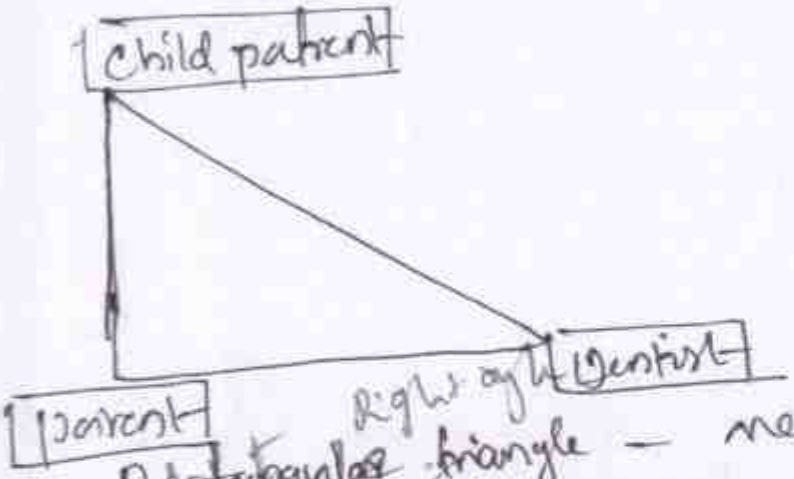
→ society is the major major factor influencing all the environmental factors

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Isosceles triangle → authoritative parent.

→ Here parent is involved in the communication between child and Dentist.



Right angled triangle — neglecting parent.

→ Here parent doesn't involved in the communication between child and dentist.

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3. Role of pedodontics in diet counselling
4. Morphological difference primary and permanent dentition.
5. Modification of pediatric treatment triangle.
   Significance of sucking oral habits.
6. Preventive phase in comprehensive case history taking

9/25

(2) primary dentition:

→ total number of teeth. is 20
→ premolar is absent
→ 2 molar in each quadrant

permanent dentition.

→ total number of teeth is 32.
→ 8 premolar is present.
→ 3 molar in each quadrant

morphology of crown.

1/2

→ more bulbous.
→ less attrition
→ mesio-distal diameter is more than cervico-occlusal diameter.
→ more whitish
→ marmelons are absent

→ cervical constriction is less
→ contact areas are prominent
→ occlusal table is narrow

→ less bulbous.
→ more attrition.
→ cervico-occlusal diameter is less than mesio-distal diameter.
→ less whitish.
→ marmelons present in newly erupted teeth.
cervical constriction is more.
→ contact points are prominent.
→ occlusal table is wider.

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Significance of arresting oral habits.

→ P. childrens with oral habit such as thumb sucking have more chance to develop proclination of anterior teeth and narrowing of upper arch.
when it initialy fnd, can corrected by arch crib-thumb guard appliance.
→ if child have tongue thrusting there is a high chance of developing spacing in anterior teeth.

→

preventive phase.
→ in this phase include fluoride treatment and pit & fi
Sealant placement for preventing development of dental caries
→ restoration of inipient carries with Atraumatic restor treatment
→ educate the patient about oral hygiene measures and proper brushing false technique.

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D) Define pediatric dentistry and write pedodontic about pediatric oral examination.

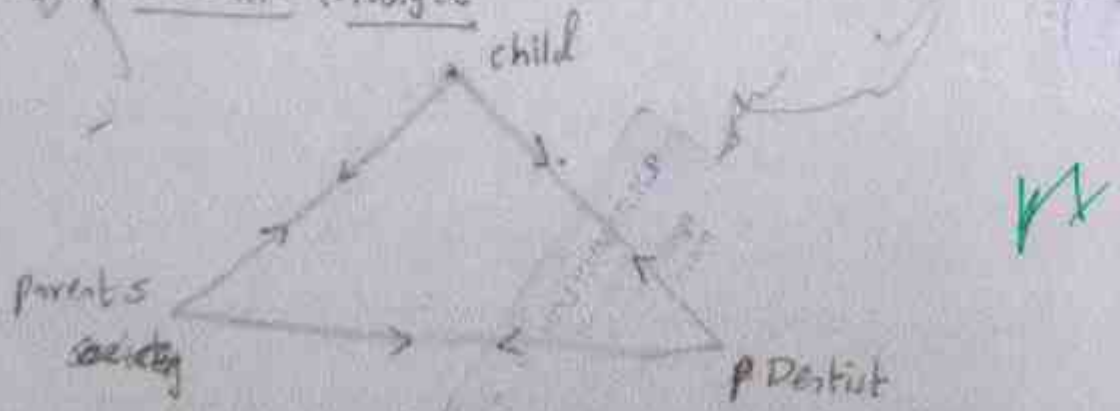
a) Evolution of primary dentition
b) First dental visit
c) Difference b/w primary and permanent dentition
d) Scope of pediatric dentistry

A) 1A) pediatric dentistry — age defined specialty

AAPD:- defined as practice and teaching for comprehensive preventive, therapeutic oral health care for child from birth to adolescents and give care for special patients with physically, mentally, and emotional problems

Stewart:- practice and teaching of comprehensive preventive and therapeutic oral health care for child from birth to adolescents

(A) Pedodontic triangle



⇒ Relationship of child, dentist and parents

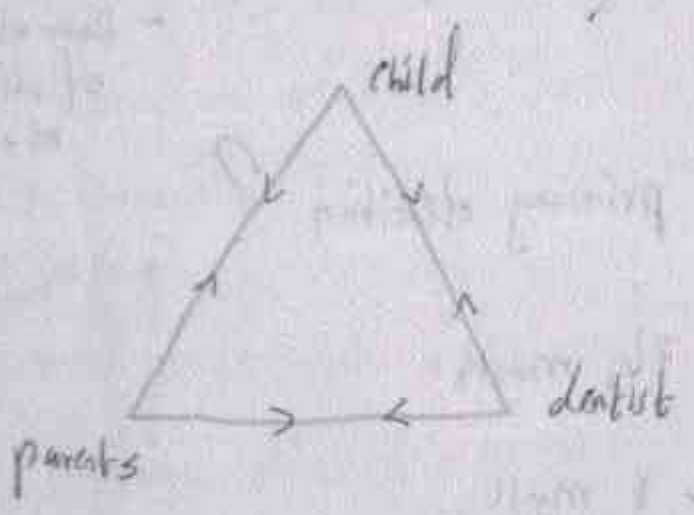
⇒ Through this child will become comfort

B) modified pedodontic triangle



here society has role too.

C)

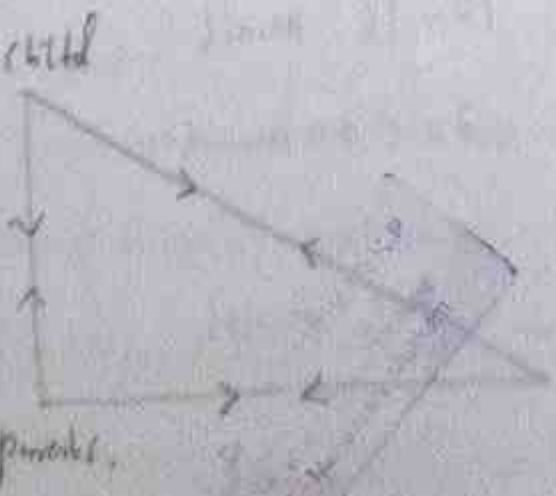


here dentist and parents having constant communication so, there is interfering communication of dentist with child

Isosceles triangle – authorised parents

here it is equilateral triangle with arrows

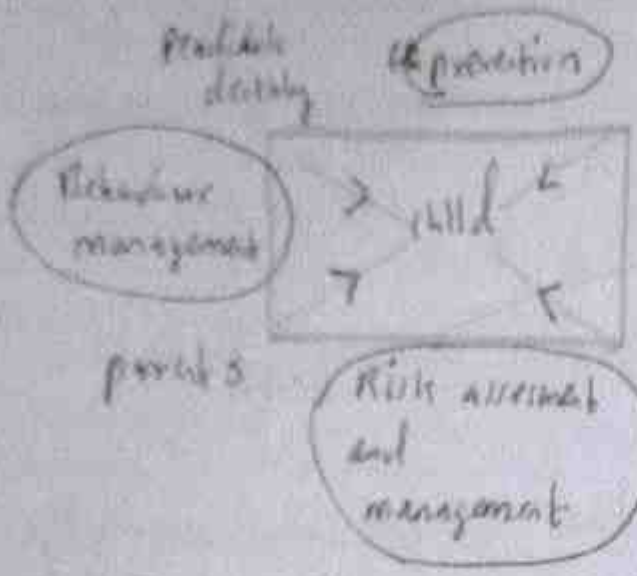
D)



here there is communication between child and dentist

Right angle triangle – neglected parents

E) Pediatric dentistry treatment triangle model



→ Prevention of oral diseases
→ good relationship between dentist and child
therapy
Child psychology improved
- Reduce risk factors
- know about behaviour of child and manage them

2) Chronology of primary dentition ?

maxilla

Central incisor — 7½ month

lateral incisor — 8 month

canine — 16-21 month

first molar — 12-16 month

second molar — 20-30 month

mandible

central incisor — 6½ month

lateral incisor — 7 month

canine — 16-20 month

4) A) Difference blw primary and permanent teeth?

	Primary dentition	permanent dentition
size	small size more mesiodistally width than cervicoocclusally	large size more cervicoocclusally width than mesiodistally
colour	white in colour (due to refractive index of enamel and dentin is same)	yellowish white
slope	cervical ridge is prominent cervical constriction prominent cervical ridge prominent because of occlusal convergence from buccal and lingual surfaces of molars	cervical ridge is not prominent cervical constriction not prominent
contact points	Broader contact area	contact points blw teeth

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first molar – 12-16 month

second molar – 20-30 month

3A) First dental visit ?

1) History taking
⇒ medical
⇒ Dental-social

2) Clinical examination
extraoral
intraoral

3) take radiograph if required

4) Explain aims of treatment to the parent

5) Emphasize the need for preventive as well as operative treatment
- Request that child toothbrush be brought at next appointment
- Inform about financial aspect
- no of appointment required to complete treatment

6) Simple procedures
- Emergency treatment – (Treat pain)
- Prophylaxis including removal of calculus
- Topical fluoride Application by atraumatic procedures

Mouth clear infant oral health
Anticipatory guidance ch –

	20 yr number	32 yr number
pulp	pulp chamber is Larger pulp horn is hat high level especially mesial pulp horn root canal wide	pulp chamber is smaller pulp horn is at lower outer surface of enamel root canal narrow
histographically	thickness of enamel and dentin is thin enamel and dentin is ~~less~~ less mineralised	thickness of enamel and dentin is thick enamel and dentin is more mineralised

5A) Scope of pediatric dentistry ?

→ This deals with parents during rapid growth and development

→ Correction of and management of cleft lip and palate

→ Management of special patients with mentally and emotional problems and handicapped patients

→ And All aspects of care related with dentistry, Endodontics, pediatric dentistry, and prophylaxis

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6. RAPID REVISION AND REVISION TESTS BEFORE UNIVERSITY EXAMINATIONS



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INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTRE



GROUP DISCUSSION

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DEPARTMENT OF PEDIATRIC AND PREVENTIVE DENTISTRY

RETEST AND ANSWER SHEETS - 2022-23

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FINAL YEAR BDS (PART II) SECOND INTERNAL EXAM- RETEST 2022

Pedodontics and Preventive Dentistry (2016 SCHEME)

- ***Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space***
- ***Answer all parts of a single question together • Leave sufficient space between answers***
- ***Draw Diagrams wherever necessary.***

Long essay **2 X 10= 20**

1. Define and Classify Pulpotomy. Discuss in detail about Formocresol Pulpotomy.

2. Define and Classify Space maintainers. Discuss in detail about Distal shoe space maintainers.

Short essay **4X 5 = 20**

3. Describe the normal features of gingiva in children. Write in detail about Herpetic Gingivostomatitis.

4. Define Preventive Orthodontics. Discuss on Serial Extraction.

5. Write in detail about indications, contraindications and modifications of Stainless Steel Crowns.

6. Classify Dental Fluorosis. Explain in detail about the defluoridation techniques.

Short notes. **3 X 10 = 30**

7. Cavity preparation in primary teeth.

8. Apexification

9. Space regainers

10. Bite wing radiograph

11. Modifications of GIC

12. Bilateral space maintainers

13. Validation of ART

14. Obturating Materials

15. Indirect Pulp Capping

16. Frenectomy.

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Fathimathu Jishara

Roll no: 18

SECOND INTERNAL EXAMINATION

PEDODONTICS - RETEST

35½/40

8) Pulpotomy

Definition: Amputation of affected or infected coronal portion of dental pulp by preserving vitality and function of radicular pulp.

Pulpotomy

Partial pulpotomy — Complete pulpotomy

Formocresol pulpotomy

Local anaesthesia given

↓

Rubber dam is placed and Remove caries using high speed bur

↓

Remove dentinal roof using high ~~speed bur~~ diamond bur & stone

↓

Deroofing of pulpchamber

↓

Ledges in the enamel are removed by slow speed bur

↓

Overhanging enamel is removed

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Spoon excavator is used to scoop out coronal pulp

↓

Wash the area with saline

↓

Place cotton for Hemostasis

↓

Place a cotton pellet dipped in dilt formocresol for 5 min

↓

After 5 min check for fixation of formocresol

↓

Once it is fixed there will be brownish discoloration of cotton pellet and pulp stump

↓

Zinc oxide eugenol will be placed as temporary restoration

↓

After one week, do permanent restoration

↓

put Stainless Steel crown

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Space maintainers

A removable or fixed appliance that are used to preserve the space created by premature loss of deciduous teeth

Classification

⇒ According to Hitchcock

- Removable, fixed, Semifixed
- With band or without band
- Active or passive
- functional or nonfunctional
- Combination of above

⇒ According to Raymond C Thurow

- Removable
- Complete arch - lingual arch
  - extraoral anchorage
- Individual

⇒ According to Hinrichsen

- Fixed

(a) Non functional P

a) Class I - Adams clasp, Ball clasp, Crozat type, Loop type

b) Class II - pontic type, lingual arch

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Sullia

(2) Functional

(1) Cantilever type band and loop

- Removable

Acrylic partial denture

→ Distal shoe space maintainer

Distal shoe space maintainer can be given

- when mesial surface of second deciduous molar is exfoliated

- guide the path of eruption of first permanent molar

- So when second deciduous molar is exfoliated there is a chance of the mesial drifting of erupting permanent molar

To prevent this distal shoe space maintainer can be given.

Design

- Consist of an horizontal bar

- It extends from distal aspect of first deciduous molar to mesial aspect of erupting permanent molar

- This will guide the path of eruption.

Vertical bar

Vertical bar should not be short to, because it may interrupt the eruption of permanent molar

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It should not be the long, because
It may harm the erupting molars



(8.3) Normal gingiva in children

Color : Coral pink

Gingiva : Smooth, thick and sound

Free gingiva : Keratinised. have saddle area

Interdental gingiva : Interdental clefts present

Alveolar mucosa : Vascular, red

Fibres : Immature

Periodontal ligament : narrow

Bony Trabeculae : Thick and large marrow spaces

Ground substance : Ground substance is collagen ratio less

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Herpetic gingivo stomatitis

Caused by Herpes Simplex virus I

usually seen less than 3 years

Clinical features

- child will have bouts of fever like measles, malaise chickenpox

prodromal symptoms : fever, malaise, vomiting, irritability.

Initially these will be :-

small vesicle

↓

rupture to form yellowish painful ulceration

↓

which will be surrounded by erythematous margin.

- There will be :-

. drooling of saliva

. child become uncooperative while brushing

. difficulty in swalling and chewing

⇒ Management

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- Complete bed rest
- provide plenty of fluids
- Debridement of the area
- Maintain good oral hygiene
- Analgesics to control pain
- mild topical anaesthetics.

4) Preventive orthodontics

Preventive orthodontics involve the identification of potential irregularities of dentofacial complex and preventing it

Serial extraction

It is an interceptive orthodontic procedure that deals with sequential extraction of certain deciduous tooth and some specific permanent tooth to guide the eruption of permanent successors without much irregularities.

Methods

Tweeds method

At 8 years

first deciduous molars, is extracted

Deciduous canine is retained to retard the eruption of permanent canine.

↓

After 4-10 months

↓

premolar is extracted

↓

Then deciduous canine is extracted. to align permanent canine and incisors

Dewel's Method

At 8-9 years

↓

All Deciduous canine is extracted

↓

After 1year

↓

All first Deciduous molar is extracted followed by extraction of premolar

↓

permanent canine and incisors can be aligned properly.

Nance method

At 8 years

↓

Deciduous molar is extracted

↓

After 1year

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Deciduous premolars is extracted

↓

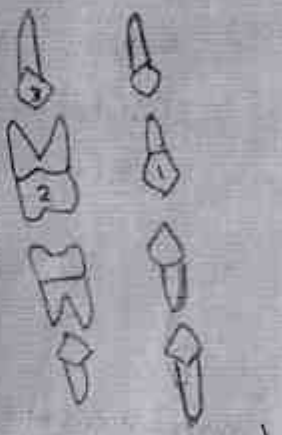
Deciduous canine is extracted

↓

permanent canine and incisors are aligned



Tweed's



Dewels method

5) Ind Stainless Steel crowns

Indication

1. Extensively decalcified tooth

when a tooth is extensively decalcified

2. Rampant caries

early child hood caries mostly

3. ~~Recurrent caries~~ bottle caries

4. Reccurrent caries

when a tooth is subjected to reccurrent caries

4. Enamel defects

mostly amelogenesis imperfecta, hypoplasia

5. Fracture of anterior tooth

when anterior tooth is fractured it is replaced with crown is placed above it

6. Tooth with Bruxism

when the cuspal edges become flat due to bruxism

Bruxism causes attrition.

7. As an abutment in prosthesis

- As a single crown
- multiple crown

Contraindication

- when Tooth with extensive caries
- Tooth with extensive mobility
- Tooth with root resorption
- patient with Nickel allergy
- Tooth with soft tissue trauma or blanching

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Modification of Stainless Steel

1. oversized / undersized crown

Oversized crown

for the crown, if it is oversized

↓

Remove and give a cut from gingival to occlusal area



↓

place on the tooth

↓

Join and check the cut surface and the gingival margin

↓

reposition the joined area and solder

↓

polish soldered area

↓

Do contouring, crimping and polishing

↓

fix with cement.

Undersized crown

Give a v shaped cut buccally or lingually



↓

place crown on tooth

↓

The joint the cut area with orthodontic band

↓

Solder the area

↓

polish the soldered area

↓

do contouring, crimping and polishing

↓

fix with cement.

2 Adjacent Stainless Steel crown

- If adjacent tooth require Stainless Steel crown, prepare one tooth and put crown at a time followed by the other.
- If both tooth are done at a time there will be encroachment of space.
- If one tooth require Stainless Steel crown and other require amalgam or Class II amalgam restoration, place Stainless steel crown first.

- Adjacent Stainless Steel crown with each length loss

- when there is caries in interproximal surface adjacent tooth will move into the space and causes decrease in arch length.

So proximal reduction of non carious tooth is done first.

(Q.6) Fluorosis

Fluorosis

Adult

Dental fluorosis

Skeletal fluorosis

Defluoridation

- process of removal of naturally occurring fluoride from water for domestic purpose.

Nalgonda Technique

Steps

- Raw water involve sequential adding of Alum, lime and bleaching powder followed by flocculation, sedimentation and filtration..

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1. Rapid Mix

When Coagulant is added to water, it undergo rapid mixing for 30-60 sec at a speed of 10-20 rpm.

This helps in uniform dispersion of Coagulant and form microflocs.

2. flocculation

- Here gentle stirring is done for 10-15 sec at 2-5 rpm.

- This helps in the settling of microflocs.

3. Sedimentation

- This is the gravitational setting of suspended particles.

Sedimentation depends on,

Size, shape, density and nature of particles
- density of water
Surface flow rate
Viscosity of water

4. filtration

Then water is allowed to pass through porous medium.

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- This will be available for domestic use water with less than 1ppm fluoride.

- Water can be used for domestic purpose
- Less wastage of water
- No expensive equipment required
- No electric power is required, No wastage of electricity
- Easy to maintain and operate and

(8:7) Cavity preparation in primary teeth

Class I Cavity

- Where thickness of enamel is less, cavity have to be extended 0.5mm pulpal to enamelo dentin junction
- Occlusal convergence must be given
1. mandibular second molar, anno central pit is more prone to caries than mesial pit
- Hence the outline must be confined to as in central pit
- Cavity have to be laterally extended to accommodate amalgam condensers
- pulpal floor for primary deciduous teeth
- Hence maintain the concavity and extend upto toe

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12. ~~Hyrax~~ Screen

Acrylic sheet used for mouth breathers and patient with thumb sucking habit. Initially holes are placed later gradually it is closed

Indication

Mouth breathers

Patient with thumb sucking habits

Contraindication

Patient with nasal defects like nasal polyp, turbinate and deviated nasal septum.

Modification

- Hole modification - Along with oral screen placed a metal ring helpful for removing of and placement appliance. Also for Stabilizing the appliance.
- Double Oral screen.
- Vestibular screen - Extent upto vestibular region.

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13. It is a ongoing relation with the dentist and patient and the Pediatric which is continuous, accessible

Characteristics

- Accessible
- Continuous
- Easily available
- Competent

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- Cavity depth should be 1.5 - 2mm
- While doing lateral extension on buccal side hold the instrument parallel to buccal surface and similarly on lingual side, hold parallel to lingual surface.

Class II Cavity preparation

- occlusal surface preparation have to follow Class I preparation
- For all first molar =

  Cavity should be extended ⅓ of mesiodistal ~~long~~ ~~dia~~ length and give dove tail
- pericimal box: Creates in width for the purpose of self cleansing
- Axiopulpal line angle must be rounded
- Cavo surface angle should be obtuse.
- Internal line and point angles must be rounded.

Cavity preparation in permanent teeth

1. outline form and initial depth
2. Primary ~~convenience form~~ primary resistance form

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2 Shape and form of conventional preparation that best enable the teeth to withstand without fracture on masticatory forces

3 Primary retention form

Shape and form of preparation the resist the dislodgement of restoration due to tipping or lifting forces

4 Convenience form

5 Removal of carious dentin and old restorations. This helps to prevent contamination of cavity

6 pulp protection if indicated using Calcium hydroxide

7 Final procedure - cleaning, inspecting, Sealing

Q. 9) Space regainers

Removable or fixed appliance used to regain the lost space

Removable appliance

Hawley's appliance with labial bow

Hawleys appliance with finger spring.

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Removable appliances

- Crozat's appliance
- Kloy's appliance
- Lip bumpers
- Holly appliance
- ~~pound - Split acrylic appliance~~.

Crozat's appliance

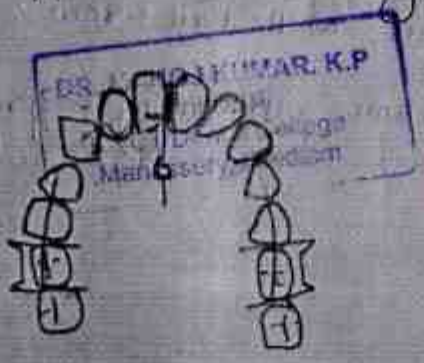


- Consist of a spring with a bend at the that is kept at the edentulous area.
- U loop can placed at the it's free end

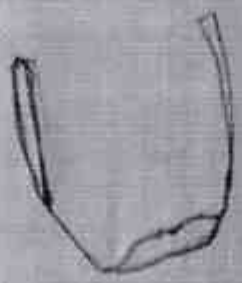
Open coil spring

Can be used to open spaces between two teeth.

Hawley's appliance with finger spring

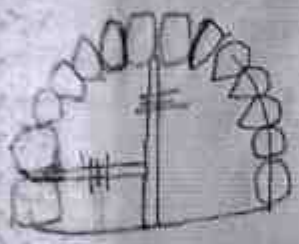


Lip bumper



- Its distal end is attached to the band present on the molar teeth
- It will prevent the mesial migration of tooth

Split acrylic



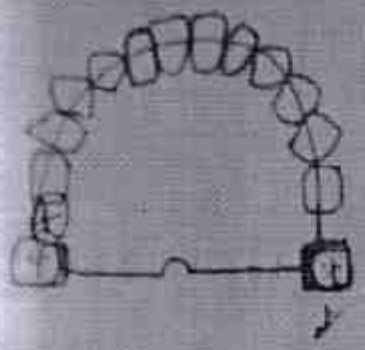
- Consist of Split acrylic acrylic plate, labial bow and Jack screw

(Q 11) Resin modified GIC
Metal modified GIC
Cermers

(Q 12) Transpalatal and Nasic palatal Space maintainer

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Transpalatal



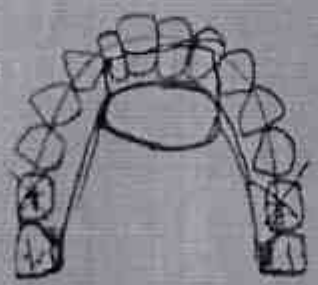
- Incorporate A metal band is attached to the molars. To which wire is attached passing across the palate.

Uses

Bilateral loss of molars. Single Loss

- Maintain arch length.
- ~~Can be given after eruption~~

Anterior palatal space maintainer



- Maintain arch length.
- Cannot be given before eruption of incisors.

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(016)

Frenectomy

Procedure for removing abberant frenum

Put an incision at the base of the frenum

↓

Extend the incision to periosteum

↓

~~reflect the periosteum~~ Raise the flap

↓

Incise the ~~cut the frenum~~ coronal the frenal attachment

↓

Keep back the mucosal flap and put suture.

A diamond shaped ~~flap~~ mucosa will be seen.



Indication

- Thick frenum
- Thick papillary penetrating frenal attachment

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(Q12) Advantages of ART

- ART Atraumatic restorative treatment can be done in small cavities
- It can be done in a cavity without pulpal exposure
- In a cavity where instrumentation is possible
- When patient have no pain
- It can be done in fearful adults children, mentally handicapped personnel
- It cannot be done if patient have pain, swelling or fistula.
- It is valid in public health programme.

Procedure

Isolate the area

↓

Clean the tooth surface

↓

Widen the entrance and remove unsupported enamel by hatchet

↓

Remove carious dentin with spoon excavator

↓

Apply Calcium hydroxide if required

↓

↓

Clean the surface

↓

Apply acid - etchant

↓

Rinse the Etc ~~or any other ma~~

↓

Place it in the cavity

↓

Take vaseline over the gloved finger and press over the surface

↓

Check for high points by using articulating paper

↓

If present, remove excess using carvers

↓

Again check occlusion

↓

Apply vaseline over the tooth surface and filling.

10) Bite wing radiograph

- It is an intraoral radiograph

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indication

- proximal caries can be detected
- periodontal bone evaluation can be done

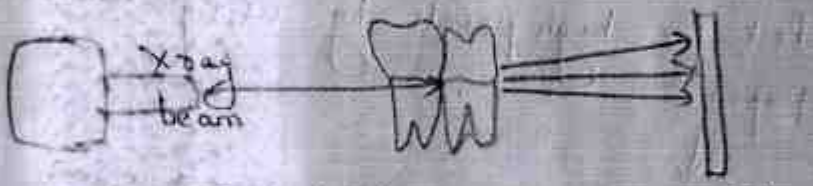
Height of bone can be determined

X-ray of upper and lower arch can be taken in single radiograph

Mechanism

- X-ray have to be passed through the contact points between the tooth.





X-ray beam passing through contact points

⇒ Film can be holded using bitewing loop.

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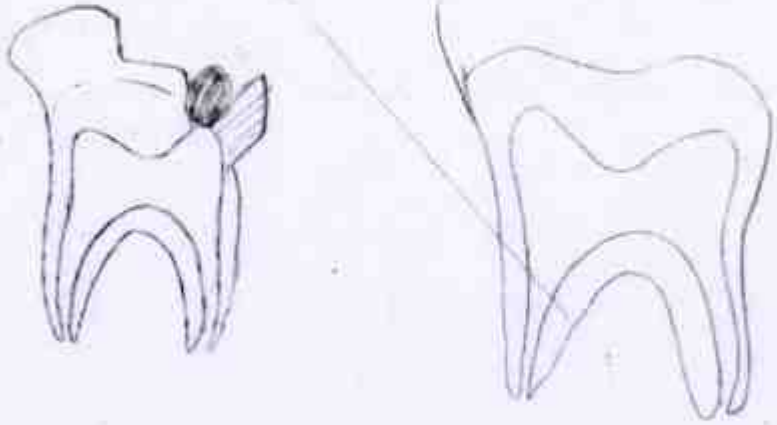
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Eg. internal and external root resorption

* Contraindications

- Mobile teeth
- The tooth shows signs of exfoliation
- Medically compromised patients
- Children with congenital heart disease.
- Children under long term corticosteroid therapy
- Uncooperative patients

* Procedure



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PULPOTOMY

* Steps

Administration of local anaesthesia

↓

Rubber dam Isolation

↓

Removal of the carious tooth surface / dentin

↓

Deroofing of the pulp chamber with straight fissure bur

↓

Removal of the coronal pulp with excavator

↓

Amputate the pulp stumps with round bur

↓

Care should be taken to avoid perforation.

↓

Placement of wet cotton dipped in formocresol into the pulp chamber for 3 minutes

↓

Check for fixation

↓

Remove the cotton pellet

↓

Place zinc oxide paste on the floor of pulp

↓

Placement of restoration

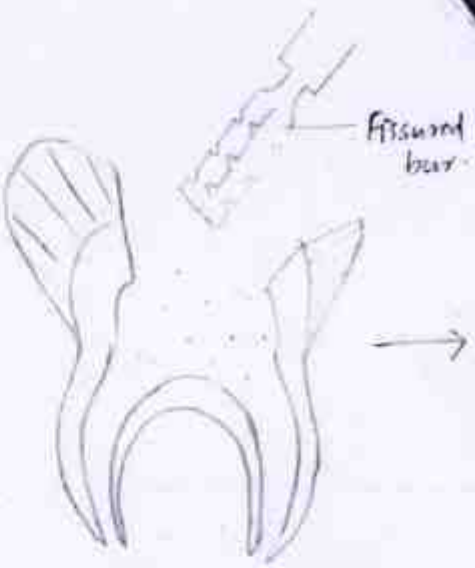
↓

Stainless steel crown is adapted on the tooth surface.

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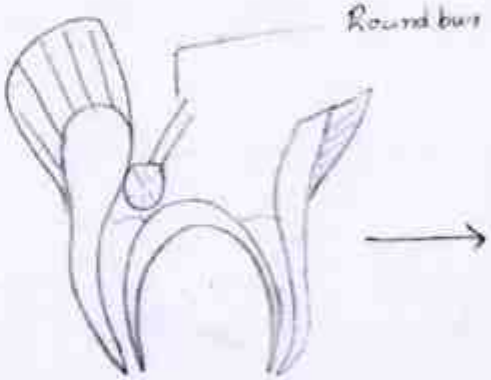
Carious tooth involved into pulp



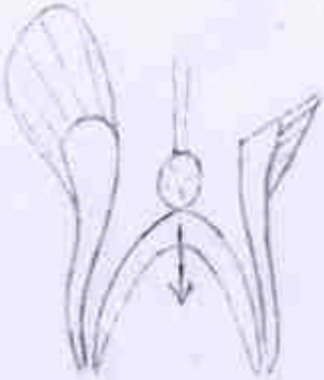
Deroofing of the pulp chamber with fissured bur.



Removal of the coronal pulp with excavator



Amputate the pulp stumps with round bur.

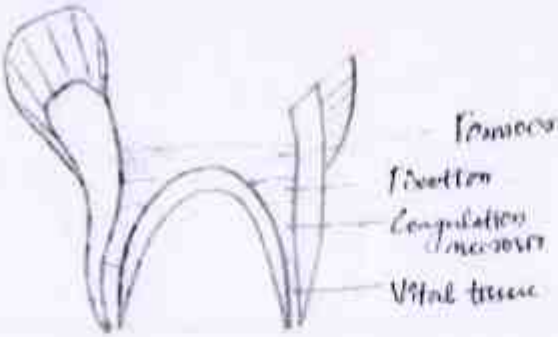


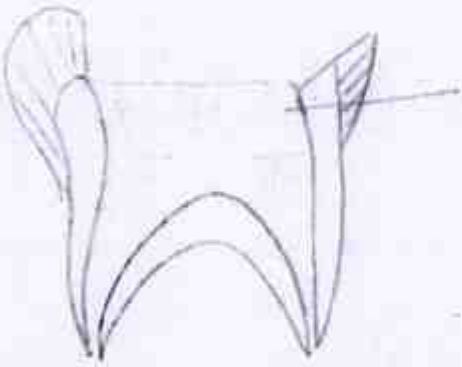
Avoid perforation.



Place formocresol wetted cotton pellet for 5 minutes

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x Difference between formocresol and Glutaraldehyde Pulpotomy

TES

- The material used in formocresol pulpotomy is
  - Formocresol
  - Glycerol
  - Glutaraldehyde
  - Water.
- In glutaraldehyde pulpotomy, the material is glutaraldehyde.

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2. # SPACE MAINTAINERS

* Definition

Space maintainers are removable or fixed appliances used to preserve the space created by the premature loss of deciduous teeth or group of teeth

* Classification

I) According to Hitchcock

a) Fixed, Removable, Semifixed spacemaintainers
b) Active or passive
c) Banded or without bands.
d) Functional or non-functional
e) Combination of the above

II) According to Regaund c Thurow

a) Removable
b) Complete arch
c) Single tooth.

III According to Hirschfeld

a) Removable space maintainers

Class I
Functional - Nance type
Non-functional - Band type, Loop type

Class II
Cantilever type - Distal shoe

b) Fixed space maintainers

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* Management of 5 year old child who requires extraction of mandibular right 2nd deciduous molar → Distal shoe space maintainers

Distal shoe space maintainers

- Also called Interalveolar space maintainers

* Indication :

- Space maintainance in children who have premature loss or extraction of second primary molars before the eruption of permanent first molars

* Contraindication

- Congenitally missing permanent 1st molars
- Mobile tooth
- There is no abutment teeth for placement
-

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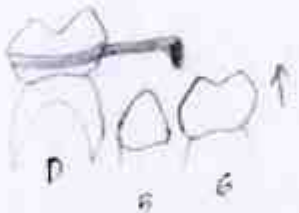
* Advantages

- It is the only appliance indicated in premature loss of second primary molar before the eruption of permanent 1st molar

* Disadvantages

- Cause tissue damage
- May alter the eruption pathway of permanent molars
- Require patient cooperation
-

* Fabrication



- Place the band on the first deciduous molar which is used as the abutment and check for adaptation
- Stainless steel crown can also be used as abutment
- ~~Remove~~ the band
- Take impression
- ~~Send the band to~~
- Place the band on the stainless steel crown on the impression and place cement
- Take a metallic piece having mesiodistal width of the space (from distal surface of 1st deciduous to the mesial surface of erupting permanent molar)

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- Weld the metallic piece to the band. (or solder)
- The depth of the terminal end of the extension should be 1mm below the gingiva.
- If it is more than 1mm, it will interfere with eruption of permanent 1st molar.
- If it is less than 1mm, the permanent 1st molar may erupt beneath the appliance.



3. Normal Gingiva of Children

- Color : The normal color of gingiva in children is pink.
- Thick and rounded contours
- Stippling is absent in infants but it will start to appear on above 3 years
- Interdental gingiva shows interdental clefts.
- Free gingiva shows retrocuspid papilla.
- Retrocuspid papilla ⟶ It is a circumscribed tissue seen on lingual surface of ~~canine~~ deciduous canines
- Children shows large pulp chamber and high pulp horn.
- Collagen fibers in gingiva of children are immature - they will become mature as age increases.
- Periodontal ligament space is more in children.

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17

10 DEC

PF - Vestibular depth of children → 1 - 1.2 cm

Gingival diseases in Children

- Acute herpetic gingivostomatitis
- ANUG (Acute Necrotizing Ulcerative Gingivitis)
- Gingivitis due to habits
- Plasma cell gingivitis
- Drug induced gingivitis
- Gingivitis due to puberty

⇒ Acute herpetic gingivostomatitis

- Causative organism : Herpes Simplex Virus I
- Commonly seen in children.
- Prodromal symptoms : Irritation
  Fever
  Malaise
  Vomiting.
- Shows minute small lesions which will leads to yellowish pustules and rupture.
- Painful lesion.
- Children shows difficulty for chewing and swallowing, drooling of saliva, reluctant to brush.
- Poor oral hygiene index, high caries activity

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- Management → Proper rest, diet, good oral hygiene practice

Topical analgesics for pain relief.

Topical anaesthetic gel.

⇒ ANUG:

- Also called trench mouth.
- The lesions shows characteristic punched out appearance
- Affects initially on the interdental gingiva and then free gingiva.
- It ~~may~~ causes ulceration and necrosis of the soft tissues of oral cavity and may spread to the underlying facial bone.
- Painful lesions, spontaneous bleeding on slight touch.
- Management → Diet, Oralhygiene practice.
  Application of mouthrinse

⇒ Plasma cell gingivitis

- No specific etiology.
- Characterized by abundant plasma cells on the affected area (histologically)
- Gingival bleeding

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→ Drug induced gingivitis

- Characterized by gingival enlargement
- Painless swelling
- No bleeding on probing
- Bulbous enlargement of interdental gingiva
- Due to administration of phenytoin, anticonvulsants, calcium channel blockers etc
- Discontinuation of the particular drug will relieve the condition

4. SERIAL EXTRACTION

* Definition

Serial extraction is the planned sequential extraction of some deciduous and permanent teeth.

* Methods

a) Tweeds method
b) Dewel method
c) Nance method
d) Moyer method

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* Indication

- No physiological teeth spacing.
- Lingual eruption of lateral incisor.
- Canines are erupting on mesial aspect of lateral incisor
- Signs of crowding.
- Mild class I malocclusion
- Less teeth material discrepency

* Contra indication

- Severe class II, class III malocclusion
- More spacing between teeth
- High caries activity.
- Caries on first permanent molars.

A) TWEED'S METHOD [D4C]



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At the age of 6 years

↓

Extract deciduous first molars

↓

After 2 to 3 months

↓

Extract permanent first premolars

↓

Extract deciduous canines

B) DEWEL'S METHOD (CD4)



At the age of 8-9 years

↓

Extract deciduous canines

↓

Extract deciduous first molars

↓

Extract

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C) NANCE METHOD (DAC)

- Similar to Tweeds method



D) Moyer method (BED)

- Indicated in anterior crowding



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Extraction of deciduous lateral incisor

↓

Extraction of deciduous canines

↓

Extraction of deciduous 1st molars

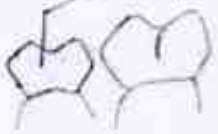
↓

Extraction of 1st premolars.

5. STAINLESS STEEL CROWN

* Definition

It is a pre-fabricated crowns used to preserve the anatomy, function of the tooth structure and are cemented on the tooth surface.



* Indications

- Extensive caries
- Caries involving ~~more than~~ multiple tooth surfaces
- Rampant caries
- Severe bruxism
- ~~As~~ On abutments in space maintainers
- As a part of orthodontic therapy
- Teeth which cannot be restored.

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* Contraindications

- Broken teeth
- Teeth with deep carious lesion
- Teeth with minimal tooth structure
- Root resorption of more than 1/3rd
- Periodontally involved teeth
- Patients who have metal allergy.

* Modifications

→ ~~Overcontour~~

→ Oversized crowns or underprepared teeth

It can be adapted by ~~cutting~~ trimming the cervical margin of the crown by using curved scissors.

→ Undersized crowns or overprepared teeth

- Place the crown on tooth surface after giving a vertical cut
- Adapt a metal piece since it is deficient
- Remove the crown and solder the metal piece with the crown.

→ Teeth with open contacts

- Use oversized crowns and contouring them

→ Crowns with deep gingival extension

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EXAM.

or 6. FLUOROSIS

- Fluorosis occurs as a result of increased level of fluoride in diet.

* Classification

A) Skeletal fluorosis

B) Dental fluorosis

Dental fluorosis

- Initially dental fluorosis appear as white lines on the incisal edges and cusps of posterior.
- Gradually it form white patches and spreads to the entire tooth surface.

Defluoridation Techniques

→ Nalgonda technique
→ Adsorption technique
→ Ion exchange method.

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→ Nalgonda Technique

- It involves the use of bleaching powder, alum
- The process involves filtration, sedimentation, chlorination.

→ Adsorption method

- Fluorides can be ~~reduced~~ lowered by adding those material who have the adsorptive capacity.
- Eg:- Charcoal
  Alum.

→ Ion exchange method

Cation exchange
Anion exchange.

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7.

PRIMARY TEETH	PERMANENT TEETH
- Depth of cavity : 0.5mm to dentin	- 0.2 mm to dentin
- Isthmus : Narrow	- Isthmus : Wide
- Width of occlusal cavity Narrow	- Wide occlusal cavity
- Dovetail is contraindicated	- Dovetail is indicated
- Retention groves are not present	- Retention groves are present
- Sharp line angles	- Rounded line angles

8 APEXIFICATION

- It is a non vital pulp therapy involved in young permanent tooth
- Defined as the placement of medicated or non-medicated material on the pulpchamber to promote root apex ^ flarure by osteogenesis or osteoblastic activity.

* Indication

- Non Vital tooth
- Tooth with incomplete root formation
- Open apex
- Severely necrosed pulp

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* Caries Indication

-

* Procedure

Tooth is anaesthetized and isolated

↓

Removal of carious dentin

↓

Access the pulp chamber

↓

Remove the radicular coronal pulp with excavator

↓

Remove the radicular pulp with broaches

↓

File the canals

↓

Irrigate with saline and remove debris

↓

Dry the canals

↓

Apply $Ca(OH)_2$ powder to the root apex

↓

Fill ~~Apply~~ $Ca(OH)_2$ and saline on the canals

↓

Apply thick mix of $Ca(OH)_2$ paste

↓

Place temporary restoration and stainless steel crown

↓

Check for apex closure

↓

Replace the restoration with permanent and root canal procedure is done

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9. SPACE REGAINER

- The lost space is regained by using space regainer.

  eg:- Jaffe's space regainer

10. BITEWING RADIOGRAPH

- It is an intraoral radiograph in which the coronal portion of maxillary and mandibular teeth is recorded.
- A bitewing or loop is used to bite the device/apparatus by the patient itself while taking radiograph.
- Size 1 film is used for adult patients
- Size 0 film is used for pediatric patients.



* Indications

  - Detection of proximal caries
  - Detection of overhanging restorations
  - Evaluation of bone level
  - Evaluation of periodontal attachment.

* Advantages

  - Radiographic image of 4-6 teeth can be obtained
  - Less patient exposure
  - Can be disposed easily

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* Disadvantages

- Dislodgement of the film while taking radiograph.

* Procedure

Place the film on the bite wing and

ask the patient to bite

↓

Xray beam of vertical angulation +10° and horizontal angulation 0° is passed between the contact areas

↓

Remove the film outside and process

13 ART (Atraumatic Restorative Treatment)

* Definition

It is defined as the non-invasive restorative procedure by which demineralized tooth substance is removed using hand instruments and restored with glass ionomer.

* Indication

- Small carious lesions
- No history of pain
- No history of hemorrage
- No [illegible]

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* Contraindication

- Pulp exposure
- Deep caries
- History of pain
- History of hemorrhage

* Advantages

- Can be done in public health camps
- Less time consuming
- Ease of sterilization because of the use of hand instruments
- Less tooth preparation (more conservative)
- Economical

* Disadvantages

- Hand fatigue
- There may be a misconception that tooth colored materials are temporary.
-

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15.

INDIRECT PULP CAPPING

* Definition

Vital pulp therapy procedure in which a small amount of de demineralized dentin is retained above the pulp and a medicated material is placed on it.

* Indications

- No history of spontaneous pain.
- No swelling, cyst, abscess.
- No obvious pulp exposure.
- Pinpoint hemorrhage which can be arrested by applying mild pressure with cotton.

* Contraindications

- History of spontaneous pain
- Uncontrolled hemorrhage
- Pulp exposure.
- Cyst, abscess

* Procedure

Tooth is anaesthetized and isolated with rubber dam

↓

Remove the carious dentin, soft debris

↓

Stop the procedure before a perforation is felt in the dentin

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↓

Remove the debris with saline

↓

Dry the cavity

↓

Place $Ca(OH)_2$ paste on the floor

↓

Fill ~~Apply~~ zinc oxide eugenol paste on the cavity

↓

Recall after 2 weeks

↓

Followup radiograph taken to check the formation of dentin bridge

↓

Replace the temporary restoration with permanent restoration.

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16 FRENECTOMY

- It is a minor surgical procedure
- There are various types of frenal attachment

  Gingival attachment
  Mucosal attachment
  Papillary attachment
  Papilla- penetrating

- High attachment of frenum cause malocclusion like midline diastema.

- There are 2 types ~~of frenectomy~~ of procedures

  Frenectomy ⟶ Complete excision/cutting of frenum on labial and lingual surface

  Frenotomy ⟶ Partial excision of frenum.

- There are many controversies in the time of performing frenectomy [before orthodontic treatment, during or after treatment].
- Most preferred time for frenectomy is just before the space closure.

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11. Modifications of Glass ionomer Cements

→ Compomers

It exhibits properties of both composites and resin modified GIC

14. Obturating materials

* $CaCOH_2$
* Zinc oxide eugenol
* Iodoform
* Vitapex, Metapex

→ Zinc oxide eugenol

- It shows antibacterial property
- Shows low resorption rate than ~~not~~ primary teeth.
- Obturation → initially thin watery mix of zinc oxide eugenol is applied on the canals and then thick mix is applied.

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→ Iodoform

- It imparts yellow discoloration to the tissue
- Have antimicrobial properties

→ Calcium hydroxide

- Commonly used obturating material
- Commercially available forms are vitapex and metapex
- Exhibit antimicrobial property
- Applies as thin mix on the canals initially and then thick mix is placed.

12. TRANSPALATAL & NANCE PALATAL SPACE MAINTAINERS

- Used in when bilateral missing teeth
- Used in maxillary arch.

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FINAL YEAR BDS (PART II) MODEL EXAM- RETEST 2022

Pedodontics and Preventive Dentistry (2016 SCHEME)

- ***Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space***
- ***Answer all parts of a single question together • Leave sufficient space between answers***
- ***Draw Diagrams wherever necessary.***

Long essay **2 X 10= 20**

1. Classify Handicapped children. Discuss the clinical presentation and special consideration in the management of children with Cerebral Palsy.

2. Discuss the Ellis and Davey classification of dental trauma. Explain the management aspects of Ellis class III fracture of tooth 11 in a 10 years old child.

Short essay **4X 5 = 20**

3. Classify theories of child psychology. Explain in detail about Freud's theory.

4. Define and classify ECC. Write in detail about its stages and management.

5. Classify oral habits. Explain in detail about the Thumb sucking Habit.

6. Define pulp capping. Mention indication and describe briefly the medicaments.

Short notes. **3 X 10 = 30**

7.Gum Pads.

8. Diet counselling

9. Battered child syndrome

10. Apexification VS Apexogenesis

11. Rampant caries

12. Nitrous oxide inhalation sedation

13. Dental Home

14. Contingency management

15. Modifications of GIC

16. Oral Screen.

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Pedodontics - Recall

Sreenandanam
47

Classification

I - Exanthems - Epilepsi
- hematological disorders - leukemia

II - Blind or partially blinded
deaf or partially deaf
Mentally disabled child
Physically disabled child

Cerebral palsy

Clinical features

1) head reclined and wide mouth open
2) tongue rigid shaped, protruded
3) Drooling of saliva
4) Anterior open bite
5) proclination of maxillary anteriors → Trauma results
6) overjet more
7) wave like movement of tongue

Dental management

1) Appointment schedule

→ schedule appointments in short period.
→ first dental visit
→ Inform meet the entire dental team and done family tour at dental office → to enhance good relationship with child
→ Bring Inform patient to bring electronic devices or playboard of child with them
→ Brings toys of child to reduce his/her anxiety
→ Bring medical reports to bring medical records, letter about child's medical history underlying disorders

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→ start with simple procedures, later use complex procedures.
→ In wheel chair, dental treatment can start at wheel chair or can be done in dental chair by a lift process
→ After seating dental chair, head supported with Assistant at midline, If upper part is going to beat, then use strap or If lower part is going to bend use soft, recline hip angle 120° to relation to trunk, and place soft foam rolls
→ Use to while taking radiogr mouth props can be used
→ While taking radiograph procedures, head tilted at obtuse angle and reverse bitewing radiograph taken
→ 38% SDF, Atraumatic & restorative techniques are used
→ Removable & fixed dental prosthesis are not done for cp patients
→ Extraction is preferred over pulp therapy
→ To communicate with child, parents are used as assistants

Oral preventive care

⇒ Inform the patient to clean patients teeth with soft cloth
⇒ And also done fluoride application biannually
⇒ use pin pointed fluoride paste to clean tooth toothsurface
⇒ Avoid frequent snacks-btw meals, can cause caries
⇒

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Classification of Anterior teeth fracture

Ellis modified classification

Class I :- Uncomplicated crown fracture involving enamel

Class II :- Uncomplicated crown fracture involving enamel, dentin

Class III :- Complicated crown fracture involving enamel, dentin, pulp

Class IV :- Traumatized injured teeth become non-vital

Class V :- Avulsion

Class VI :- Root fractures with or without crown fracture

Class VII :- Displacement of teeth without crown or root fracture

Class VIII :- Fracture of crown en masse

Class IX :- Fracture of primary teeth

According to color :- Discolored teeth

According to mobility :- Cyclic dislocation of teeth

Wilkinson classification

Class I :- Fracture of enamel

Class II :- Fracture of enamel, dentin

Class III :- Fracture of enamel, dentin, pulp

Class IV :- Traumatized teeth

Class V :- Avulsion

Ledd Andreasen classification

1) Hard tissue

→ complicated crown fracture

→ uncomplicated crown fracture

→ complicated crown root fracture

→ uncomplicated crown root fracture

2) Soft tissue

⇒ laceration

→ contusion

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Inclusions and
Associated disturbances

- Luxation
- Subluxation
- Lateral luxation
- Extrusion
- Intrusion

Clinical features management

- Injury enamel, dentin, and also the pulp involvement

Clinical Picture

- → mobility
- → bleeding
- → tenderness / pain

⇒ pulp capping can done of pulpotomy

⇒ pulp capping after isolating the tooth, clean with saline and hemostasis achieved

⇒ pulp capping done with $Ca(OH)_2$ and TF is given, Lata cavity planes

⇒ If any laceration occur near of gingiva near the tooth, suture

⇒ Tetanus prophylaxis given to prevent infection

⇒ pulpotomy done with removal of coronal portion of pulp and for regeneration of radicular pulp

Isolate and examine
↓
Remove debris
↓
Remove coronal pulp, Irrigate pulp planter
↓
radicular file letter
↓
Polishing and obturate done
↓
Permanent restoration / TF

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Theories of child psychology

1) Freudian / psychoanalytical theory / psychosexual theory
2) psychosocial theory
3) cognitive theory
4) classical conditioning
5) operative conditioning

1) Freudians or psychoanalytical or psychosexual theory

⇒ The Freudian says that human mind compared to iceberg which has upper visible compared to conscious mind and below invisible compared to unconscious mind

⇒ 2 components of ~~mind~~ :- phi (energies of emotion) and psi (storage of emotion)

when emotion achieved at a level, a discharge occur. called archaic discharge

⇒ And there is preconscious ~~mind~~, which indicates available memory

⇒ Conscious mind indicates present thought, memories

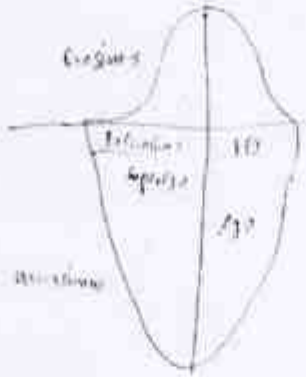
⇒ Unconscious mind ⇒ simple desires of sexuality, instinct of artist and scientist

→ psychic triad

(1) Biologic drive ⇒ ID (pleasure principle)
(2) Superego :- parents teaches the value and morals of society to child. and he/she judge as good or wrong
3) Ego :- It is between ID and ego and it makes person a guilty feeling

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Stages

(1) oral stage

Age :- 1-1.5 years

Erogenous Zone :- mouth

Activities :- sucking, biting

⇒ It's not about food, but also mother love for infants

⇔ If forcefully or pressurized breastfeeding can result in fixation in child

fixation :- smoking, sarcasm, drinking

2) Anal stage

Age :- 1.5-3 yrs

Zone :- Anus

Activities :- Bowel movement

⇒ Toilet training ⇒ teeth parents teach how to use toilets

2 Components

(a) Anti expulsion effect

⇒ If parents are fail to train or teach the children, he/she become an retentive, stingy, revengeful

(b) Anti retention effect

⇒ If parents are too strict or pressuring child

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• (no result in ...)

3) Latency stage

Age :- 6-12 yrs

Zone :- genitals

Adler :- ...

→ children (boys) mimic ... not like father ...
identification

4) phallic stage

Age :- 4-5 yrs

Zone :- genitals

Two names are :- oedipus complex and electra complex

→ In case of boys they have attraction towards his mother and they behave like father called oedipus complex

⇒ But they have fear of father (castration fear)

⇒ In case girls, they have attraction towards father and they compete with mother, and she think that she has no genitals like father and ~~son~~ brothers and she have anger towards mother (penis envy)

Finality

In boys :- Anxiety toward fear towards sex

In boys :- envy and inferiority

5) Latency

Age :- 5-18

Zone :- genitals

→ They start to find same gender attraction, friendships, ~~fear~~ play

→ Engage in sports

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Pre
Prim
Age
2°
→ relationship, line, proximity
→ depend on diameter, shape
Dental application

4

ECC → Early childhood caries

→ They are caries involving first maxillary incisors and following
It spreads Active dentition

Classification

Type I :- mild to moderate
→ involve molars, incisors
→ due to sugar items, lack of hygiene
→ 2-3 years

Type II → moderate to severe
→ labial/buccal surface of incisors
→ prolonged breast feeding, lack of hygiene
→ birth

Type III → severe
→ lack of hygiene

stages

stage I → Initial reversible stage
→ 10-18 months
→ cervically, interproximally chalky white discolorations
→ no pain

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- Stage 2 : Damaged carious stage
  - → 16-24 months
  - → maxillary incisors, posterior deciduous, gets in close contact
  - → Pain on cold stim.

Stage 3 : Deep carious stage

- → 24-32 months
- → It can direct time into 16-18 months
- → molars are affected
- → Pulp involvement of maxillary incisors

Stage 4 : Traumatic stage

- → 32-48 months
- → pulp involvement of molars
- → Tissue loss of incisors

Management

→ oral hygiene instructions :- Brushing techniques, methods of cleaning

→ Diet counselling

- Inform parent to avoid sticky foods, more dangers substances
- After night feeding, take diet advices, duration
- Avoid cariogenic snacks b/w meals can cause caries

→ Fluoride treatments

- → • use pinpoint fluoride paste for children
- → • Application of fluoride varnish to teeth and crevices
- • Fluoride treated drinking water

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Pedodontics

The orthodontic treatment is easy,
→ 35% the child is good for existing conditions
→ 3% parental frustration

Habits
→ It is an action or act, behaviour unconsciously repeated
performance of fixed, constant and automatic (Stedman)

Classification

1) Compulsive and non compulsive
2) physiological and pathological
3) normal and Abnormal habit
4) meaningless and simply dull habit

5) 1) parafunctional habit ⇒ mouth breathing
   2) pressure habit lip sucking ⇒ lip, thumb
      biting ⇒ nail, lip

Thumb sucking

→ classification

Type I :- placement of pad of Thumb against palate, contacting maxillary and mandibular anterior teeth

Type II :- placement of thumb in mouth against palate, contacting maxillary and mandibular teeth

Type III :- placement of thumb beyond first joint against palate contacting maxillary teeth not mandibular teeth

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Type IV - placement of tip of tongue against incisal edge of maxillary incisors

Theories

(1) Feeding theory: Baby will suck breast in such a way that nipple is placed in between gums. Baby will suck milk by pressing nipple between tongue and hard palate.

(2) Oral drive theory: Baby will suck breast in such a way that nipple is placed in between gums. Baby will suck milk by pressing nipple between tongue and hard palate.

(3) If anything touches baby's cheek, they have tendency to suck it

Biological factors

- Socio economic status
  - ⇒ high socio economic status, more nutritious breast milk, more milk
  - ⇒ low socio economic class, doesn't get proper nutrition, have less milk,
- working mother
  - ⇒ babies are taken care by caretakers
- order of birth
  - ⇒ Recent child get more milk
- No of siblings

Clinical features

In maxilla

- ⇒ Increased maxillary anterior protraction
- ⇒ Increased maxillary arch length
- ⇒ Anterior placement of apical base of maxilla
- ⇒ high palatal arch
- ⇒ Increased mx clinical crown length

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medicament
- Indirect pulp capping
- Direct pulp capping
→ removal of all caries dentin and placement of medicament over exposed pulp to help healing of pulp

Indications of indirect pulp capping

1) Tooth with no pain
2) no mobility
- on clinical examination: caries exposure minimum
Radiographic examination: normal radiographic appearance
normal PDL width
no radiolucency seen

Contraindications

→ Tooth with spontaneous pain
→ mobility
→ radiograph showing periapical lesions

Procedure

Isolate, Anesthetize
↓
Remove all caries dentin with sterilized bur
↓
Irrigate with saline
↓
$Ca(OH)_2$ placed on exposed pulp
↓
Build cavity, if radiograph showing dentin bridge formation final restoration

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Indication of Direct pulp capping

→ small carious exposure with little bleeding

→ No pain

Isolate and Anaesthize

↓

Remove all caious dentin with slow speed round bur

↓

Irrigate with saline, hemostasis achieved

↓

ZOE placed, TEgium

↓

Recall after 1 weeks, final restoration

pulp capping agents

1) Zinc oxide eugenol

2) Calcium hydroxide

→ It is at high alkalinity (pH-11) cause antibacterial effect and hard tissue formation

→ necrotic zone form adjacent to dentin bridge, later this zone resorbed and replaced by dentin bridge

→ It has 2 forms :- setting and non setting

→ white crystalline structure

→ Available as :- Dycal, pulpdent, hydrex

→ Antibacterial effect due to release of OH^- ions

3) MTA → mineral trioxide Aggregate

→ It is tricalcium silicate, tricalcium phosphate, tetracalcium aluminate, Bismuth oxide, titanium oxide

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→ In mandible

→ Retrognathic mandible

→ Retruded mandible in ...

other:

→ hypotonic upper lip

→ hyperactive mentalis ...

→ long narrow face

→ ... formation of B mail ...

Management

→ 1) Tongue blocks

1) Thumb guard

2) Thumb/ digit habits :- Ask patient to ... of middle finger ... of mine ... This will prevent child from thumb sucking

3) Three steps system
Wilson's - wrap the finger with gauze piece, ask child to place finger in mouth, and he get stained due to dust in mouth

4) chewable rubber on fingers- Acrylic

6) Pulp capping

1) Direct

2) Indirect

Indirect pulp capping

→ It is procedure involving removal of carious dentin and retain small amount of caries adjacent to pulp to avoid exposure of pulp and placement of

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→ Titanium oxide in MTA sets in contact with tissue fluid and forms tooth

→ Induces hard tissue and dentin bridge formation

4) Corticosteroid, and antibiotics

→ Hydrocortisone, penicillin

5) Isobutyl cyanoacrylate

6) Bone morphogenetic proteins

7) Collagen fibers

8) Denatured albumin

Short notes

Gum pads

→ Alveolar process of infants called gum pads

→ It is horse shoe shaped, flat, pink and covered by dense layer of periosteum

→ It is divided into labiobuccal and lingual by dental groove

→ Lateral dulcus :- at canine and molars regions, it is formed by transverse groove. Each segment represents developing tooth sac.
This determines interarch relation

→ maxillary gum width pade is wider than mandibular gum pad

→ when 2 are approximated, there is contact in posterior region and open in anterior region result in infantile open bite which helps in suckling

Diet card

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Nitrous oxide inhalation sedation

→ Indication :- Cooperative child with lengthy procedure
fear, apprehensive child
Anxiety child.

Contraindication :- ~~child with minimal breathing~~
child who has cardiovascular deficiency
child who has immunosuppression
upper respiratory tract infection
Asthma.

Objectives

- To eliminate avoidance behaviour
→ To eliminate fear and anxiety
⇒ To deliver quality dental treatment

Procedure

place mask over the nose
↓
Deliver 100 % O_2 for 2-3 min through nose
↓
Ask patient to breathe through nose
↓
Deliver nitrous oxide
↓
note self sensations felt ie, gibbing, tingling of thumbs lips
↓
Adjust 30 % nitrous oxide and ~~70 % oxygen~~
↓
Deliver oxygen then through mask

Side effects

→ ↓ vomiting
→ nausea

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manipulations of GIC

1) Elimet :- powder :- sintered silver powder - glass powder - S.I. titanium oxide
liquid :- glass ionomer liquid

2) Silver sintered silver alloy with glass powder → miracle mix

3) Resin modified GIC

Contingency management

a) Tell show do

→ First tell patient, what you are going to do and Reveal Demonstrate how you are going to do and third do the procedure in demonstrated ways

→ Always speak with slim, soft, confident voice, while you are doing it, before you doit, after doing it

b) modelling

→ Audiovisual modelling

→ visual modelling

Distraction

c) Distallisation

d) Hand over mouth

e) use of Reind language

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SILPA. P
Roll No. 45
Part II

26/2/2023

MODEL EXAMINATION - RETEST-1

PEDODONTICS & PREVENTIVE DENTISTRY

1. Classification of Special Healthcare Needs

1. Systemic disorders - Hemophilia
2. Mental disorders - Retardation
3. Physically handicapped - Polio
4. Osseous disorders
5. Nutritional disorders
6. Psychological disorders
7. Hypomotive patients.

33/10

Another classification

- Blind or partially blind
- Deaf or partially deaf
- Mute
- Mental retardation
- Physically handicapped
- Bone defects.

CEREBRAL PALSY

Re Classification

- Epistatic
- Tremor
- Kinetic
-

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→ Dental management

- Schedule the appointment in a non busy working day (non-crowded atmosphere)
- Familiarize the dental clinic atmosphere to the family and child.
- Make a good rapport between the receptionist, staffs of the clinic with the child, that will reduce the anxiety towards dental treatment
- If the child uses pictures or any electric devices to communicate ~~any~~ then dentist should try to communicate in the same method.
- Give instructions to the child slowly and clearly.
- Make the child familiarize with the equipments.
- Some patients may exhibits gagging during dental radiography
- Modifications of the regular radiographic technique should be carried out.
  45° angulation

- Fluoride therapy — by using silver sodium fluoride

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→ Oral preventive care

* Oral manifestations

- Occurrence of nursing bottle caries
- Rampant caries
- Poor oral hygiene
- Gingivitis, periodontitis
- Calculus deposition
- Gingival bleeding
- High caries index
- Habitosis
- Malocclusion
- Speech problems
- Lip biting
- Biting of buccal mucosa

→ Oral preventive care

- Educate the parent about the maintenance of good oral hygiene
- Diet counselling
- Ask the parent to bring the child for routine dental checkup for every 6 months
- Do non-invasive dental procedures
- Prescribe fluoridated toothpaste and customized tiny toothbrush according to the patient
- Educate the patient about toothbrushing techniques





- Restore the carious teeth with glass ionomer cement
- Perform ~~fluo~~ topical fluoride application
- Use silver calcium fluoride
- Use of mouth rinse ~~in case of~~ loss of ~~oral hygiene~~ dexterity

2. ## ANTERIOR TEETH FRACTURES

→ Classification

Ellis and Davey's classification of Teeth fracture

Class I – Fracture of teeth involving enamel only

Class II – Fracture of teeth with enamel and dentin without pulp exposure

Class III – Fracture of teeth with pulp exposure

Class IV – Traumatic tooth which is non-vital without any root or crown fracture.

Class V – Complete loss of tooth (Avulsion)

Class VI – Trauma of ~~tooth without~~ root with or without crown fracture.

Class VII – Displacement of tooth either without ~~or~~ malocclusion

Class VIII – Loss of crown en mass

Class IX – fracture of ~~per~~ dental ~~from~~ tooth

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Class I


Class II


Class III


Class IV


Class V


Class VI


Class VII

Class VIII

→ Management of Ellis Class III fracture

Ellis Class III fracture → Tooth fracture involving enamel, dentin and pulp.

Management options → Pulp capping
Pulpotomy
Pulpectomy
RCT.

~~* Apexification~~

* Pulp capping

- Indicated in Ellis class III fracture with a small pulp exposure or pin-point bleeding on the cavity floor.

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- Apply pressure on the bleeding site using cotton and stop bleeding.
- Application of calcium hydroxide on the floor and restore the cavity with zinc oxide eugenol.
- Recall the patient after 1 week and take diagnostic radiographs.
- Remove the temporary restoration and replace it with a permanent restorative material.

* Pulpotomy

- If the pulp exposure is more, pulpotomy is performed.
- It's a vital pulp therapy procedure.
- Removal of the coronal portion of pulp tissue and filling the pulp chamber with medicated or non medicated material.
- Steps:

Removal of the carious tooth structure and debris
↓
Deroofing of the pulp chamber
↓
Removal of the coronal pulp with excavator
↓
Application of cotton pellet on the pulp chamber to arrest the bleeding
↓
Apply ~~for~~ cotton pellet dipped in formocresol into the pulp chamber
↓
~~the~~ Place a dry cotton over it to prevent the tissue exposure with formocresol

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↓

Remove the cotton pellet and check for firity (brownish color on the pulp)

↓

Place calcium hydroxide paste on the pulp chamber

↓

Restore the cavity with zinc oxide eugenol and recall the patient after 1 week

↓

Restore the cavity with permanent restoration

↓

Stainless steel crown is placed.

* Pulpectomy

- Indicated in non vital teeth
- Extensive, uncontrollable pulpal hemorrhage
- Pain, abscess

. Steps :

Administration of local anaesthetics

↓

Isolation of tooth

↓

Removal of carious tooth structure and debris

↓

Deroofing of the pulp chamber with fissured bur

↓

Removal of pulp tissue with excavator

↓

Removal of radicular pulp with Barbed broach

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↓

Filing of the root canals

↓

Irrigate the canals with saline

↓

Dry the canals

↓

Place a slurry of calciumhydroxide into the root canals

↓

Place the thick mix of calcium hydroxide in pulp chamber

↓

Cavity is restored with temporary restoration.

↓

After reviewing

↓

Restore the cavity with permanent restoration.

↓

Place stainless steel crown.

* Apexogenesis

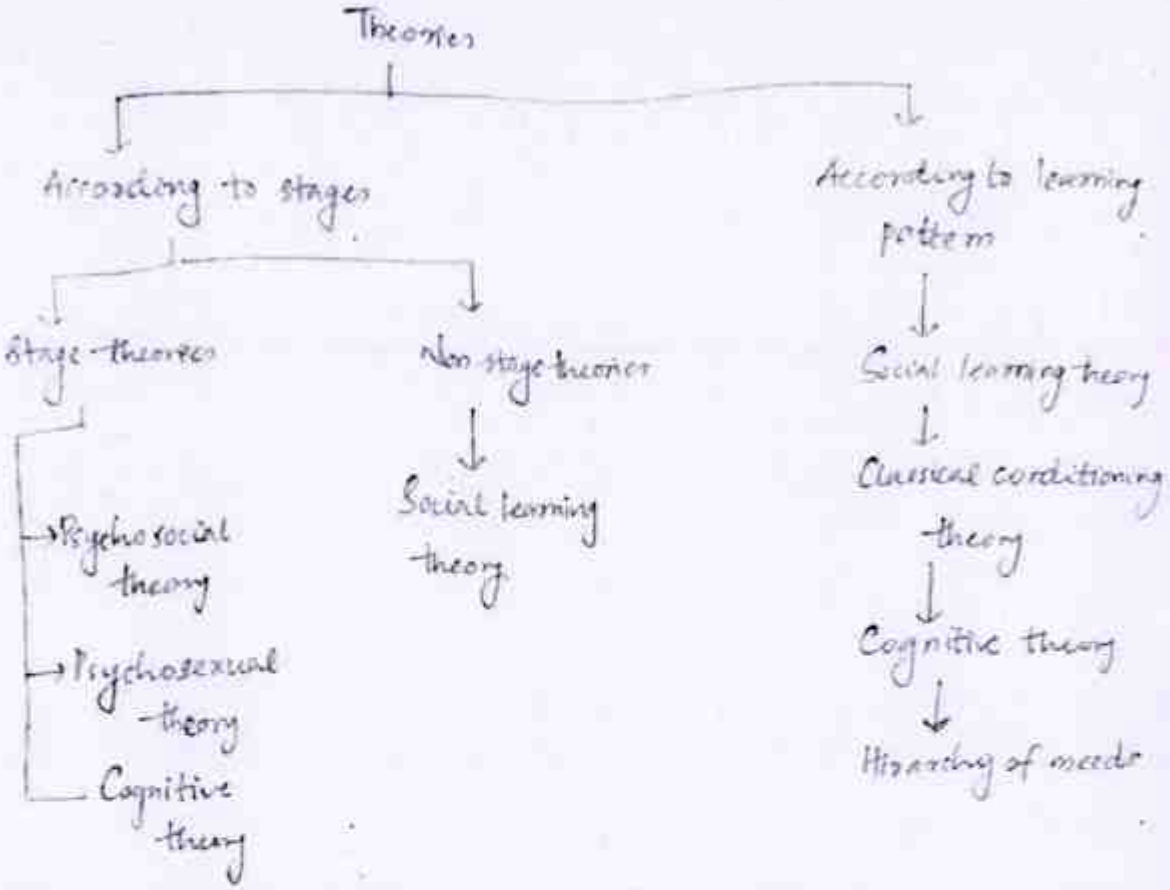
- If the tooth apex is not closed and incomplete root formation, then apexogenesis is performed. In vital teeth.
- Application of medicaments which induce the root formation

* Apexification

- In non vital teeth, root formation is incomplete and open root apex, apexification is carried out.

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THEORIES OF CHILD PSYCHOLOGY



FREUDIAN THEORY

- Also called psychoanalytical theory
- Proposed by Freud
- He stated that there is 2 types of neurons
  a) PNI neurons
  b) PSI neurons

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- Freud compared the human psychology with an iceberg



- The exposed small part of the iceberg resembles to the conscious mind
- Below the conscious mind, a narrow subconscious level is present. It relates with the previous memories but which is not in the present situation but it comes in mind during certain situations.
- The large submerged portion is the unconscious mind. It relates with the previous experiences, memories etc.
- There are 3 main concepts by Freud

  a) ID
  b) Ego
  c) Super ego

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ID → related to the pleasure gratification.
For example, need of food or drink
'I want it'

Ego → related to the restriction of ID due to the influence of society
"I want it, but it's not right"

Superego → Change in the need of the child according to society.
"I want it, I need to change the plan."

Stages

1. Oral stage
2. Anal stage
3. Urethral stage
4. Phallic stage
6. Latency
7. Genital stage

1. Oral stage (1–1.5 years)

Area of focus – oral cavity / Mouth.
Gratifying Activity – Eating, drinking, sucking, biting.
Positive outcome — If the child is

Dental management – Children should be treated with parents So dental treatments should be carried out in presence of parents

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2. Anal stage

Age - 1.5 - 3 yrs.

Area / Organ of focus - Anus

Gratifying activity - Fecal expulsion and retention.

- Children develop pleasure in withholding and expulsive activities of feces.
- Important role in toilet training.
- If the parents do not teach the child about society's rules on fecal withholding or expulsion, the child will become untidy, less confident, low self esteem, narcissistic behaviour.
- If the parents are too strict and develop retentive habit in child, the child will develop an organized, clean and behaviour. Irritates on other with untidy behaviour.

3. Urethral Stage

- Age - 3 - 5 year
- Organ - It's a transition stage between anal and phallic stage. So it shows characteristics of both.
- Gratifying activity - Pleasure in urination.
- It is almost similar to anal stage.
- Here the child develop pleasure in

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4. Phallic stage

- Age 4 – 7 years
- Area or organ – Penis
- In this stage, child develop attraction towards the parent of opposite sex.
- Electra complex
- Oedipus complex
- Male child develops attraction towards mother and at the same time fear and anger towards father.
- Female child develops sexual attraction towards father and anger towards mother. But imitate the activities of mother to be like her and tries to impress father

5. ~~Genital~~ Latency

- In this stage, the child's area of activities changes.
- It changes into school and friends
- Child develops the interaction between same age group and make friendship.

6. Genital Stage

- Puberty stage
- Area or organs – Genitals
- Gratifying activity – relationship with opposite sex.
- In this stage, development of sexual attraction towards opposite sex

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4. ECC [Early Childhood Caries]

→ Definition

According to AAPD (2004), the early childhood caries is defined as the presence of one or more filled, ~~carious~~, decayed or missing tooth surfaces ~~in~~ in under the age of 6 years

→ Classification

Type I - Mild
Caries confined to the maxillary anterior teeth
Discoloration of teeth

Type II - Mild to moderate
Caries in maxillary anteriors, canines and sometimes molars

Type III - Severe
Caries present in all the teeth
Loss of tooth support due to extensive caries
Pulp exposures

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Management of ECC

First Visit

- Educate the parent about the situation
- Ask the parent about the feeding habits of the child especially at night
- Ask the parent to avoid night time bottle feeding
- Instruct parent to change the bottle feeding. If it is difficult ask to use plain water in the content
- Wash and clean the child's mouth after each feeding
- Do excavation of the caries
- Do restoration of caries with restorative material like GIC
- Application of topical fluorides.
- Ask the parent to make a diet record for 1 week. It should include time, frequency, type of food, consistency of food and sugar exposure.

Second Visit

- On second visit, evaluate the diet record of the child.
- If diet counselling required, counsel the parent and child about proper diet to avoid further incidence of caries

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- Perform pulp therapy procedures if needed
- Extraction of grossly decayed teeth and advice for oral maintenance based on the caries risk

PULP CAPPING

→ Definition
→ Indications
→ Medicaments used for pulp capping.

→ Definition

- Pulp capping is defined as the pulp therapy procedure in which retaining the small amount of dentin thickness to avoid pulp exposure and placement of medicated or non medicated material on it.

→ Indications

- Pin point hemorrhage
- Asymptomatic tooth
- Absence of abscess or cyst
- Non mobile tooth
-

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CALICUT

→ Medicaments used in pulp capping

* Calcium hydroxide

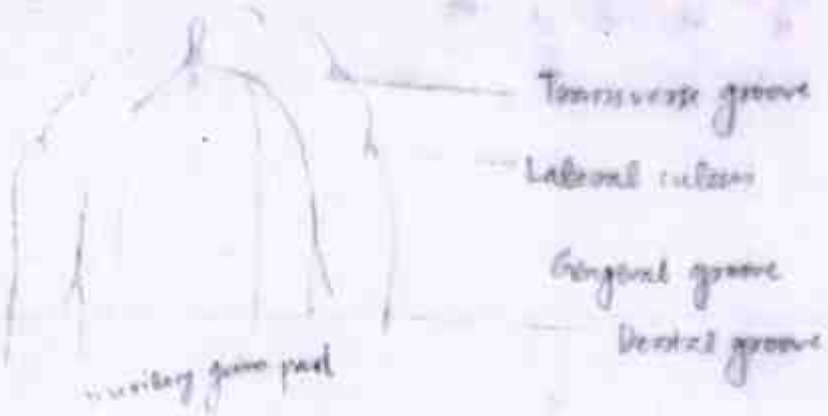
- Commercially available form - Vitapex, Pulpdent
- Exhibits antimicrobial property
- Act as a barrier between the restorative material and pulp
- Prevent ingress of ~~microbes~~ micro organisms into the pulp
- Promotes secondary dentin formation.
-

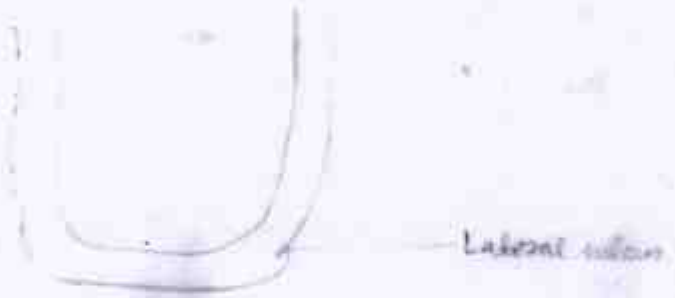
* Zinc oxide eugenol

- It is one of the commonly used pulp capping material
- Posses obtudent activity
- Reduces the pain.
- Shows bactericidal activity.

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7 GUM PADS







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CALICUT

- Gum pads are present in the predentate period.
- They are mucous mucosa lining the alveolar process
- They are horse-shoe shaped structures
- The mucosa is soft, firm, pink in color
- Shows gingival groove which separates the buccal gum pad from lingual part
- There are 10 transverse grooves it separates 10 areas of the gum pad and consists of tooth bud
- The transverse groove present between canine and molar is called labeeal sulcus which is a demarcation of the gum pads.
- The upper and lower gum pads contacts only in the posterior region. and open in anterior region
- Open bite due to the portion of gum pad helps in suckling.

8. DIET COUNSELLING

- It is a part of preventive dental treatment.
- The incidence of caries are due to the type of food intake of the child.
- Proper diet counselling can help in the prevention of caries incidence.

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- The diet chart includes time of intake, type of food, frequency, amount of food, consistency of food and sugar exposure.
- Record the diet chart → Calculate the diet score
- Dental diet score = (Food score + Nutrient score) − (Sweet score)

- Sugar score:

  Solid — 10 (Chocolates, candy, biscuits)

  Liquid — 5 (fruit juices)

  Semi solid, sticky — 15

- Inference

  Sugar score 5 - Good

  10 - Fair

  >15 - Watchout zone.

Watchout zone requires diet counselling.

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10.

Apexification	Apexogenesis
- Severely necrosed tooth - Non vital pulp therapy performed in case of open apex and incomplete root formation. - Young permanent teeth.	- Necrosed tooth. - Pulp therapy in which closure of apex is induced using medicaments.

11. RAMPANT CARIES

- Extensive caries in oral cavity.
- Commonly affected in maxillary anteriors
- Mandibular anteriors are less commonly affected due to the action of saliva.
- Severe destructure of tooth and causes loss of tooth structure.
- Appear as ~~brown~~ brown - black colored caries on the labial surfaces and occlusal surfaces.

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12 NITROUS OXIDE SEDATION

- It is the commonly used chemical for conscious sedation.
- In conscious sedation, the patient can follow the instructions of the dentist without loss of consciousness.
- Nitrous oxide is a fruit smelled gas which is highly volatile on exposure.
- Step.

Administer 100% oxygen to the patient through nose.

↓

Slowly administer nitrous oxide to the nose

↓

Apply nitrous oxide ~~upto~~ until it reaches 30% nitrous oxide and 70% oxygen

↓

Ask the patient about how she/he feel and confirm the sedation effect

↓

Do the dental procedures

↓

Monitor the vitals during the procedure

↓

After completion ~~the~~ of dental procedure

Administer 100% oxygen to prevent diffusion hypoxia

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→ Indication

- Mild to moderate anxious patients

→ Contraindication

- Patients with breathing difficulties. nasal blockage

→ Diffusion hypoxia

- After the removal of nitrous oxide administration, there will be disturbance in the oxygen – carbondioxide balance in alveoli and causes hypoxia ⇒ Diffusion hypoxia.
- To prevent this, 100% oxygen is given for 5 minutes for the patient at the end of the treatment.

DENTAL HOME

- Hand Over Mouth Technique
- It is one of the non-pharmacological ~~was~~ behavior management in dental office.
- Performed in patients who are not listening to the dentist and keep on crying or shouting.
- A tissue or towel is placed on the patients mouth, sometimes covering the nose also.
- This will reduce the anxiety of the child and dentist can communicate with the child

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→ Contraindication

- Should not perform to patients with breathing problem
- Dentist who is emotionally attached to the child.

- HOME should be performed with parents concern
- Remove the towel from the patients mouth when the child agree to cooperate. Otherwise repeat the technique.

14 CONTIGENCY MANAGEMENT

- It's a type of non-pharmacological behaviour management.
- In this technique, the child is get rewards for their performance.
- Positive reinforcement → Give toys, balloons or stickers for the cooperation and appreciate them.
- Negative reinforcement → Avoid parents presence during dental treatment

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ORAL SCREEN

- It is used in the treatment of mouth breathing



- It consists of an acrylic part which covers both upper and lower teeth and extends upto the vestibule
- A metal ring is attached to the centre of the appliance.
- Small holes are drilled in the acrylic portion and the number of holes are reduced by filling them with acrylic as the treatment progresses.





15 Modifications of GIC

* Compomers

- It exhibits the properties of both composite resin and glass ionomer cement
- Possess good strength, wear resistance, superior esthetics, dimensional stability

* Resin modified GICs

- Improved strength and wear resistance



Fathimatha Jishana
Roll No - 18

PAEDIATRIC DENTISTRY - RETEST

4 4½
10

1 SPECIAL HEALTH CARE NEEDS

Classification

I Frank and Wilmar classification

Physically differently abled
Maladjusted
Blind or partially sighted
Deaf or partially deaf
Educational subsystem
Epileptic
Defective speech
Scrib

II Nowak classification

Medically compromised - Hemophilia
Osteogenic - Rickets
Mentally differently abled - Down Syndrome
Systemic diseases - Hypothyroidism
Physically differently abled - Cerebral palsy.
Malignant - Leukemia, Rabdomyosarcoma
Convulsive - Epilepsy.

III Classification of Cerebral palsy

Spastic - Hemiplegic
Quadriplegic
Diplegic

Dyskinetic - Athetosis
Dystonic

Ataxic

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Mental retardation

Mild - Communicative

Moderate - Basic communication

Severe / Profound - Less or no communication (e.g. Mute or guard communication)

CEREBRAL PALSY

It is a combination of disturbances in motor sense due to impairment in nerve pathways to an

Etiology

- Prenatal - Infection
  Teratogenic drugs
- Natal - Traumatic delivery
- Postnatal - Cerebrovascular disease
  Cerebral tumors
  Cerebral trauma

Oral manifestations

- Poor oral hygiene
- Dental caries
- Periodontally weak teeth
- Hypertonic lips
- Malocclusion
- Injuries to oral structures
- Oral ulcers

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Management

First visit

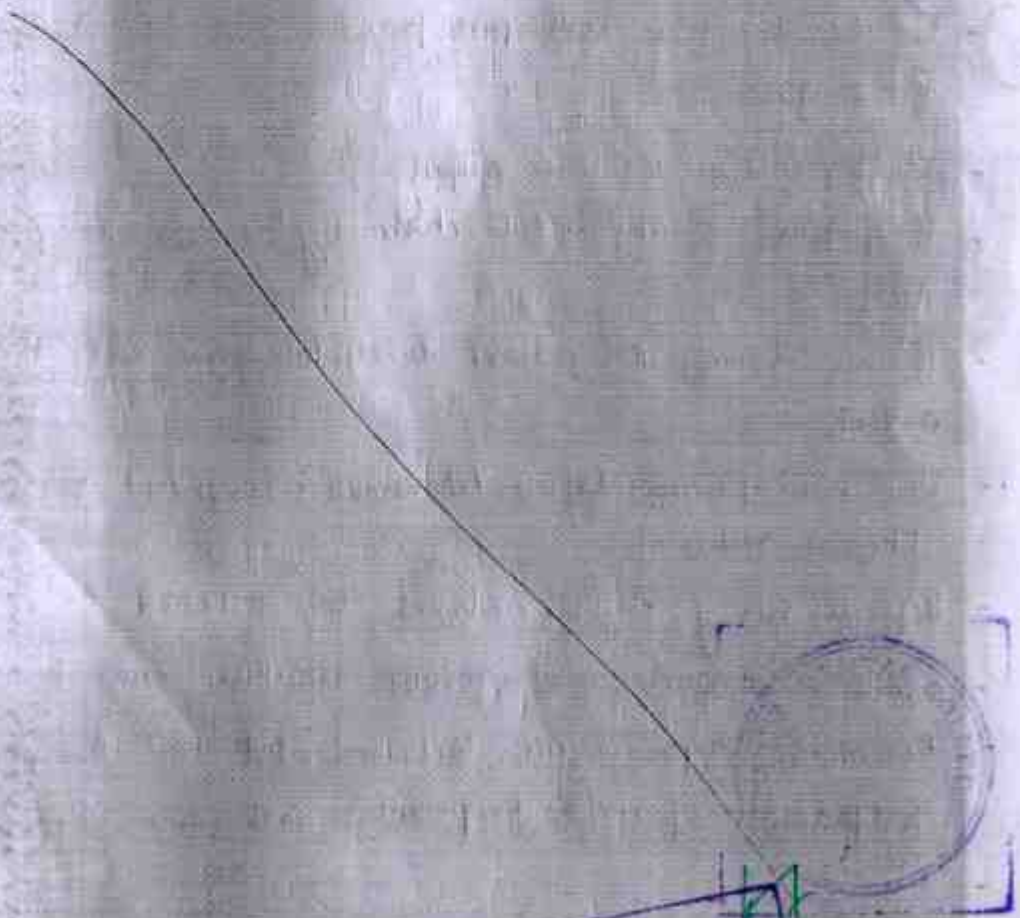
Don't do any procedure during first visit
- It is a breakthrough
- Introduce the dentist of child with dentist and dental assistant
- Diagnosis and plans for treatment
- Take radiographs if necessary.
  - ~~2 positions~~ - Oblique 45° head plate
    Reverse bite wing.
- ~~Later~~ Caries excavation ~~done~~ and restored with GIC
- If pulp is exposed due pulp therapy procedures.
- Advise single visit endodontic procedures.
- If the tooth is with poor prognosis and more restorable. Advise for extraction
- Head position is done properly.
- If patient is in wheel chair try to do the procedure in chair.
- If not transfer the patient to dental chair with the help of assistant
- Use non-pharmacological behavioural management techniques like Physical restraints.
- Before using physical restraints take a consent from the parent.
- Conscious sedation and general anesthesia can be also administered
- Removable appliances are contraindicated in this patient due to aspiration of metal components and causes injury.

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Class PREVENTIVE CARE

- ~~Patient~~ Parent should assist patient for brushing teeth
- Fluoridated toothpaste should be used
- Avoid sucrose containing food
- Avoid sticky food
- Systemic fluoride application
- Pit and fissure sealant application
- Try for atraumatic restorative technique
- Fluoride varnish application
- Acidulated phosphate fluoride biannually

2.



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2 Classifications of Anterior teeth fractures

1 Ellis and Davey's classification

Class I - Enamel fracture with little dentin involvement
Class II - Enamel and dentin fracture without pulp exposure
Class III - Enamel and dentin fracture with pulp exposure
Class IV - Non vital tooth with or without crown involvement
Class V - Avulsion
Class VI - Root fracture with or without crown involvement
Class VII - Displacement of teeth
Class VIII - Crown enamel
Class IX - Fracture of primary dentition

2 Anderson classification

Enamel infarction
Enamel fracture
Uncomplicated crown fracture
Complicated crown fracture
Uncomplicated root fracture
Complicated root fracture
Luxations - Concussion - Loosening without displacement
Sub Luxation - Loosening with displacement of tooth
Lateral luxation - tooth displaced laterally
Intrusive luxation - Inward displacement of tooth into the socket
Extrusive luxation - Outward displacement of tooth out of socket
Avulsion - Complete removal of tooth from socket

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Ellis Class III

Complicated fracture

Fracture involving enamel, dentine with pulp exposure

Clinical features

- Bleeding
- Sensitive to electric pulp testing
- Pain

Management

- If the fractured ~~occurs between~~ Site exposed to 0.5 mm :- Pulp capping, Apexogenesis
- If the fractured ~~occurs more~~ Site exposed beyond 5 mm :- pulpotomy, pulpectomy and Apexification.

Pulp capping

→ a. Direct pulp capping - It is the ~~process~~ precaution removal of Carious ~~tissue~~ lesion by leaving the deep portions which will lead to exposure of pulp and use of biocompatible medicament to seal the cavity

Indication : No history of pain and night pain.
No tender on percussion.
No periapical radiolucency.
No thickening of Periodontal ligament.

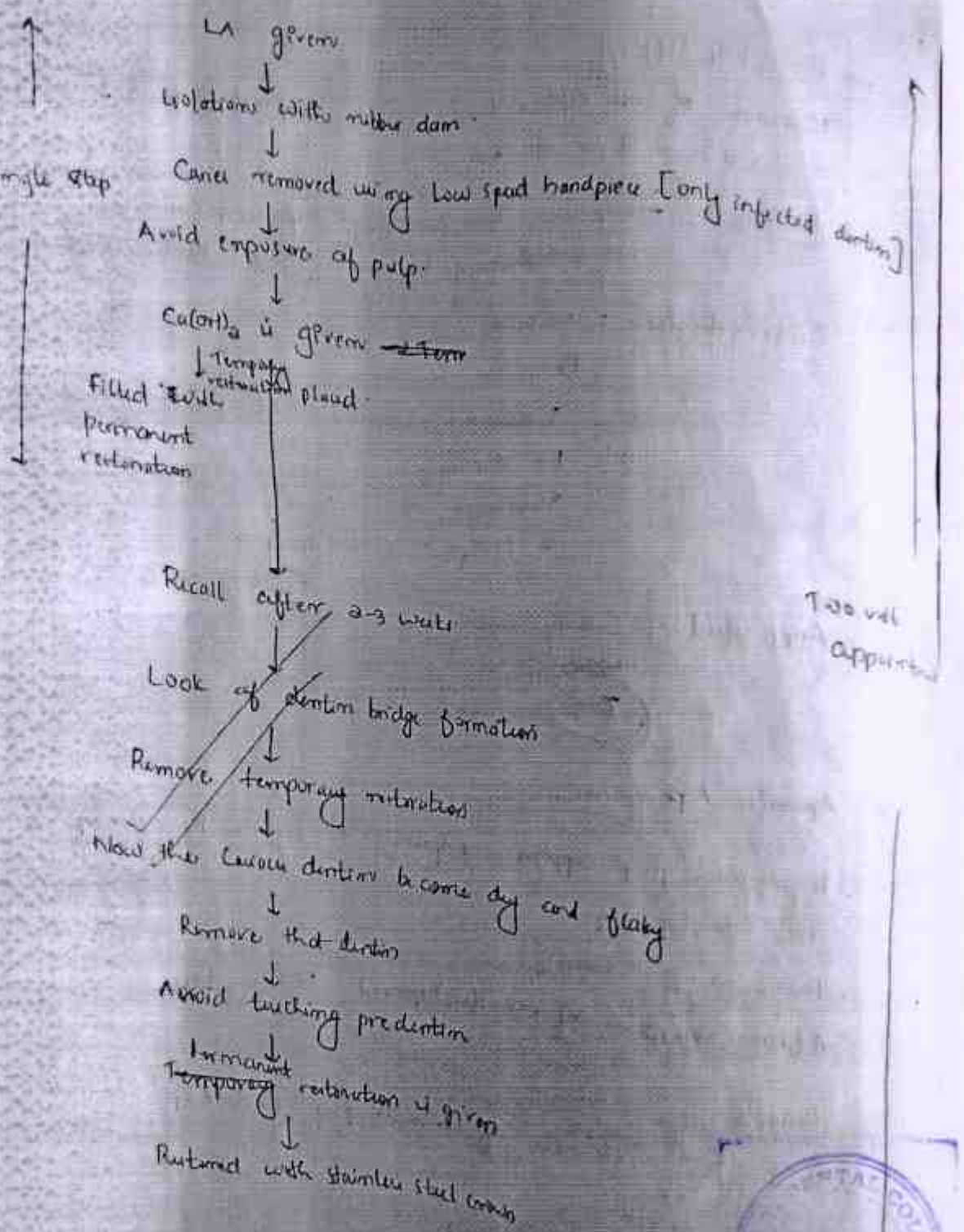
Contraindication : History of sharp, shooting pain
Night pain
No reaction to electric pulp testing.
Periapical radiolucency.


Caries excavated


$Ca(OH)_2$ placed


Permanent restoration given

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→ Direct pulp capping

Removal of all carious lesion and exposed pulp is sealed with a suitable medicament.

Indication: ~~no pain~~ True pin point exposure, Controlled bleeding ~~no radiolucency~~ Presence of sound dentin around

Contraindication: Mobility
Resorption
Excessive hemorrhage
Pus discharge
Swelling
& Periapical radiolucency.

Agents used - $Ca(OH)_2$

ZnO

→ ~~Apexo~~ Apexogenesis

- It is vital pulp capping or pulpotomy to induce the development of root development
- Done using $Ca(OH)_2$.
- After completion of root development RCT is done.

→ Pulpotomy.

- It is the complete removal of coronal pulp and help to promote the healing process.
- Material used - Formocresol
Glutaraldehyde
Ferric sulphate
Erbium pulpotomy
Propolis
Bone morphogenic protein
Freeze dried plasma
Laser pulpotomy

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⇒ Freudian triad: It consist of ID, Superego and Ego.

1) ID (Pleasure principle)
- It is the primitive response
- ~~Have~~ Immediate response
- Pleasure and gratification
- Eg: If a child is hungry he or she want food immediately without considering the environment. They will do anything for their immediate pleasure "I want it now"

2) Superego (Morality principle)
- It is composed of rules and moral values
- Eg: If the child is hungry he will wait until the ~~appropriate~~ lunch time

3) Ego (Reality principle).
- "I want it but a little planning is needed"

⇒ Stages of Psychosexual theory

1) Oral stage
- Age - birth - 15 years.
- Erogenous zone ~~is~~ of focus : Mouth.
- Gratifying activities : Sucking, chewing, biting.
- Relationship with environment: Primitive stage. Mainly involves sucking. Mother's breast milk is not only their food but also a symbol of love and care. Forceful feeding and early weaning leads to fixation
- Symptoms of fixation: Smoking, drinking, Sarcastic behaviour

2) Anal stage
- Age - 1.5 - 3 years
- Focus of erogenous zone - Anus
- Gratifying activities - Bowel movement and its retention

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5. Theories of CHILD PSYCHOLOGY

classification

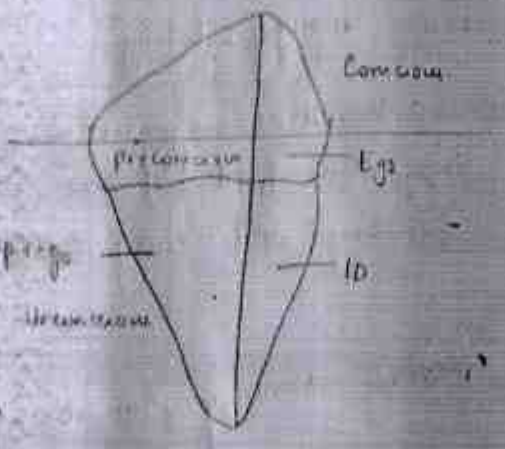
- Psychodynamic theory
  - Psychosexual / Psychoanalytical theory by Sigmund Freud
  - Psychosocial theory by Erik Erikson
  - Cognitive theory by Jean Piaget
- Theory of learning and behaviour learning
  - classical conditioning by Ivan Pavlov
  - Operant conditioning by BF skinner
  - Hierarchy of Needs by Maslow
  - Observational learning by Albert Bandura

FREUDIAN THEORY

- Also known as psychosexual / Psychoanalytical theory.
- Proposed by Sigmund Freud

→ Levels

- Our mind is composed of Conscious, preconscious and Unconscious.



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Relationship with environment : Bowel expulsive and retentive fixation stage of toilet training. Child notice the pleasure of expulsion.

~~Anal expu~~

- Symptoms of fixation

Anal expulsive - Parent is too lenient during toilet training. Child will be disorganized, messy etc.

Anal retentive - Parent is too strict and punishment is given during toilet training. Child will feel as anxiety during bowel movement and become as clean, orderly and can't tolerate those who are not clean.

3) Urethral stage

Age - 3-4 years

Erogenous Zone - Urethra

Gratifying activity - It is a between stage of Anal and Phallic.

Relationship with environment - pleasure in urination

4) Phallic stage

Age - 4-6 years

Erogenous zone - Genital

Gratifying activities

Interaction with environment : Attraction for opposite sex parent

~~Electra~~ Oedipus Complex : Boy will feel as attraction towards their mother. They will imitate like their father. This type of boy will feel a Castration anxiety is the fear of been Castrated by their father.

Electra Complex : Girl will have a attraction towards her father try to be with her mother. She also notice that she is not having the sexual organ like their brother and father and brother and they will feel that the mother has Castrated it. This will lead to Penis envy. This kind of child will be having a anger toward her mother.

b) Latency stage

Age - 12 to puberty
Libidinous zone - Quiescent
Interaction with environment - Sexual desires are depressed and their energies are channeled for new activities like sports, making friends with same sex etc. In this period the child will come out from their home and interact with society

c) Genital stage

Age - Puberty onwards
Zone - Genital
Interaction with environment : Heterosexual attraction

~~Symp~~ This stage itself doesn't have any fixation. If they are not fully recovered from oedipus & electra complex will feel a anxiety are talking with opposite sex individual.

Dental office adaptation

- Oral stage - Dental treatment should be done with the presence of parents. Usually do the procedure placing them in parents lap
- Anal Genital and Urethral - Allow them to play with toys during treatment
- Phallic - More concerns with esthetic
  Orthodontic treatment.
- Parental - More Concerns about the cost of treatment.
  Not giving much importance to aesthetics.

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4 Early Childhood Caries

Definition - is the early type of dental caries that occurs during first few years of life

Clinical features

Stage 1 - Initial

Age - 2-3 years

Involved teeth - maxillary incisors

Clinical features - Patient is irritable

Dx - evidence of white opaque demineralized lesion are not cavitated.

Due to bottle feeding

Stage 2 - Caries

Age - 3-4 years

Rampant

Depends on duration of Cariogenic intake

Involving mandibular lower incisors

Management

Objectives

- Isolate the causing pathogen
- Preventive measure
- Avoid pulp exposure

Factors affecting

- Age of patient
- Diseases pattern
- Stage of progression

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First visit

Caries excavation and restoration

- Fluoride varnish application
- Diet counselling - 24hour or 6hour diet chart
- Parental counselling - Add fluoride content diet, Avoid night bottle feeding, Brushing techniques
- Behavioural modification

Second visit

- Are teeth after first visit
- Evaluation
- Modification of diet

Second and Subsequent visit

- Pulp capping procedures
- Extraction if needed
- Space maintainer and fixed prosthesis given

5 ORAL HABITS

Definition

It is a act of doing a activity ~~repeatedly~~ repetitively.

Classification

1) Meaningful habits - deep rooted psychological
   Empty habits - No psychological root

2) Useful habits - needed for physiological functioning like breathing etc.
   Harmful habits - No needed caused harmful effects are oral, structural

   eg:- Mouth breathing

3) Compulsive -
   Non Compulsive -

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4) Primary
Secondary
Myofunctional

5) Anatomic - eg: Swallowing
Pathologic - due to any pathologic like obstruction and deviation of nasal Septum
eg Mouth breathing

6) Anatomic - due to anatomic defect like large tongue leads to tongue thrusting
Non anatomic - Absence of any anatomic defects

7) Pressure habits - Tongue thrusting.
Non pressure habits - Mouth breathing.
Postural habits - Chin propping
Pillowing.
} Graber's classification.

THUMB SUCKING.

- Introduction of thumb into mouth to varying depth.

Classification

1) Physical
Psychological

2) Nutritive
Non nutritive

3) Subtlety classification:

Type A - Thumb is placed inside touching it to the upper palatal region
Contact between maxilla and mandible

Type B - Thumb rest against hard palate. Contact is present

Type C - Thumb is placed in such a way that first joint is inside the mouth. No Contact between maxilla and mandible

Type D - Only little portion of thumb is inside mouth. No contact

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Theories

- Fracture theory
- Cleft advance theory
- Reflex theory
- Learning theory

Clinical features

- Maxilla : Proclination of anterior teeth
  Increased length of maxillary arch
- Mandible - Retrognathic mandible
  Retroclination mandibular teeth
- Intermaxillary relation - Anterior openbite
  Increased overjet
  Decreased overbite
  Posterior crossbite
- Lip - Hypotonic upper lip
  Hyperactive lower lip
  Lip incompetence
  Injury of lip
- Tongue - Tongue placed lower Collapsed arch
- Finger - Callus formation
  Clean nail
  Keratotic lesions

Management

1. Preventive treatment

- Proper feeding.
- Allow the child to ~~for~~ ~~the~~ suck as much milk as they want
- If thumb sucking is noticed try to ~~ignore~~ eliminate it at home
- Can be done using - Dummy position

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i Manual

- Least effective method

ii Remainder therapy

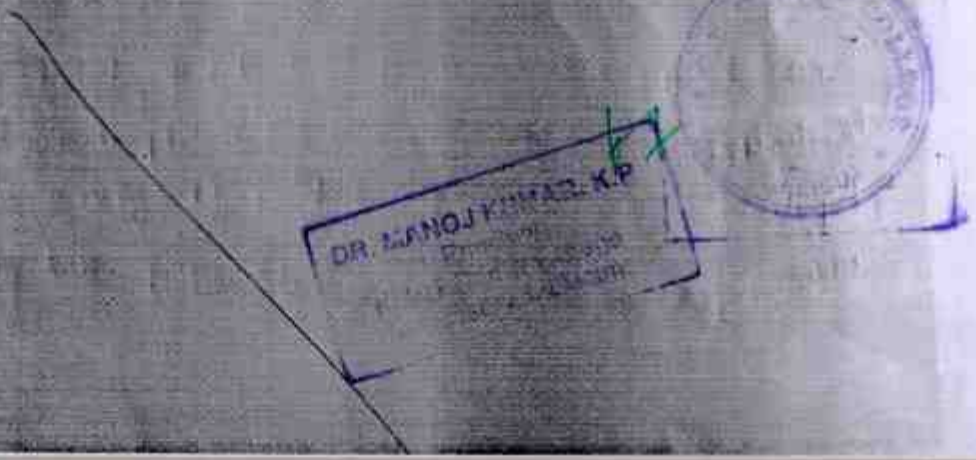
- Three alarm system
- Long sleeves
- Bank Home technique
- Analgesic watch
- Thumb puppets
- Arm bandage
- Elbow bandage
- Thumb guard - most effective

Psychological

iii Mechanotherapy.

Tongue crib appliance
Tongue rake appliance
Blue grass appliance.
Modified blue grass appliance
Oral screen
Fixed appliances.

Recent advances : Light emitting diode appliance - Here when patient put the finger inside mouth a light will appears then alarm remind the patient



6 Pulp capping

Definition : Sealing the pulp with suitable medicament

2 types

1) Indirect pulp capping

Procedure : Remove caries from where a small portion of deep caries is not removed as it result in pulp exposure. Seal with a suitable medicament and maintain the vitality of pulp.

Indication : No history of pain
No night pain
Presence of tender on percussion
Vital pulp
No periapical pathology
No widening of PDL
No break in lamina dura
No interradicular radiolucency.

2) Direct pulp capping

Removal of all carious tooth and exposed pulp is sealed with a suitable medicament & maintains the vitality.

Indication : Small time pin point exposure
Presence of sound dentine around the exposure
Minimum haemorrhage that can be controlled by applying finger pressure

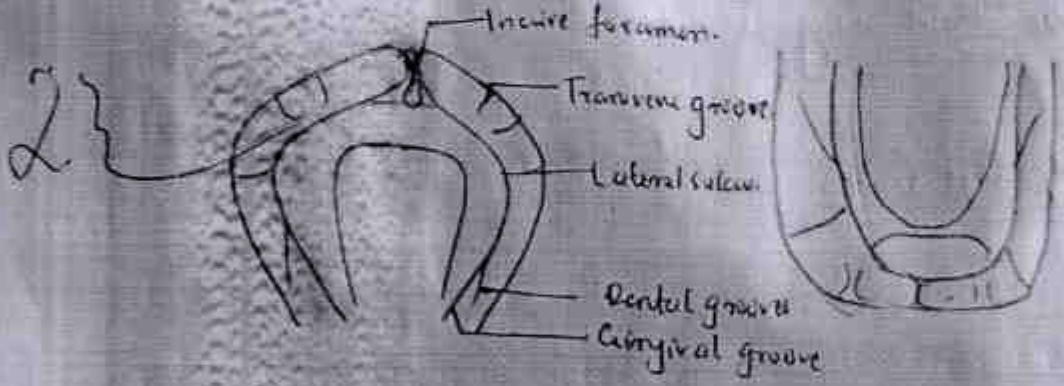
Medicaments used in pulp capping:

- $Ca(OH)_2$
- ZnO
- Procaine
- Propolis
- MTA

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7 Gum pad

- Seen in pre dentate stage
- First tissue structure covered by periosteum
- Dental groove: It separates gum pad into Labiobuccal and Linguoplate. It runs from the incisive foramen and runs backwards and reaches a canine relation. From their runs laterally to molar region
- Gingival groove: Separate the gum pad from palate
- Transverse groove: Divide the gum into 10 segments. Each segment containing each tooth sac.
- Lateral sulcus: Running at the canine region
  Important in maintaining the interarch relation
- Maxilary gum pad is horseshoe shaped and wider.
- Mandibular gum pad is U shaped



Importance:

- Maintaining interarch relation
- Lateral sulcus of maxilla is always a head of lateral sulcus of mandible

8. Diet counselling:

- It is done to test their Carbohydrate intake.
- Diet score = Food score + Nutrient - Sweet score

Test
- Excellent - Counselling not needed
- Adequate - Diet modification
- Barely adequate - Diet counselling
- Poor - Diet counselling + Diet modification

Sweet score

×5 - Liquid - Juice
×10 - Mild sticky food - Cake, Chocolate
×15 - Solid, Moody duration - Breath mint, Candy.

Steps

1) Patient selection - Cooperative patient
2) Food diary
3) Diet chart
4) Assessment of sweet score
5)
6) Interview
7) Teaching
8) Counselling
9) Motivation

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1 PATTERN OF CARIES INCIDENCE

- Initially by Dr Fay
- Multiple fractures and left lower region first molar fracture
- left lower region are always followed by left lower molar molyphyseal fracture a few seconds consecutively.

Apexogenesis	Apexification
Vital teeth	Non vital teeth
Vital pulp capping or pulpotomy procedure done for development of root formation	Inducing root formation of a immature pulpless tooth by formation of osteocementum
Primary & Young Permanent teeth	Blunderbuss canal with open apex
Revascularization possible	Not possible
Root developed	Not formed
Materials used - calcium	Materials used - $Ca(OH)_2$, MTA, Hydroxyapatite Bioceramics
Physiologic process	Not a physiologic process

11 RAMPANT CARIES

- Is a rapid widely spreading burrowing type of caries involving teeth that are immune to decay.
- Teeth involved - All teeth including mandibular lower incisor
- But primary and permanent teeth are involved.
- Clinical features
- Initially extensive coronal destruction of clinical portion of teeth.
- Later progresses into pulpal involvement, dislocation.
- Finally will leads to fracture of entire crown.
- Teeth with pulp exposure

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Etiology

- High carbohydrate diet
- Improper oral hygiene
- Bed feeding at night

Management

- Restoration
- Preventive treatment like fluoride application, ART & pit and fissure sealant application
- Extraction along with space maintainence
- Pulp therapy.

b NITROUS OXIDE / Laughing gas

- Odourless, colourless, non inflammable gas.

Technique

Inspect the equipment

↓

Cover 100% O_2 through the equipment

↓

After 3 min give Nitrous oxide slowly

↓

Reduce Oxygen to 30% and 70% Nitrous oxide.

↓

After the procedure Nitrous oxide is removed and 100% O_2 is given for 5 min.

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Objective sign

- Open mouth
- Open or closed fingers
- Tear coming from eyes

Subjective symptoms

At the patient ~~what~~ what is feeling

Psychomotor effects

Parallel ~~and~~ visual motor Cocktail test

At the patient to draws Open Square Circle, triangle, directional arrow, three line cross.



Triangle Open Square Circle Three line cross Directional arrow

Indication

Child to ~~me~~ decrease anxiety

Uncooperative patient

Contraindication

Any systemic illness

eg TONTINGENCY MANAGEMENT

based on ~~Introduced by~~ BF Skinners operant conditioning therapy

4 types

1) Positive reinforcement - ~~taking~~ ~~Decreasing~~ ~~of~~ ~~pain~~ pleasant stimuli

eg:- giving toys, stickers etc.

2) Negative reinforcement - ~~Presentation~~ Withdrawal of unpleasant stimulus

eg:- Stop the clinical procedure and Withdrawal of handpiece

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3) Time out / Omission - Withdrawal of pleasant stimuli like making it. parent eg:- Removal of toys.
not confused with punishment.

4) Punishment - Presentation of unpleasant stimulation
Eg: SCOLDING, physical restraints, Voice control.

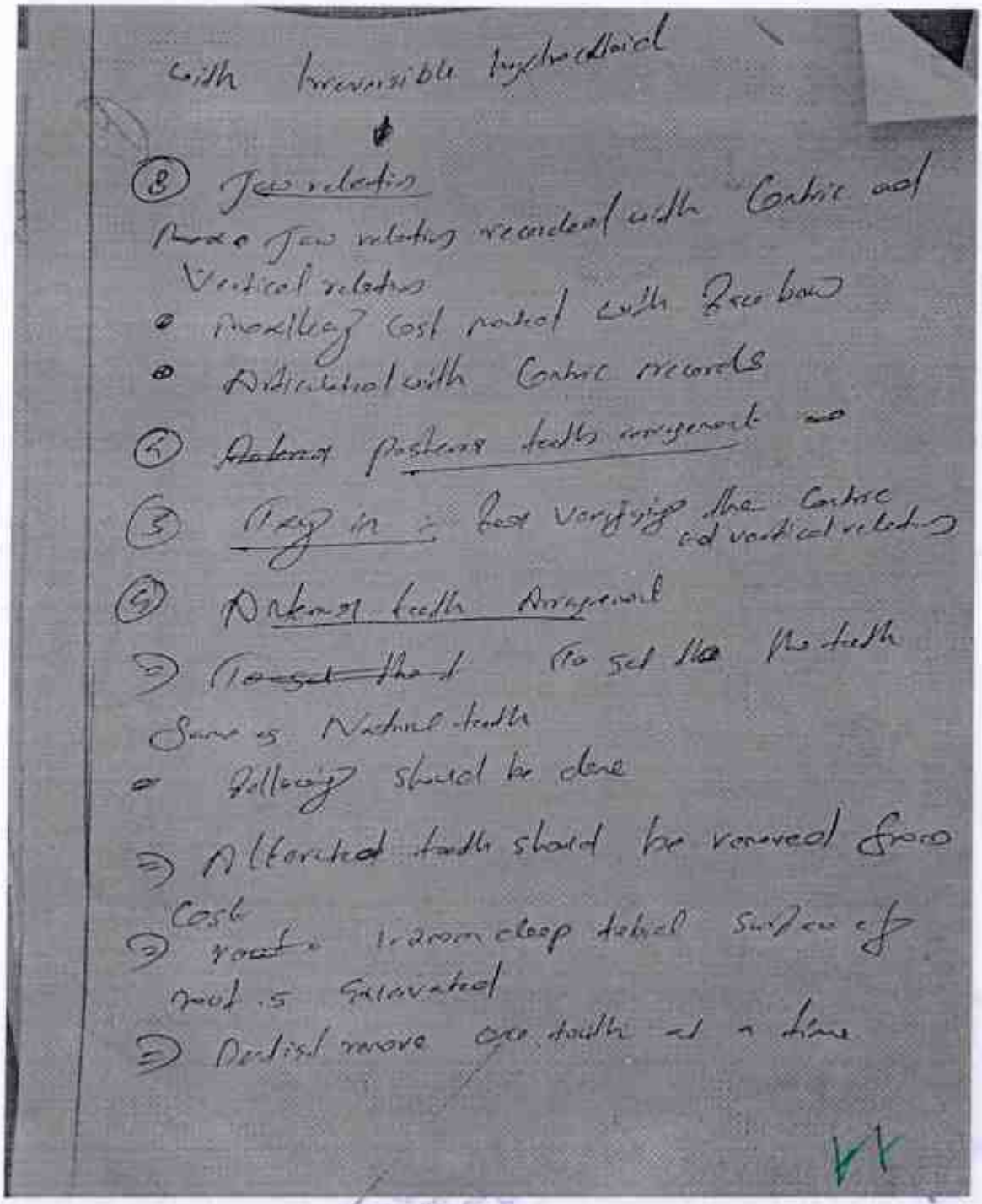
Advantage: Bringing a appropriate behaviour
Elimination of inappropriate behaviour

Disadvantage: Fear generation
Sometime become more violent.

MODIFICATIONS OF GIC.

- Resin reinforced modified GIC. - Add HEMA and methylmethacrylate and Chemical & Photo activation
- Metal reinforced GIC — Cermet
  - Miracle mix.
- Ceramer.
- High viscosity GIC.
- Low viscosity GIC
- Powder paste paste GIC.
- Modified powder liquid GIC

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with irreversible hydrocolloid

(2) Jaw relation
Jaw relating recorded with Centric and
Vertical relation
- maxillary cast mated with face bow
- Articulated with Centric records

(4) Balance posterior teeth arrangement

(3) Try in : last verifying the Centric and vertical relation

(5) Balance teeth Arrangement

⇒ Remove the ~~wax~~ to set the teeth
Same as Natural teeth
- Polishing should be done

⇒ Altered teeth should be removed from cast

⇒ Cast root undercut deep dental surface of mold is Relieved

⇒ Dentist remove one tooth at a time

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(8) (10) (12)

(1) Balanced occlusion

It can be defined as the Bilateral, Simultaneous occlusal Contact of Anterior and posterior teeth in Centric and eccentric ~~relation~~ position

Factors affecting Balanced occlusion

(1) Condylar guidance

(2) It is the ~~effect~~ Anterior post portion of articulator which controls the movement of mobile member

~~Factors~~

(2) Condylar guidance Inclinato

The angle ~~the~~ of Inclination of the Condylar guidance controls the surface of Posterior reference plane.

Features

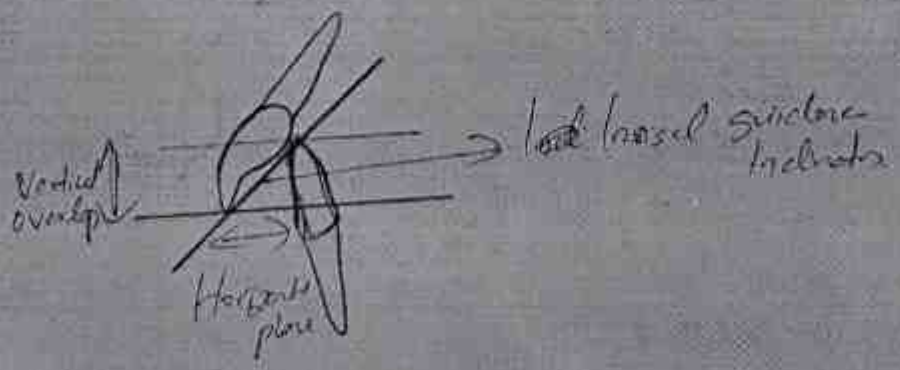
1) Mediotrusive guidance generated traverse through Contours of glenoid fossa

2) It depicts the attrition depends on

Capability of Articulator
Not adjustable
It is expressed in degrees
Shallow → less space in posterior teeth
Steep → more space in posterior teeth

Incisal guidance

It is the influence of Contralateral mandibular Anterior teeth in mandibular Movement
It is expressed in degrees
Used in Degrees



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(3) Orientation of occlusal plane

⇒ If is for posterior teeth ⇒ from upto retromolar pad

⇒ Anterior teeth ⇒ Mandibular Canine ~~Cut~~ Cingulate the Commissure of mouth

⇒ Bite-Rimps can also used

(4) Compensating Curve

⇒ Anterior occlusal Arrangement in Anterior posterior and lateral alignment of buccal and occlusal surfaces of artificial teeth in balanced occlusion ⇒

① ~~Anti~~ Medio lateral Curves

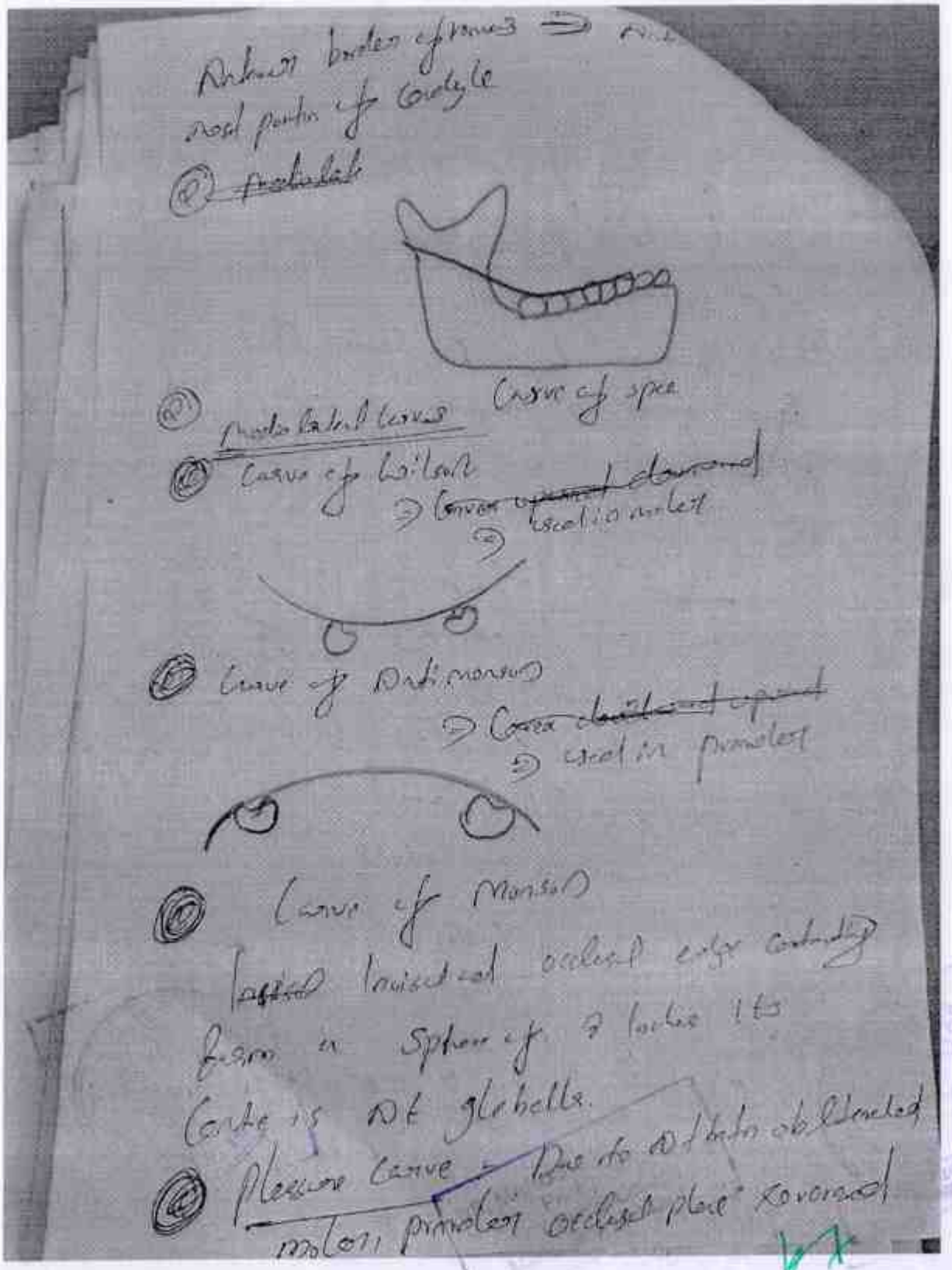
② Anteroposterior Curves.

Anteroposterior Curves

① Curve of Spee

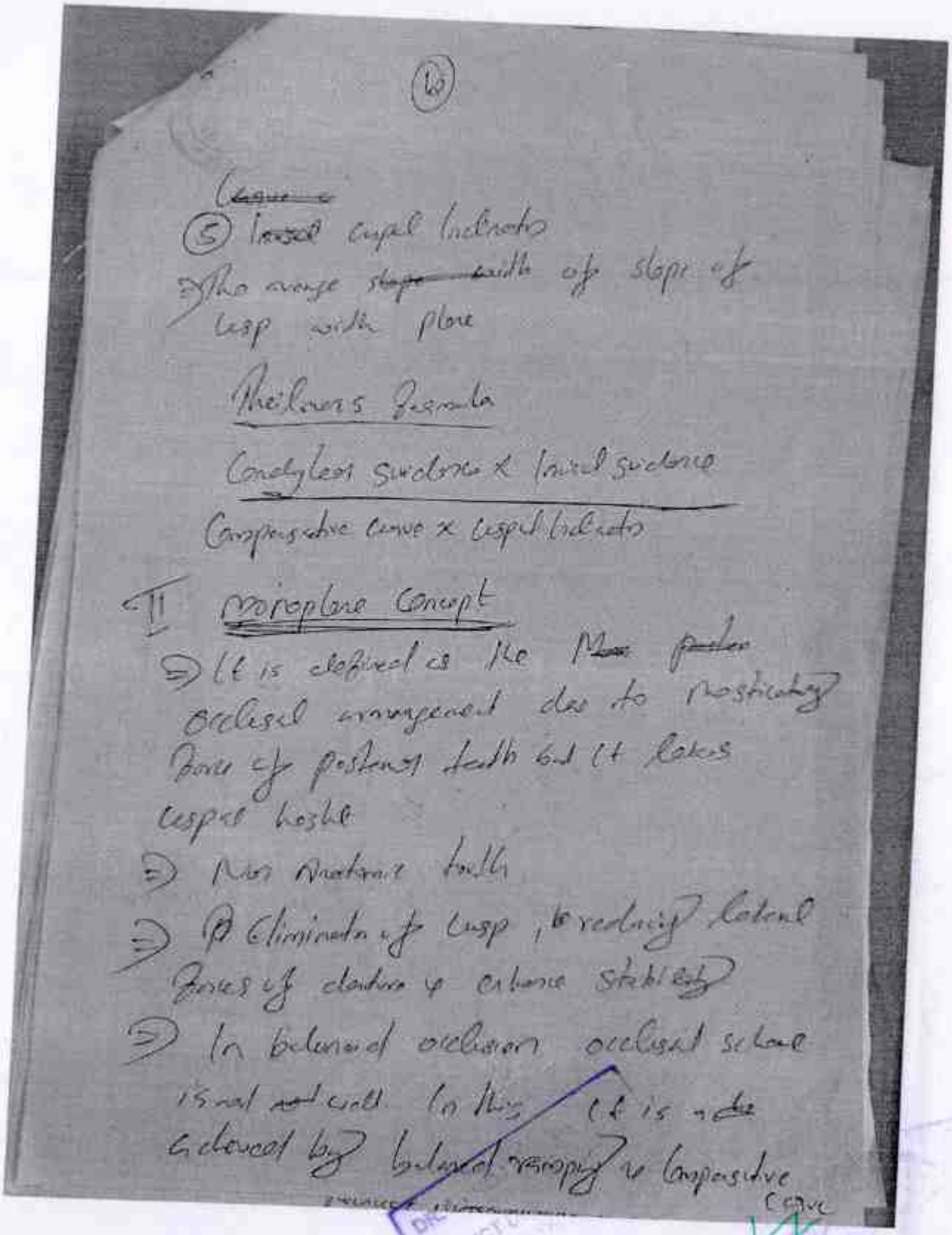
⇒ Anatomic Curve of occlusal Alignment

Tip of Curve ⇒ ~~Tip~~ Cusp tip of premolar ⇒ Cusp tip of molar ⇒



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(10)

(5) Incisal angle inclinato

⇒ The average ~~slope~~ width of slope of cusp with plane

Pleiadon's formula

Condylar guidance & Incisal guidance

Compensative curve & cusp inclinato

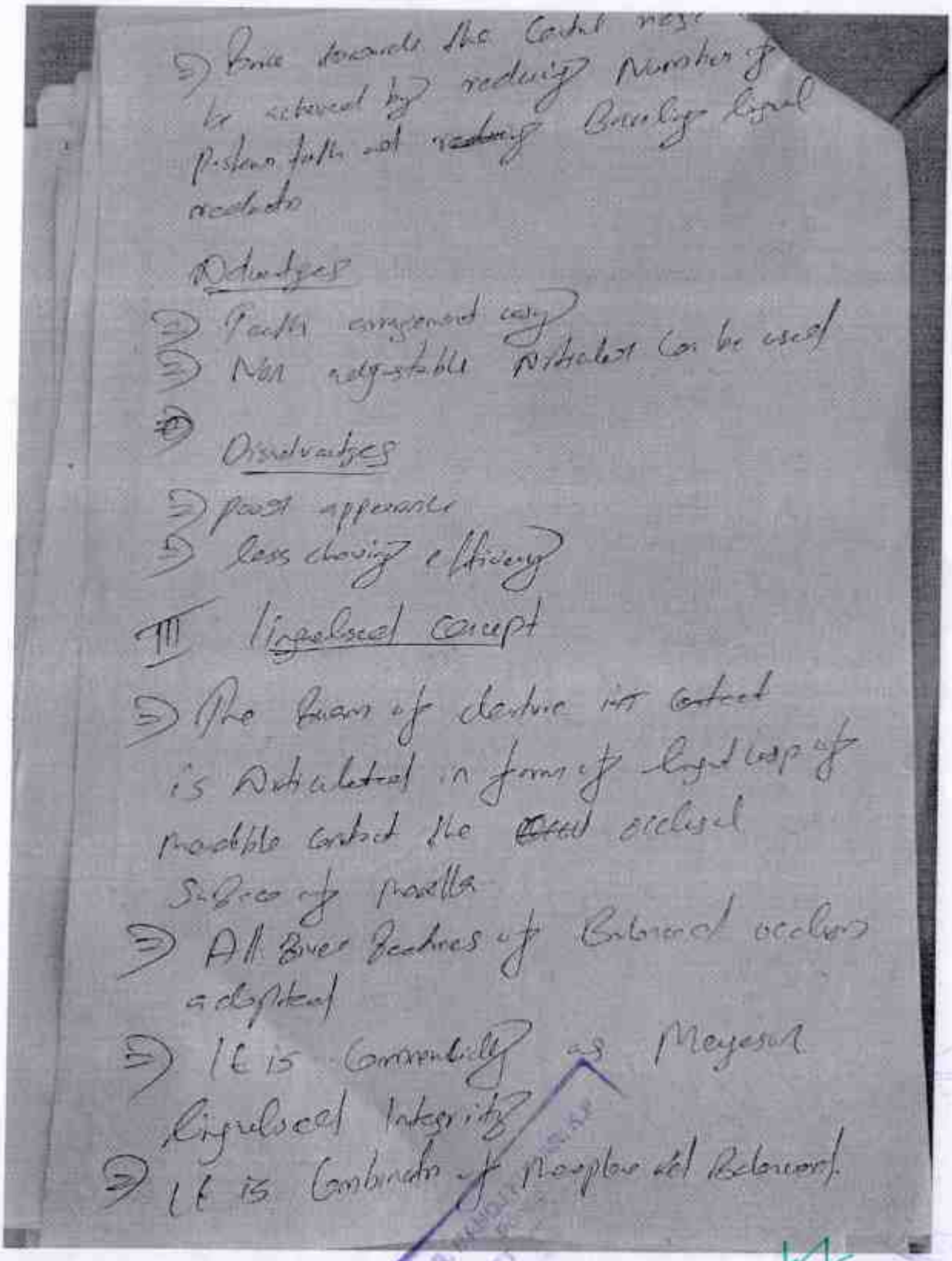
(11) Monoplane Concept

⇒ It is defined as the ~~Mon~~ posterior occlusal arrangement due to masticatory force of posterior teeth and it takes cusps beside

⇒ Non Anatomic teeth

⇒ Elimination of cusp, by reducing lateral forces of chewing & enhance stability

⇒ In balanced occlusion occlusal scheme is not well. In this it is ~~not~~ achieved by balanced occlusion & compensative curve



3) Bone towards the Cortical region is achieved by reducing Number of Posterior teeth and reducing Buccolingual width

Advantages

1) Teeth arranged easy
2) Non retentive Artificial can be used

Disadvantages

1) poor appearance
2) less chewing efficiency

III Lingualised occlusal concept

1) The form of denture is created in form of Lingual cusp of mandible contact the central occlusal surface of maxilla
2) All other features of Balanced occlusion adopted
3) It is commonly as Meyer Lingualised Integrity
4) It is combination of Neoplastic Balanced

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Advantage

- Better chewing efficiency
- Good appearance of prosthesis

Disadvantage

- Tooth is difficult to Prepare
- No scientific data for stability.

6) Objectives of impression making in Complete denture

I Retention
II Stability
III Support
IV Preservation of residual ridge
V

I Retention

- The ability of the prosthesis to prevent the dislodging force in path of placement

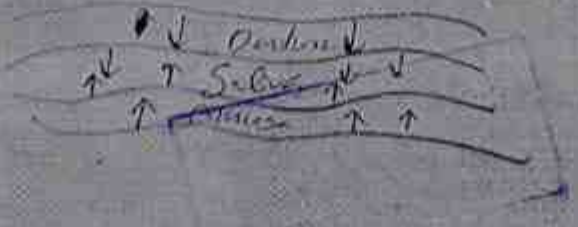
Recent Advances in Dental Implants

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(14)

(a) ~~Physical factors~~
Saliva
(1) Physiological factors
⇒ Saliva play important role in denture bearing area
⇒ Saliva should be thin and watery
⇒ Thick saliva decrease retention
⇒ Xerostomia - No retention
(b) Anatomic factors
(1) ↑ size of denture bearing area — Increases
Increases Retention
(2) Tissue ~~to~~ tissue displacibility will reduce the retention to during impression making
(c) Physical factors
(1) Adhesion
(2) Attraction between unlike molecules
(3) Force between saliva, mucosa and denture
(4) Xerostomia ⇒ Surface of denture



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(iii) Cohesion

⇒ Attraction between two or like molecules

Normally less retentive

(iv) Interfacial Surface Tension

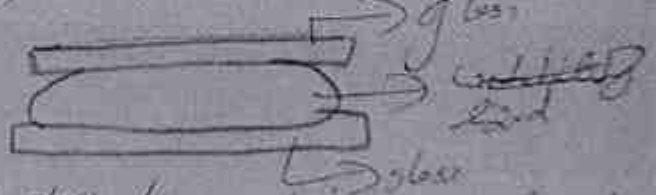
⇒ It depends on fluid wettability

⇒ Denture - less wettability less Retentive

and mucosa ⇒ More wettability More Retentive

⇒ Denture contact with saliva pellicle

Mucosa Retentive

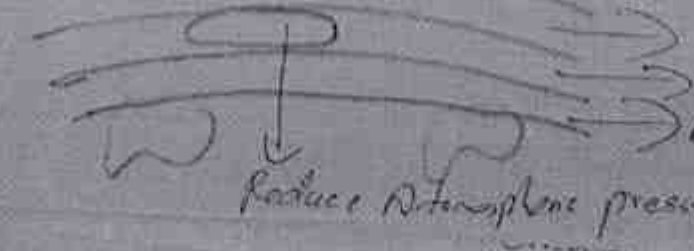


⇒ Liquid b/w the glass increased till some critical

No surface tension easily glass can be separated.

(v) Atmospheric pressure

⇒ It depends on peripheral seal



Reduce Atmospheric pressure (~~Adap~~

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(V) Loss of stability
Increase retention and more Comfort

(2) ~~Stability~~

Undercuts

⇒ Natural undercuts above the Retentive & undesired undercuts Maxillary tuberosity undercut in midline of Mandible

⇒ Some undercut should be Surgically created

& Anterior maxillary region undercuts

Denture adhesive

⇒ It also enhances the Retention

⇒ It is a chemical form used in Denture

Denture Sealer chamber

⇒ It provide Suction in palatal Maxillary region

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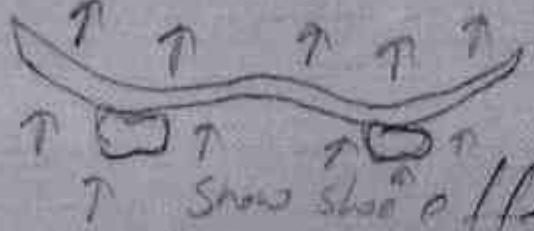
III Stability

⇒ The quality in which prosthesis to resist displacement and stable against the functional, horizontal, rotational stress

① Vertical height of ridge
② Soft tissue covering the denture
③ Close adaptation to the denture
④ Tooth Arrangement
⑤ Denture factors and polishing

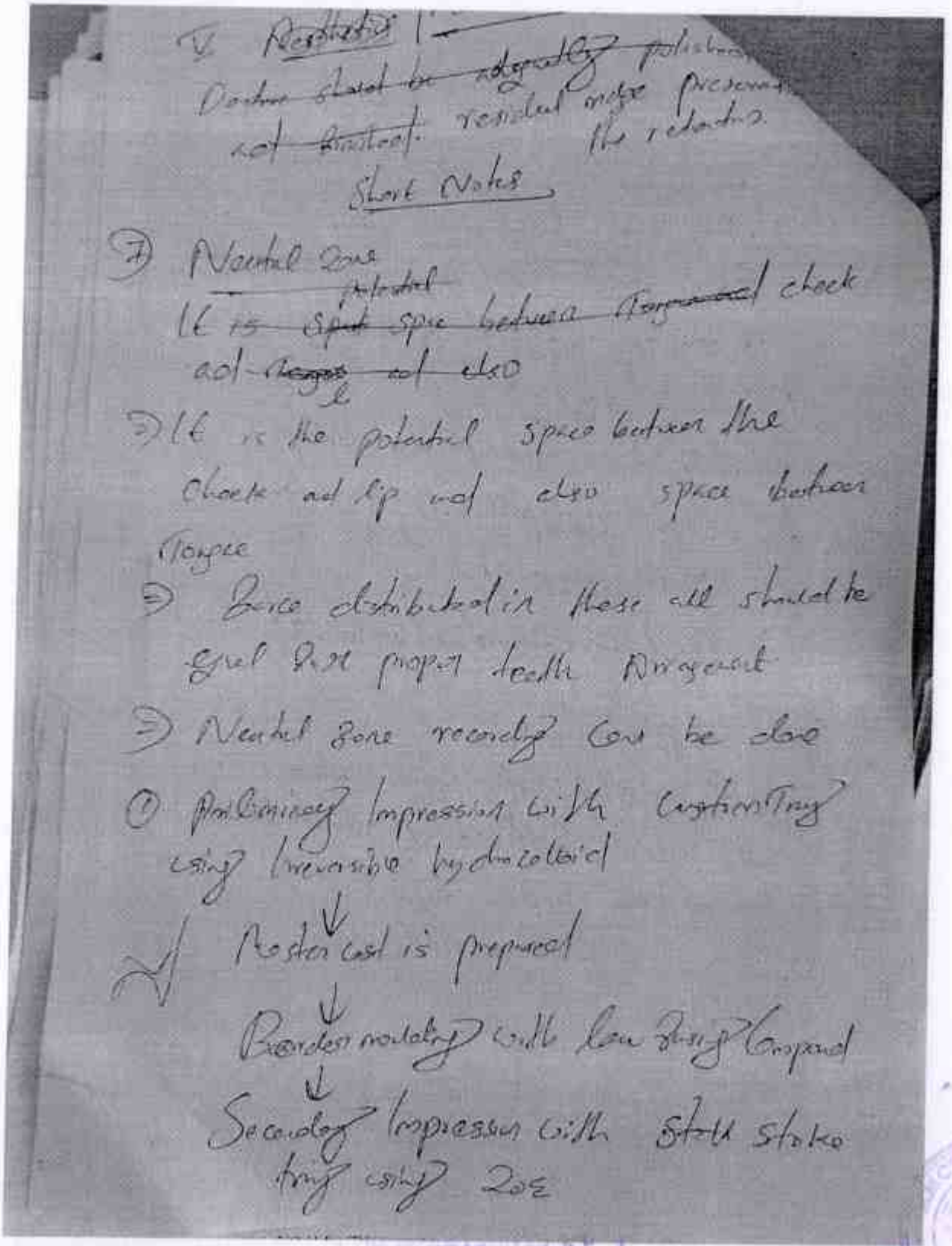
IV Support

⇒ It is ability to stand without any displacement ~~foot~~ denture should be given with proper support
⇒ Force is equally distributed



Show shape of foot

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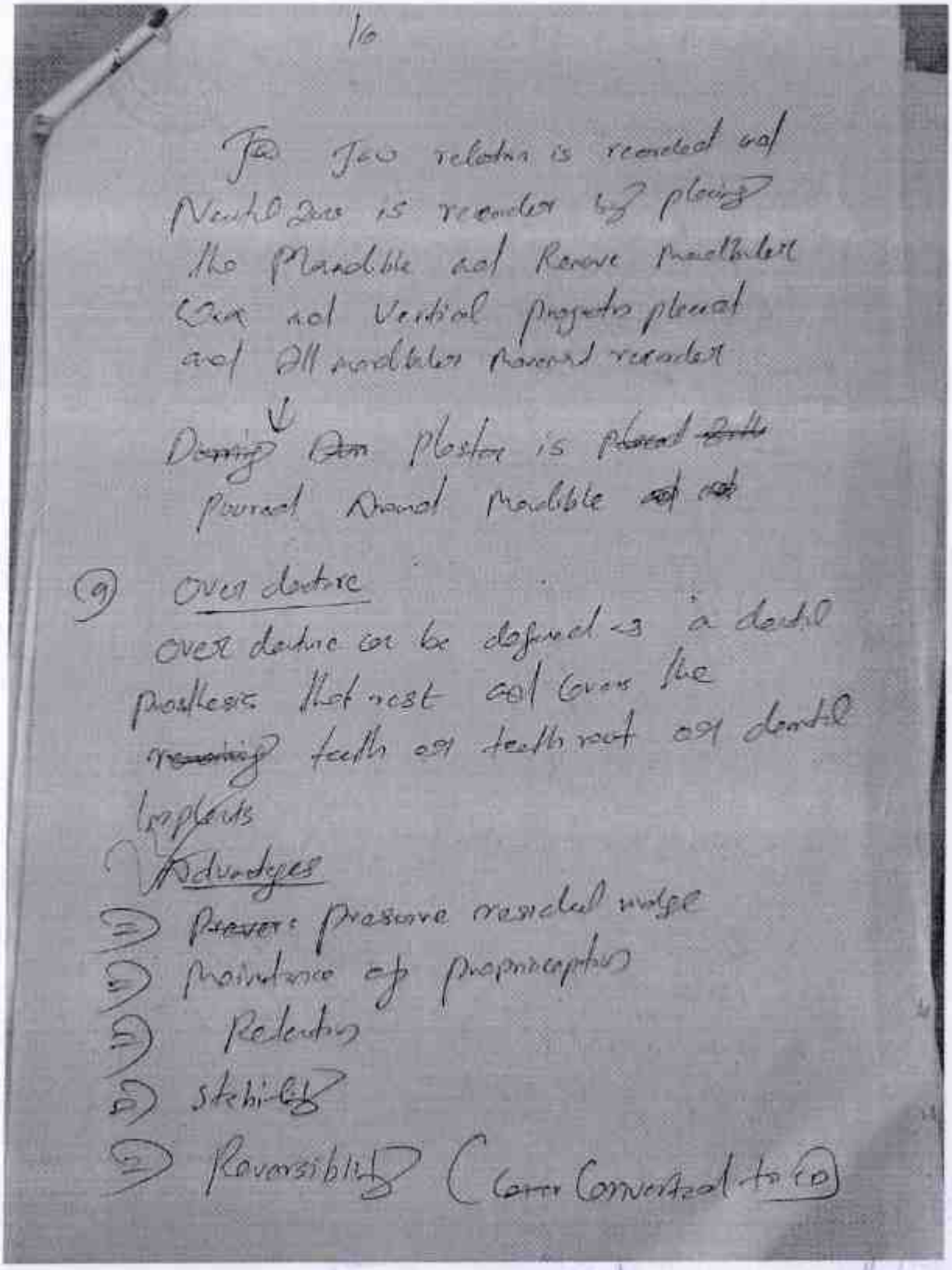


V. Restoration
Doctor should be adequately polished
not finished. residual ridge preserved
the retention.

Short Notes

1) Neutral Zone
It is ~~Space~~ space between ~~tongue~~ cheek
and ~~tongue~~ of teeth
2) It is the potential space between the
cheek and lip and teeth space between
tongue
3) Force distributed in these all should be
Equal for proper teeth Arrangement
4) Neutral Zone recording can be done
5) Preliminary Impression with customising
using irreversible hydrocolloid
↓
Master cast is prepared
↓
Border moulding with low fusing Compound
↓
Secondary Impression with Stott stone
tray using zoe

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For Jaw relation is recorded and Mandible is recorded by placing the Mandible and Recording mandibular Cast and Vertical pin to the and All mandibular movement recorded

During Jaw Plaster is placed Paired Dental Mandible

(9) Over denture

Over denture can be defined as a dental prosthesis that rest and cover the remaining teeth or teeth root or dental implants

Advantages

1) Preserve pressure receptor nerve
2) Maintenance of proprioception
3) Retention
4) Stability
5) Reversibility (Can Converted to FD)

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Disadvantages

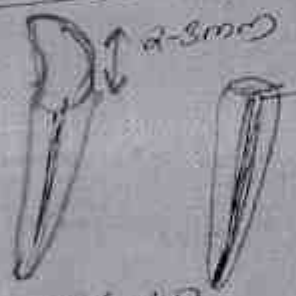
- Caries Susceptible
- Periodontal Breakdown of abutment
- Bulkier
- Undercuts in Abutment

Indications

- Weakened Abutment

overdentures

① Bare root surface



② Metal Copings

- Dome shaped
- Thimble shaped

Dome shaped

- Dome of Dome shaped metal copings of 2-3 mm height with finish line placed on the post space

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(10)

Thimble shaped

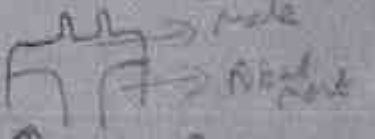
⇒ long
⇒ 5-8 mm in height
⇒ Not enough retentive
⇒ Need good bone support

(2) Attachment

(a) Stud Attachment
(1) Extra coronal (2) Intra coronal



(b) Bar attachment
(1) Bar arms
(2) Bar joints
(3) Non Rigid Bar
(4) Multiple Bar



(c) Magnetic Attachment
(1) Keeper
(2) Denture Retentive element



Intra coronal

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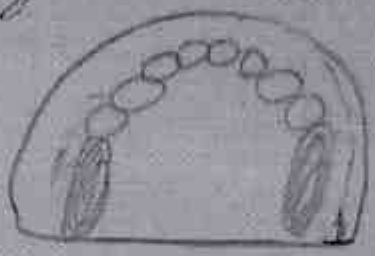
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8 (10) (11) Kennedy's classification

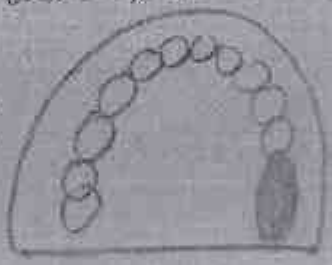
Class I: Bilateral edentulous area posterior to remaining Natural teeth

Class II

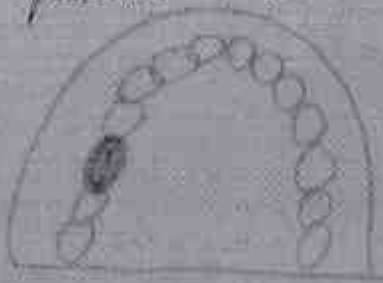


Class II: Unilateral edentulous area posterior to remaining Natural teeth

d

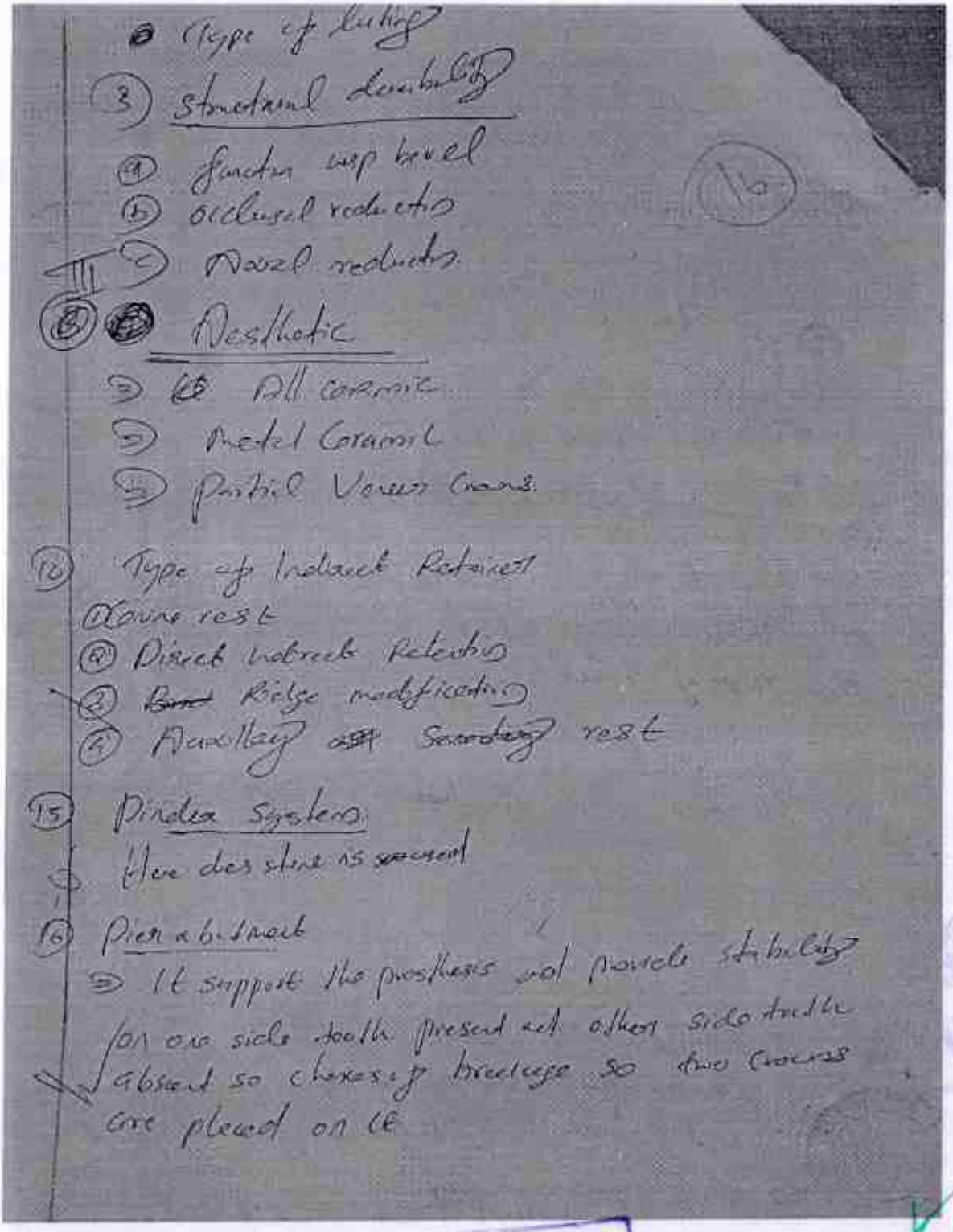


Class IV: Single bilateral edentulous area in which Natural teeth Anterior to and posterior to it.



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- Type of listing
3. Structural durability
   a. Incisal edge bevel
   b. Occlusal reduction
   c. Axial reduction
4. Aesthetic
   a. All ceramic
   b. Metal Ceramic
   c. Partial Veneer Crowns
10. Type of Indirect Retainer
    Occlusal rest
    a. Direct retainer
    b. Ridge modification
    c. Auxiliary ~~Guiding~~ rest
15. Finding System
    How does stress is created
16. Pier abutment
    It support the prosthesis and provide stability
    for one side tooth present and other side tooth
    absent so chances of breakage so two crowns
    are placed on it

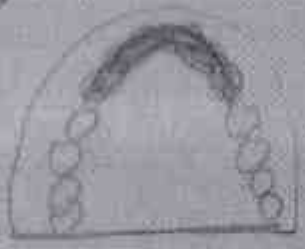
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(17)

Class IV

⇒ Single Bilateral edentulous area Anterior to the remaining Natural teeth



(18)

Indications

Tooth replacement

⇒ Single tooth replacement
⇒ Bilateral Complete edentulous arch
⇒ long span edentulous span
⇒ Distal extension

When RPD Compromised in

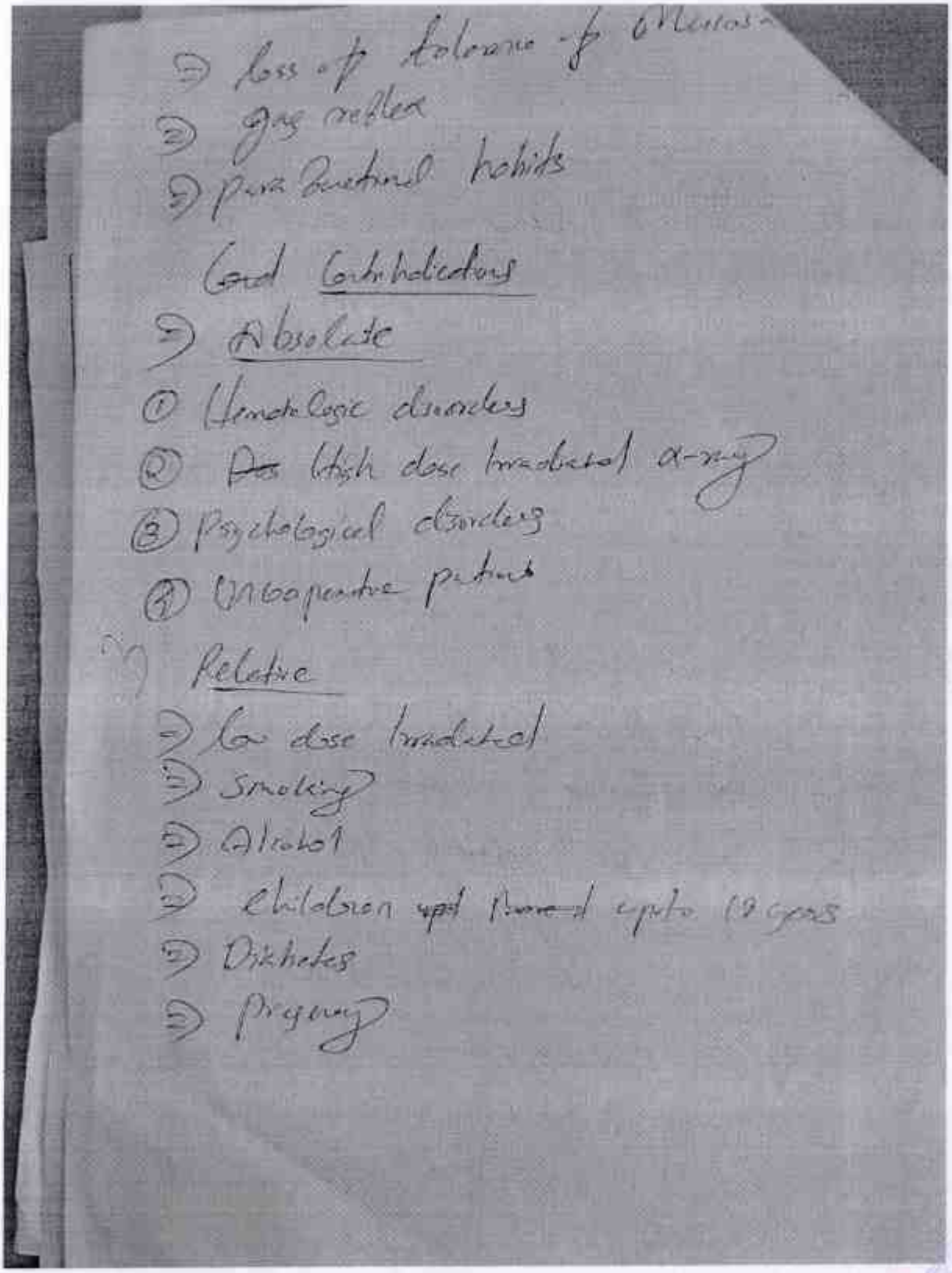
⇒ Gingival Cantilever
⇒ Weak abutment

When Complete denture Compromised

⇒ loss of muscle coordination

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3) loss of tolerance of dentures
3) gag reflex
3) parafunctional habits

Contraindications

1) Absolute

① Hematologic disorders
② ~~Pa~~ High dose irradiated x-ray
③ Psychological disorders
④ Uncooperative patient

2) Relative

1) low dose irradiated
2) smoking
3) Alcohol
4) children upto 12 years
5) Diabetes
6) Pregnancy

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(14)

(13) posterior palatal seal
It is in the junction of soft and hard palate
Zone within the physiological limits to
relieve retained & support for Complete removable
dental prosthesis
① Anterior vibrating
② posterior vibrating line
③ ~~Post~~ vibrating line is the line joining
junction of hard & soft palate fovea ~~demarcate~~
between movable and immovable tissues
④ Anterior vibrating is in the junction of
Alveolar tissue overlying hard palate and
Immediate Movable Movable tissue of
Soft palate
⑤ Post sharp line ⇒ Projection of
Anterior Nasal Spine

Method of recording

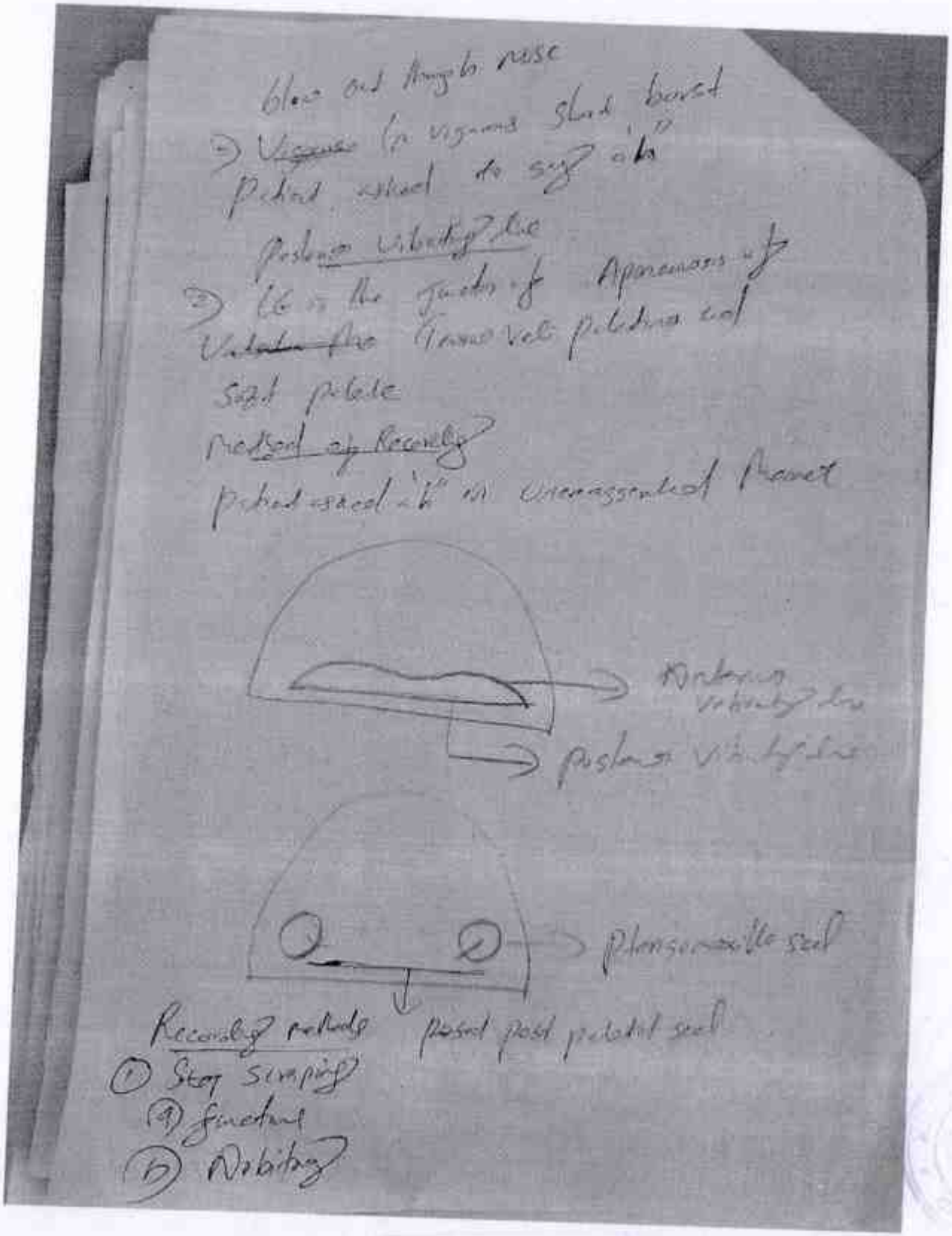
⇒ Valsalva Maneuver :- Patient is instructed
to bend head the Nostrils and
mouth

Orthopantomogram

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(19)

1. Blood work Recharge
2. Low Fusing

(B) Anchor

- Not adjustable
- Teeth arranged different
- Less Commonly used

Non Anchor

- Self adjustable
- Contain
  - Cantilever
  - Dual Surface
  - Attachment Surface
  - Retentive Clasp
- Teeth Arrangement easy
- Most Commonly used

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(5) (15)

Principles of tooth preparation

Biological

(1) Prevention of damage to adjacent structures

(a) Soft tissue

(b) pulp

(c) adjacent teeth

(2) Conservative tooth preparation

(3) Marginal Integrity

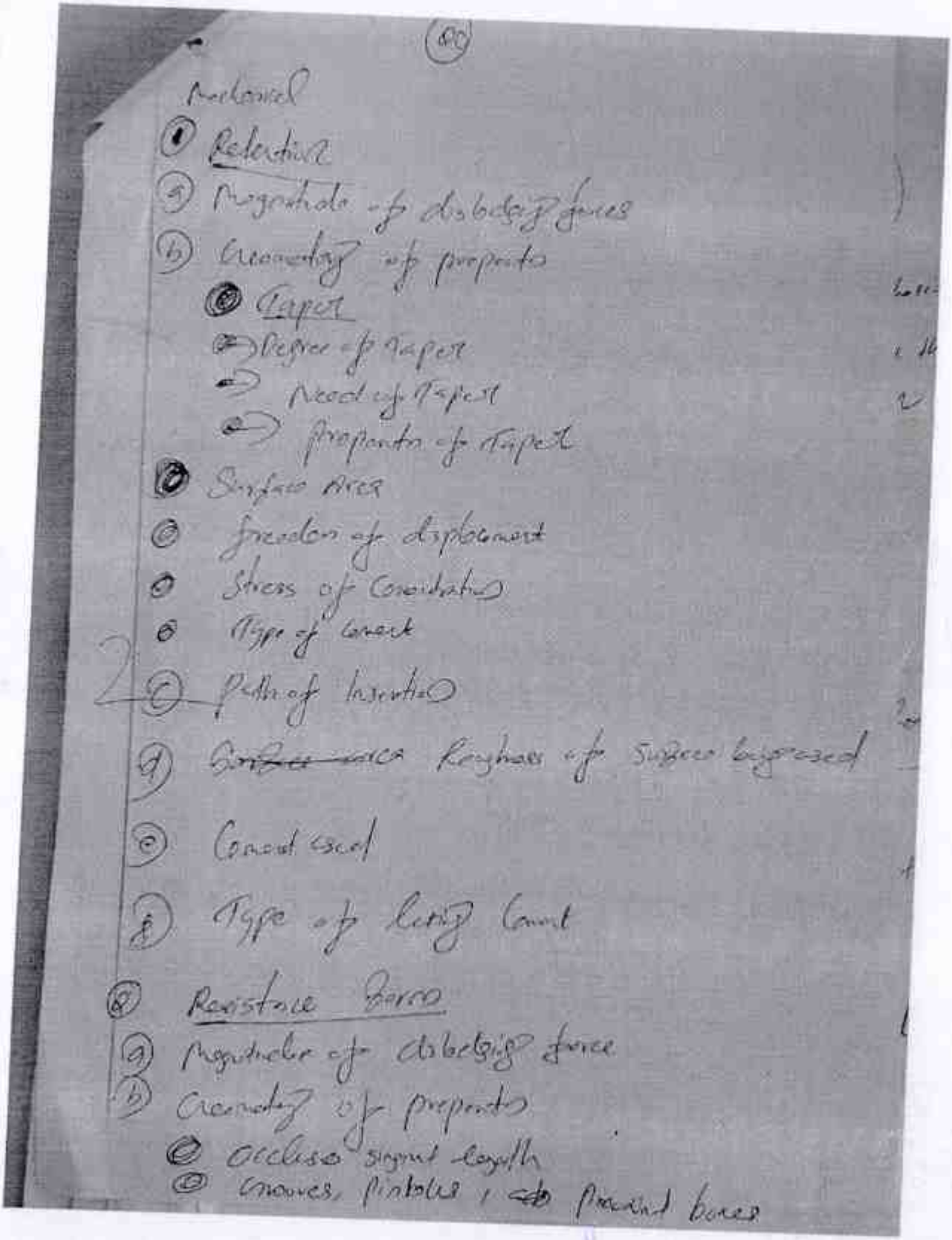
(a) Marginal ~~gap~~ placement and adaptation

(b) Marginal extension

- chamfer
- deep Heavy chamfer
- ~~chamfer with finishline~~
- Butt shoulder
- shoulder with bevel
- Radial shoulder
- Sloped shoulder
- Knife edged shoulder

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(22)

Mechanical

1. Retentive
2. Magnitude of dislodging forces
3. Geometry of preparation
   - Taper
   - Degree of Taper
   - Need of Taper
   - Preparation of Taper
   - Surface Area
   - Freedom of displacement
   - Stress of Cementum
   - Type of Cement
   - Path of Insertion
   - ~~Surface~~ Roughness of Surface lubricated
   - Cement Seal
   - Type of Luting Cement
4. Resistance form
   a) Magnitude of dislodging force
   b) Geometry of preparation
      - Occlusal Gingival length
      - Grooves, pinholes / ~~etc~~ Proximal boxes

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DENTAL COLLEGE

DEPARTMENT OF ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS

RE-TEST QUESTION PAPER FINAL YEAR PART I REGULAR BATCH

29.11.23

ESSAY

1. Classify Myofunctional appliances. Write in detail on Activator
2. Define interceptive orthodontics. Write in detail on various interceptive procedures.

10X2=20

SHORT ESSAY

3. FR 2
4. Facemask
5. Hyalinization
6. Adenoid facies

5X4=20

SHORT NOTES

7. Late mesial shift
8. Diagnostic setup
9. NAM
10. Sved bite plane
11. Brodie bite
12. Benninghoff lines
13. Buccinator mechanism
14. Pitch roll yaw
15. Modifications of Oral screen
16. Safety valve mechanism

10x3=30

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Orthodontics

1. Myofunctional Appliance

CONTENTS

- Myofunctional Appliance
- Classification
- Activation

Myofunctional appliance

Definition

Defined as Appliance that allow
mandible keeping it
or backward
(Right)

Classification

I.
- Tooth borne passive
- Tooth borne active : Activator
- Tissue borne : Instable appliance

sn

II)

- Group I : Transmit the entire force to the
  Eg: Head gear, Facemask
- Group II : Transmit the force on teeth and other structures
  Eg: Activator, Bionator, Twin block
- Group III : operate due muscle
  Eg: Frankel appliance

III)

- Hydraulic appliance : Rely on muscle train for action
  Eg: Activator, Bionator, Twin block, Frankel
- Hydrodynamic appliance : Rely on muscular movement for action
  Eg: Frankel appliance

IV)

- Removable
  Eg: Activator, Bionator, Twin block, Frankel appliance, Bite planes
- Fixed
  Eg: Herbst appliance, Jasper Jumper

V)

- Act by Force application
  Eg: Activator, Bionator, Twin block, Frankel appliance, Bite planes

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Aids by force elimination

Eg Frankel's appliance

ACTIVATION

Surgery

- Herbst
- Herbst appliance
- Andresen - Haupl appliance

Mode of Action

muscle contraction

↓

Myotatic Reflex activity

↓

↓

Releasing direct or inverse

↓

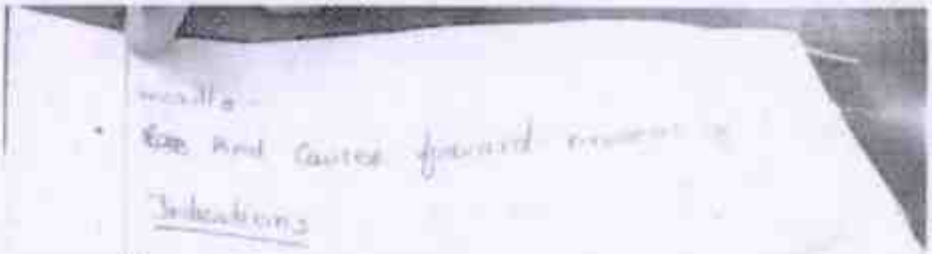
Forward movement of mandible

Myofunctional appliance causes muscle contraction which leads to Myotatic reflex activity and relay - an muscle nerve fibre to brain & produces kinetic energy to Mandible direct

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results -

- Ease and control forward movement

Indications

- Growing patients
- Class II division 2 with
- Class II
- Class I Malocclusion
- Class III Malocclusion
- For correction of
- As a Habit breaking appliance
- As a Retention appliance
- In patients who snore during night
- In patients with obstructive sleep apnoea
- For space maintainers

Contraindications

- Non-growing patients
- Normal Mandible
- Severely periodontal
- Patients with nasal obstruction
- In case of Crowding

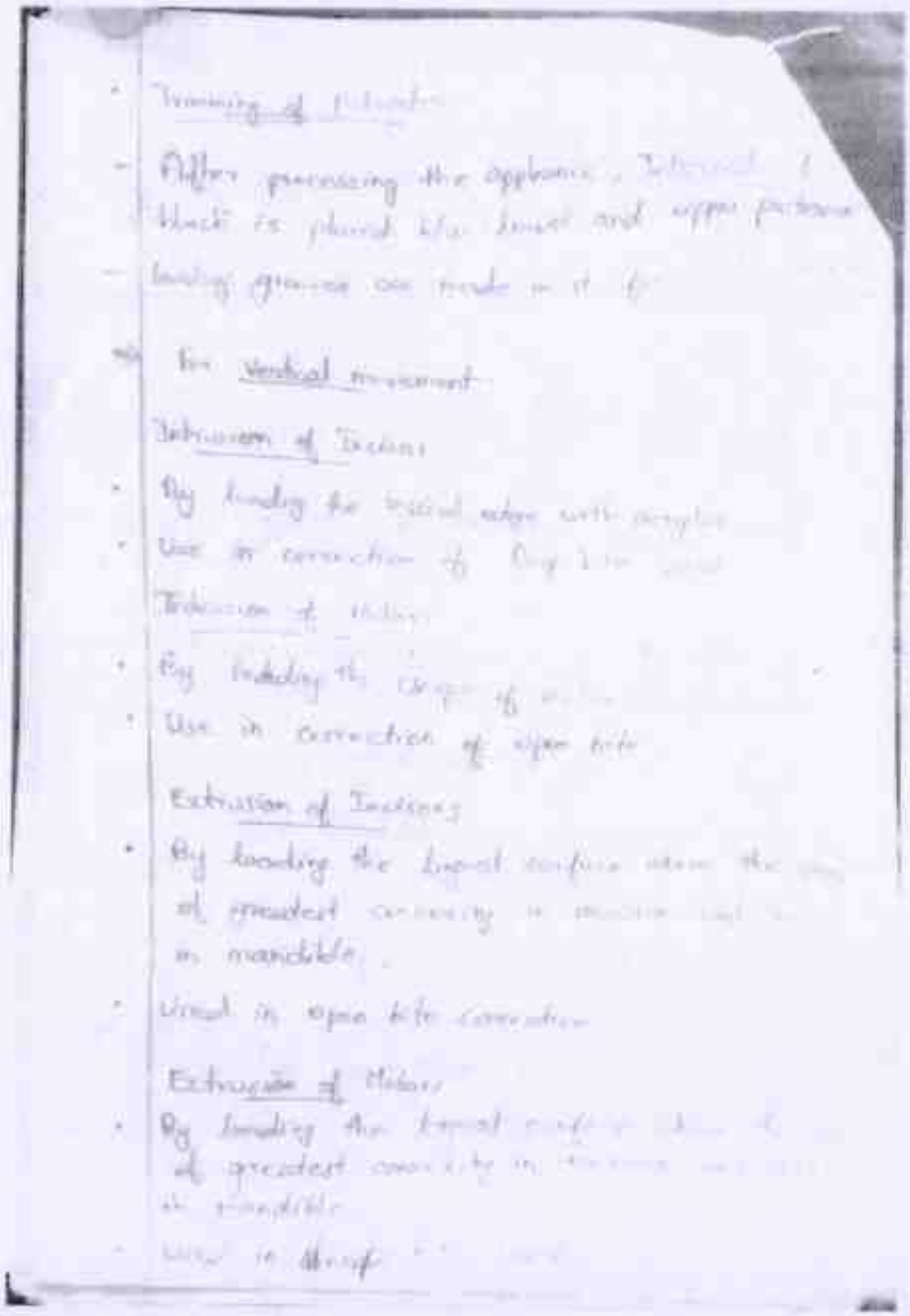
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Construction of Activator Appliance

- Impression taking
- Preparation of Study model and working model
- Registration of construction bite
  - Horizontal bite
  - Vertical bite
- Horizontal bite → Mandible advancement by 5-7 mm
  (H-activator) Vertical opening by 2-3 mm
- Vertical bite → Mandible advancement by 3-5 mm
  (V-activator) Vertical opening by 5-7 mm
- Vertical opening → Deep bite cases
- Retrusive bite → Class III cases
- Articulation of model
- Wax up and wire bending
  - Labial bow is made using 21 gauge stainless steel wire or an active component
- Deflasking
- Processing of Appliance

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- Trimming of Models
- After processing the appliance, Intercuspal position of the models is placed in the lower and upper portions of the articulator. Grooves are made in the lower portion of the articulator.

For Vertical movement

Intrusion of Incisors

- By loading the incisal edges with acrylic
- Used in correction of deep bite cases

Intrusion of molars

- By loading the occlusal surface of molars
- Use in correction of open bite

Extrusion of Incisors

- By loading the lingual surface where the point of greatest convexity in the lingual surface in mandible.
- Used in open bite correction

Extrusion of Molars

- By loading the lingual surface where the point of greatest convexity in the lingual surface in mandible
- Used in deep bite

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⇒ For Antero-posterior movement

Retraction of incisors

- By [illegible]

Retraction of incisors

- By trimming off the occlusal & incisal surfaces
- When labial bow touches the teeth, it is called active bow

⇒ For Distal movement of molars

- Guide planes [illegible] of molars
- Used in distal movement of molars in Class II cases
- Used in distal movement of molars in Class III cases

⇒ For Mesial movement of [illegible] molars

- Guide planes [illegible] the Disto-lingual surfaces of molars

⇒ Transverse Movement

- Lingual [illegible] should be in contact [illegible]

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4 Notes

Modifications of Activator Appliance

- Bass activator
- Bow activator
- U - loop activator
- Kinetor
- Palate free activator
- Clark's Open activator

2.

INTERCEPTIVE ORTHODONTICS

Contents:

- Introduction
- Definition
- Various Procedures

Definition:

- Defined as all the [illegible] is employed to recognize and eliminate or [illegible] malocclusion and malposition of dento facial complex

Procedures

- Serial Extraction
- Correction of developing Occlusion
- Control of abnormal Habits
- Space Regainers
- Minor surgery
- Removal of soft tissue and bony barriers to facilitate the eruption of teeth

Serial extraction

- Defined as interceptive orthodontic treatment which is instituted at early mixed dentition period when we can recognize potential irregularity and malposition in deciduous dental complex and correction by planned and sequential extraction of first deciduous teeth
- To guide the eruption of permanent teeth in more favourable position

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Rationale of Serial extraction

- Arch-length and Tooth material discrepancy
- [illegible]

Indications

- Class I [illegible] minor relative [illegible] to skeletal and muscular system
- Straight profile with [illegible]
- [illegible] discrepancy [illegible]
- Growth is not enough to overcome the arch length tooth material discrepancy

Contraindications

- Class II Malocclusion
- Class III Malocclusion
- Minor Arch length - Tooth material discrepancy
- Spaced dentition
- Midline Diastema
- Open bite
- Deep bite
- Dilacerated teeth.
- Extensive Caries

Advantages

- Tooth Movement is Physiological
- Psychological [illegible]
  can be treated assisted in [illegible]
  malocclusion and early age
- Health of investing tissue is preserved
- Proper oral hygiene is possible that reduces the risk of caries
- Eliminate or reduce the duration of Fixed treatment

Disadvantages

- [illegible] Fixed treatment
- Ditch / space b/w Canine and [illegible]
- Extraction of Buccal teeth results in Deepening of bite
- Extraction Canine open bite finger sucking habit
- Axial inclination of teeth

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Methods of canine extraction

Dewel's Method

- Initially deciduous canine is extracted at 8-9 years to make space for the alignment of incisors
- After 1 year, Deciduous molar is extracted
- Then Premolar is extracted, the canine erupt in their place.

Tweed's Method

- Extraction of deciduous molar is done followed by simultaneous extraction of deciduous premolar and deciduous canine.

Nance method

- Extraction of deciduous molar followed by extraction of premolar and

- Extraction of Developing Canine

- Extraction of entire primary dental arch malocclusion.

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- By using Catalan's appliance
- Catalonic appliance should be used more than 3 weeks
- Expansion appliances can also be used for cross bite correction such as Coffin spring, Expansion screw, RPE etc

Correction of Posterior Crossbite

- By using Rapid maxillary expansion appliance
- Quad helix appliance
- Expansion screw can be used for posterior crossbite correction

- Control of Abnormal Habit

Habit is defined as learned pattern of muscle contraction which is complex in nature

Thumb sucking as Habit control

- Psychological approach
  - Beta hypothesis theory by Ainlay

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- Reminding aids like thumb sucking or nail biting habits to prevent
- Habit breaking aids
  - Removal / fixed
  - Flat crib thumb sucking appliance
  - Vertical rail thumb sucking
  - Vertical bake appliance

Control of mouth breathing habit

- By use of oral screen

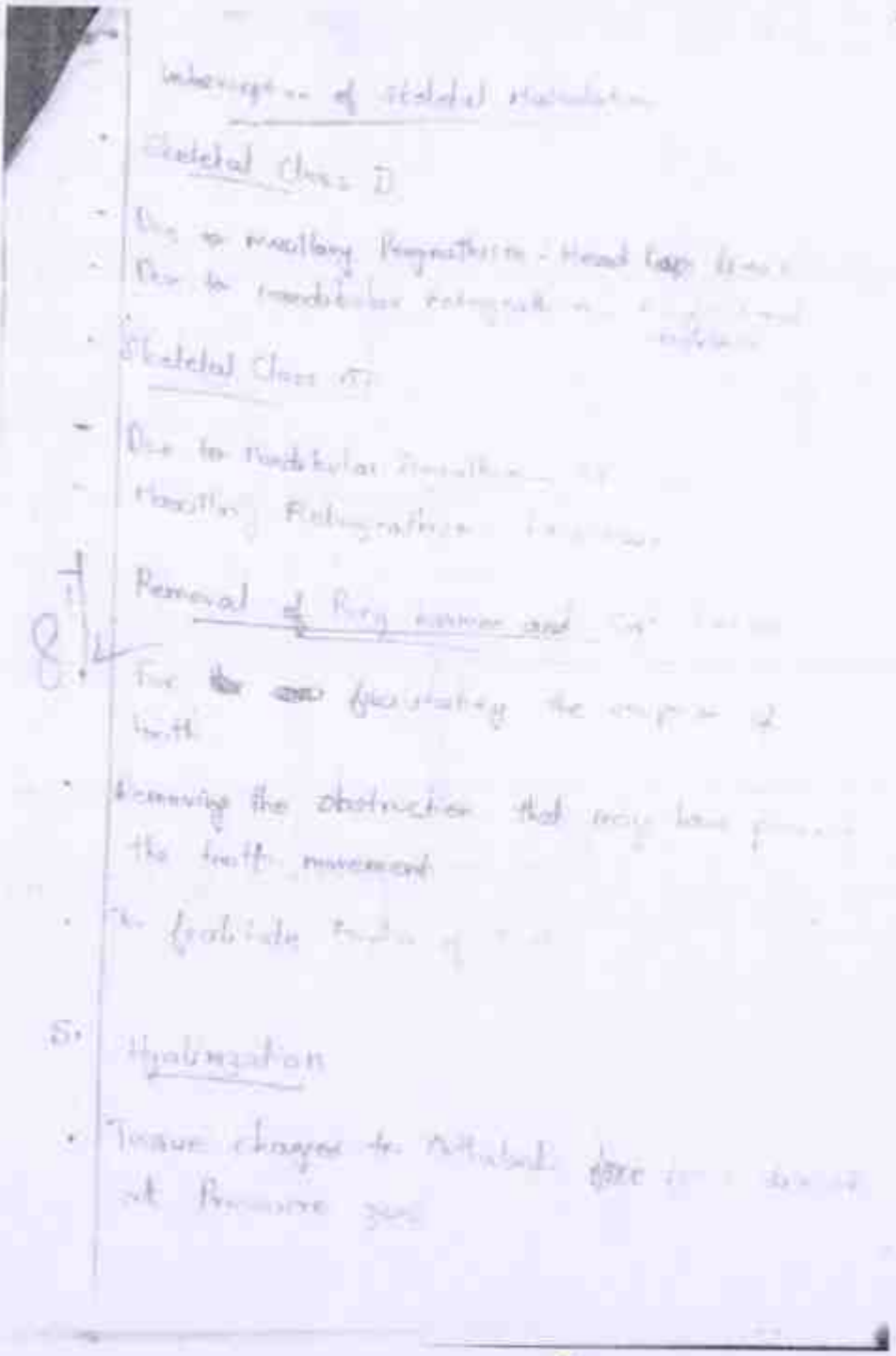
Control of finger thumb habit

- By use of finger cots

- Space Regainers

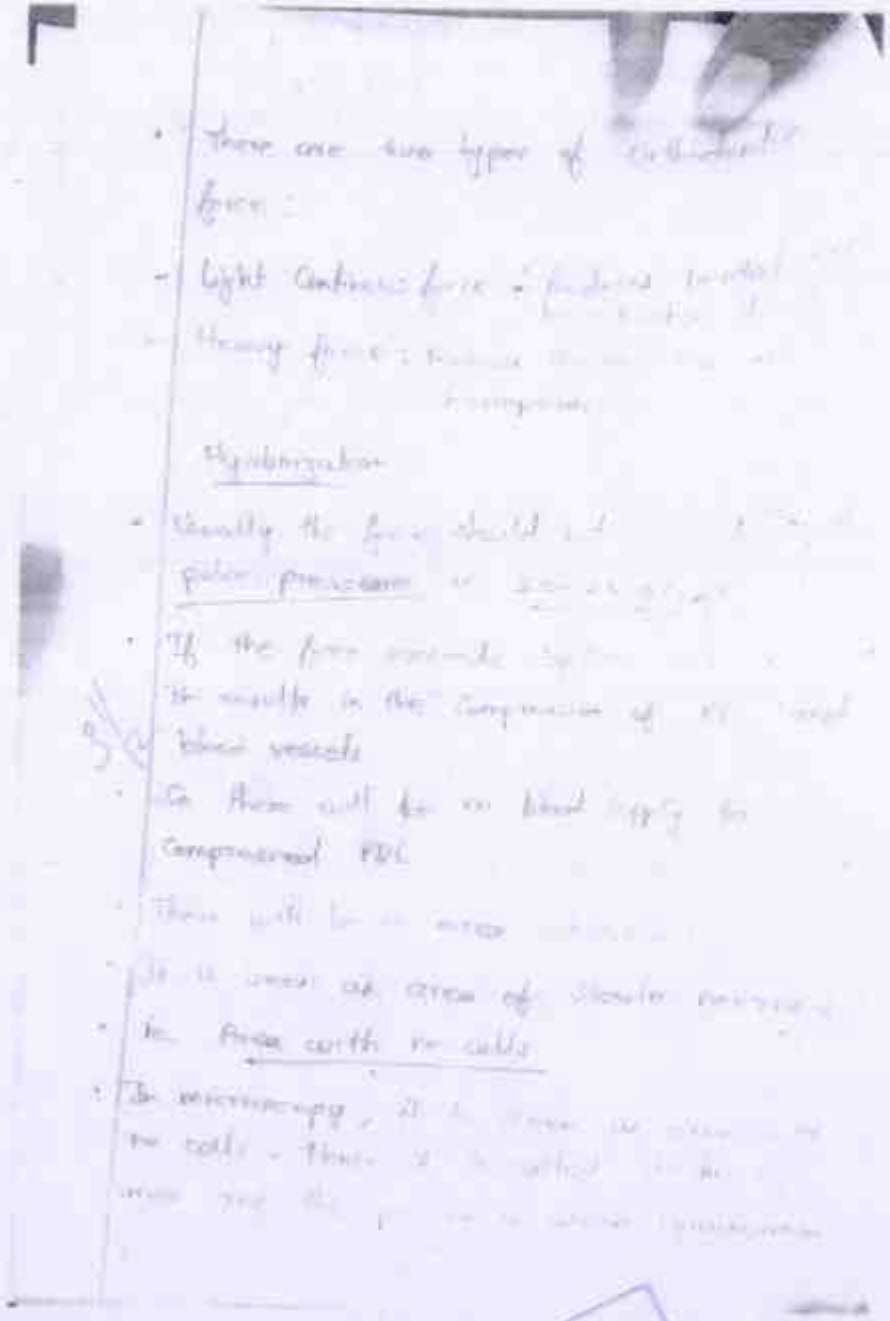
- Interceptive orthodontics can be
  regaining of space
- Nance appliance which is a unilateral appliance
  regains space which is given using early childhood
- Lower block which is a bilateral appliance
  can also be used to regain

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- There are two types of [illegible] force :
- Light Continuous force - [illegible]
- Heavy force : [illegible]

Hyalinization

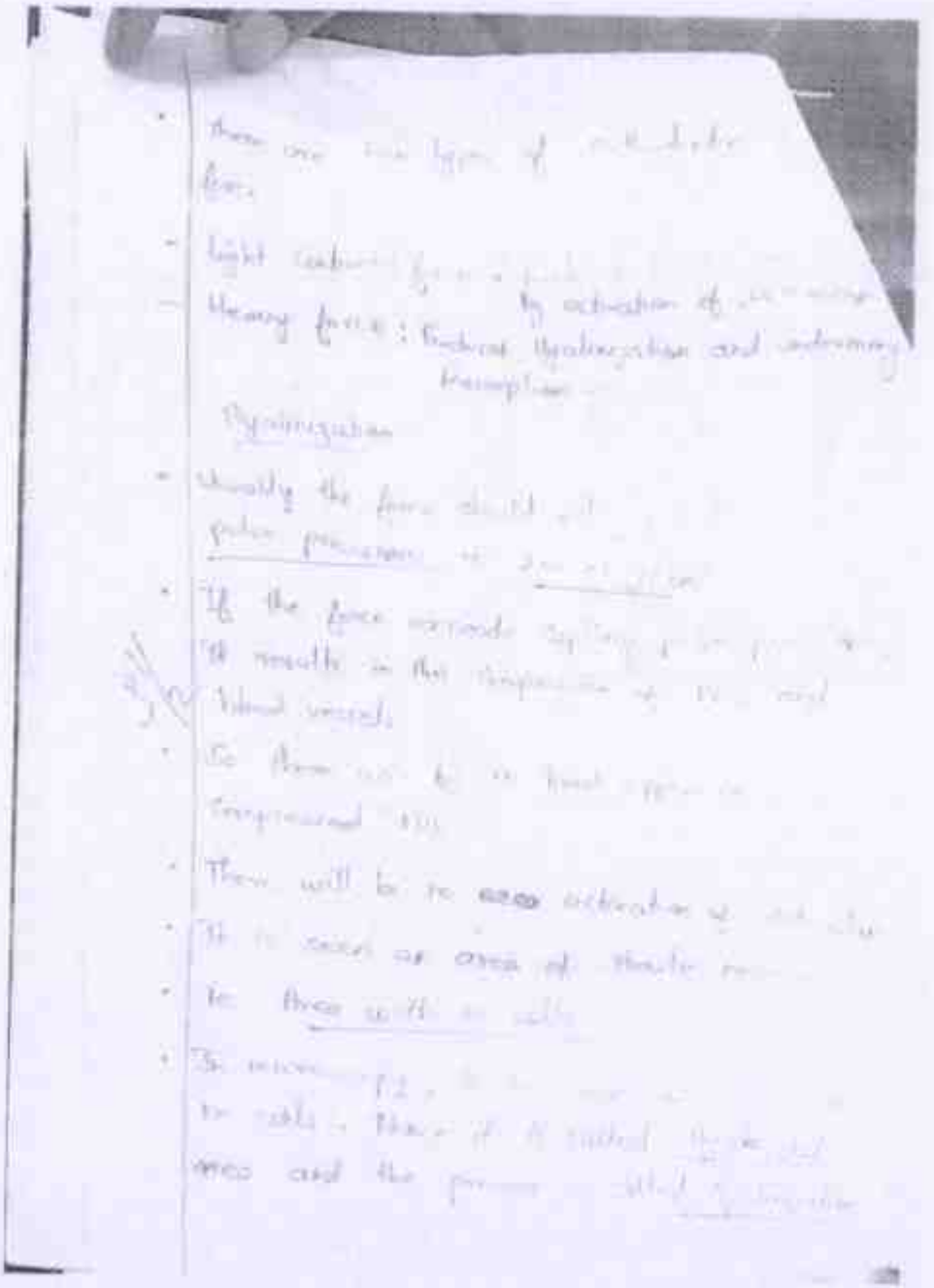
- Usually the force should [illegible] pulse pressure [illegible]
- If the force exceeds [illegible] it results in the compression of [illegible] blood vessels
- So there will be no blood supply to compressed PDL
- There will be [illegible]
- It is known as stage of [illegible]
- In Area with no cells
- In microscopy, [illegible] no cells - there [illegible]

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- There is no activation of Osteoclast
- It is a Reversible process
- It is not related to Alveolar bone
- It last for 2-3 days after application of Heavy force.
- After than redermining resorption takes Reasons
- Anatomical factors -
- Clefts / opening
- Mechanical factors -
- Type of tooth movement
- Amount of force imparted
- Histological features
- Hyalinosis
- Cell death
- Compressed Collagen fibers
- Dense inflammatory infiltration in connective tissue

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Dentistry. BS
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Oral Pathology

34½/70

1. Mucocutaneous lesion

→ Oral Lichen Planus
→ Pemphigus Vulgaris
→ Pemphigus foliaceus
→ Erythema multiforme
→ Psoriasis
→ Sjogrens syndrome
→ epithelial dysplasia.

Oral Lichen Planus

Most common mucocutaneous lesion
Affects both skin and mucous membrane
Described as bilateral white striations / patches on either side of oral mucosa mediated by circulating autoantibodies.

Etiopathogenesis

It is T cell mediated
Cytotoxic CD8 T cells triggers the apoptosis of oral epithelial cells
This may affect adjacent cells
Direct this role the developing lesion.

Clinical Features

Age : All age groups can affected

Sex : Females are predominantly affected (1.4 : 1) ratio

Site : Buccal mucosa, tongue, lip, gingiva, palate.
Extra oral : Flexor surface of wrist, arms
Inner aspect of knee and thigh.

Skin lesions are small flat-topped papules, which is angular. They may diffuse or coalesce to form discrete lesions. It is surrounded by fine glistening scale. Centre of the papule may be slightly umbilicated. At the periphery it is surrounded by a greyish white line known as 'WICHAM'S STRIAE'

Oral lesions :-

Oral lesions appears first before cutaneous lesion. If there is only oral lesion if there is no any other finding anywhere in the body it is known as Isolated lichen planus.

They may be appear as reticulating white or greyish/ velvety lines in an reticular or annular arrangement to form reticular patches or streaks.

Oral lesion is of 3 types - Reticular
Erythematous
Atrophy.

The interconnection seen in between two intersecting lines is in reticular form is known as 'STRIAE OF WICHAM'

Erythematous

The lesion appears as red.

It is surrounded by a erythematous zone.

Histopathology

→ Atrophic epithelium with mild or no rete ridges

→ Saw tooth rete pegs is one of the characteristic feature of lichen planus.

→ Dense lymphocytic infiltration in connect tissue (it is thick)

→ Civatte bodies are present.

→ No lymphocyte trafficking cells or fibrous tissue.

→ Separation of inflamed epithelium from fibrous seen seen.



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2 Salivary Gland Tumors

A. Benign
B. Malignant

Benign ⟹ ① Adenomas

- ⊙ Pleomorphic Adenoma
- ⊙ Adenolymphoma (Warthin's tumor)

⑤ Carcinoma

- ⊙ Acinic cell carcinoma
- ⊙ mucoepidermoid carcinoma
- ⊙ Adenoid cystic carcinoma
- ⊙ Adenoid carcinoma

Malignant ⟹ Adenoid lymphomas.

Pleomorphic adenoma

→ mixed tumor
→ Contains both myoepithelial and ductal muscle cells
→ It shows various morphological diversities, hence the name pleomorphic adenoma
→ Most common benign tumor effect the oral cavity.

Histogenesis

Hebner :- myoepithelial cells are responsible for morphological diversity of the pleomorphic adenoma.

Regezi & Kolsaki :- Contain both myoepithelial cells and intercalated duct neural cells, which are responsible for it.

Mc Dandrick :- Neoplastically altered epithelial cells shows multiple differentiation capacity.

Clinical Feature

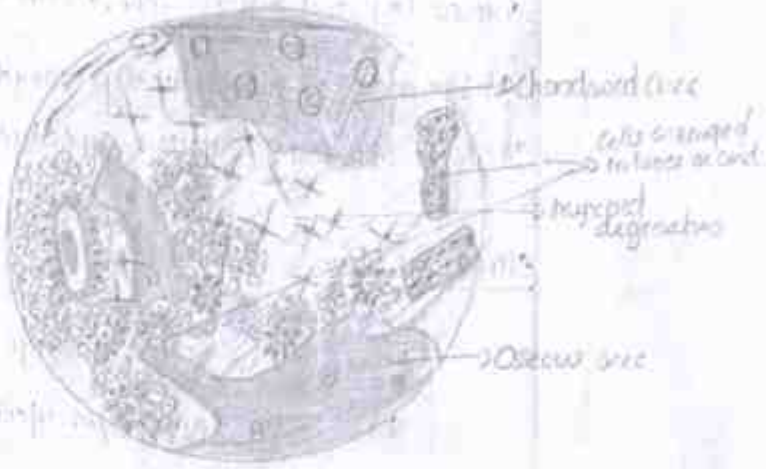
Age :- 30-50 years of age.

Sex :- Female predilection (2:1)

Site :- Buccal Intraorally - palate is commonly affected also lip, tongue, floor of mouth.
Extraorally - ~~Parotid~~ skin of mouth.

- It is painless slow growing lesion.
- Quiescent nodule formation is characteristic feature.
- This nodule is shows no fixation
- Not fixed to underlying muscle or mucous membrane.
- Ultimately nodule become ulcerated due to infection.
- Pain to the jaw is the presenting complaint.
- Enemia are present.

Histopathology of pleomorphic adenoma



6

→ Cells shows various properties
→ Chondroblastic area
→ osteoblastic area
→ Myxoid degeneration
→ Polygonal epithelial cells are arranged in tubules or strands.

7) Neurofibroma and Neurilemmoma

Neurofibroma :



→ Also known von Recklinghausen disease.

→ Types = Pigmented : contain melanin.
Erythematous
Plexiform

→ Commonly in children & young adults.

→ Seen in head & neck regions.

→

Another one type describes as a bag of worms appearance.

Neurilemmoma :

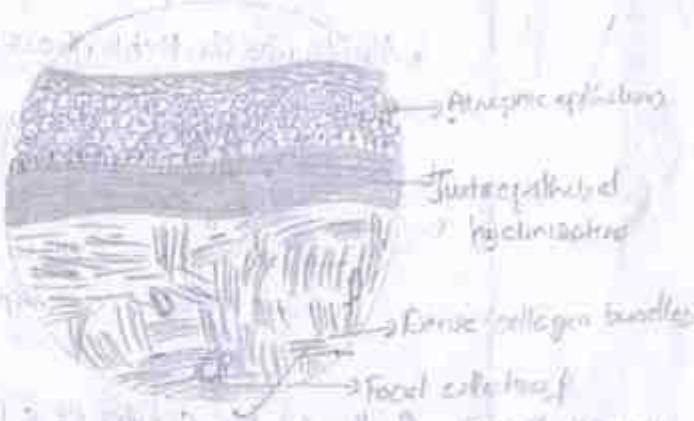
Arises from Schwann cells.

Also known as Schwannoma

Histologically 2 type of cells Antoni type A &
Antoni type B.



8. Oral Submucous Fibrosis



→ Atrophic epithelium - Stratified squamous

→ Below the epithelium, a layer of hyalinization is seen, that is Juxta epithelial hyalinization

→ Connective tissue contain dense collagen bundles

→ Focal collection of inflammatory cells.

→ No lymphocytic or inflammatory infiltration

→ Separation b/w epithelial cells &

11. Lip Print

→ It is also known as cheiloscopy

→ The grooves and wrinkles on the lip known as 'Sulci labiorum superiorum' which produce lip prints.

→ Use of lip print technology is crucial in forensic odontology ——3:

→ Used in sex crimes, child abuse etc.

→ Traditionally, lipsticks are used.

→ For color visualization, other materials used are Aluminium powder
Cobalt oxide
Nile red.

Classification :- ① Clean cut Vertical curvilinear of entire lips



② Same as that of type I but not entire lip.



③ Intersected type



④ Branched type



⑤ Reticular type



⑥ Undifferentiated.

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13. Histopathology of Calcifying Odontogenic Cyst



→ Intact basal cell layer consisting of ameloblast like cells.

→ There is no cell to cell adhesion

→ Spinous cells are resembling Stellate reticulum

→ Spinous cells shows discrete proliferation.

→ Ghost cells are characteristic feature

They are altered epithelial cells

Eosinophic in nature.

Oval or round in shape.

Arised from coagulative necrosis of odontogenic epithelium

→ Calcifications are seen.

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5. Age Estimation

Classified into 3

① Pre natal, natal & Early postnatal

② children and adolescents.

③ Adults.

Age estimation in ~~children and~~ pre natal stages

It is done through the calcification ~~checking~~

Time of calcification for each tooth is different.

In children and adolescents

- Demirjian's method.

~~He~~ He classified some features for age estimation

Attrition of actual occlusal surface due to mastication (A)

Periodontitis (P)

2° dentin formation (S)

Dentin opposition (C)

~~Root~~ Translucency of Root (T)

Root resorption (R)

$P_0 + S_0 + C_0 + R_0 + T_0 = X$

X is the age.

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Age = 11.93 + 4.56 x x = Sisn

± 1.43 years is the age is estimation.

In Adults age estimation is done by Gustafson's theory.

He assigned calcification process of teeth from 0 to 9.

0 → Calcification yet to begin.

1 → Tooth calcification

2 → Calcification completes (Tooth)

Scores are given

Dentin Transluency method

It is used for age determination by using dentin translucency.

4. Paget's

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4. Paget's disease

Chronic progressive disease of the bone characterised by abnormal & excessive remodelling of bone, with markedly increased osteoclastic activity.

⟹ Accelerated but abnormal bone growth with increased vascularity to the bone

As a result, bone becomes enlarged, weaked and process deformity with complications

Etiology

Exact cause is not known
Some gene (mutation)
Viral or other infections

Clinical features

Age - Above 50 years with increased incidence with age. Rare below 30 years

Sex - Both male & female equally affected

→ It is usually asymptomatic but sometimes symptoms like bone pain, bone deformity, osteosarcoma & neurologic are shown.

→ Presenting complaint is bone pain which worse at night
→ Enlargement of skull
→ Frontal bossing.
→ Platybasia - soft bones at base of skull show
→ Hearing impairment.

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Oral manifestations

→ Enlargement of jaw.
→ widening of alveolar ridge
→ maxillary bones are most affected than mandible
→ Flattening of soft palate.
→ Tooth shows movement
→ malposition of tipping of teeth
→ Discolored occlusion

Radiography

Shows cotton wool appearance
Hypercementosis
Loss of lamina dura is seen.

Histopathology

Basophilic reversal lines for jigsaw or 'mosaic' pattern.
Osteoblastic rimming present
Osteoclast are present
Irregular woven bone.



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6. TNM staging

T (Size of primary tumor)

T_x → Size of 1° tumor cannot assessed

T_0 → No evidence of 1° tumor

T_{is} → Carcinoma in situ

T_1 → Size of 1° tumor less than 2cm in greatest dia

T_2 → Size of 1° tumor greater than 2 in greatest dia

T_{4a} → Up: resectable.

$T_{4b<}$ → Oral cavity

T_{4b} → Unresectable.

N (lymph node)

N_x → LN metastasis cannot be assessed.

N_0 → No evidence of LN metastasis

N_1 → metastasis of LN in single ipsilateral node less than 3cm in dia

N_{2a} → metastasis of LN in single ipsilateral node >3cms but <6cm

N_{2b} → metasis of LN in multiple ipsilateral nodes >6cms in greatest diameter

N_2c → metastasis of LN in single bilateral nodes >6cms

N_2 → metastasis of LN in multiple nodes greater than 6cms in greatest dia.

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M (distant metastasis)

M_X → Distant metastasis cannot be assed.

M_0 → No involvement of distant metastasis

M_1 → Presence of distant metastasis

Staging

Stage 0 → T_0 N_0 M_0

Stage I → T_1 N_0 M_0

Stage II → T_2 N_0 M_0

Stage III → T_3 N_0

Stage IVa → T_1, T_2 / T_3 / Any T N_1 M_0

Stage IV b → Any T N_2 M_0

Stage IV c → Any T Any N M_1

A

2. Oral dysplasia effected tongue

① Fissured tongue.

② Median rhomboid glossitis.

③ Aglossia

④ Macroglossia.

Aglossia → Absence of tongue.

Macroglossia → Size of tongue is bigger than normal.

Fissured tongue → fissures are seen.

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12. Odontoma

It is a ~~de~~ hyperplastic ~~to bone~~ lesion in bone.
Commonly seen in children.

clinical features

Age :- 2nd - 3rd decade of life.
Sex :- Females are commonly affected.
Site :- Mandible > maxilla.

→ Painful lesion.
→ Rapidly progressing.
→ Bone pain is the common symptom.
→ Patient is unable to eat & drink properly.
→ Tooth ache is also seen.
→ Swelling of jaw in affected side.

Radiographic features

Multilocular radiolucency.
Thick and well defined corticated margin.

Treatment

Enucleation
Surgical correction.

10. Reed sternberg cells

They are specialised cells.

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15. Pindborg's tumour

Also known as Calcifying epithelial odontogenic tumour.



→ Ghost Ring like structure called Ghosting cells are seen.

→ Amyloid like material is seen.

→ Polyhedral cells with hyperchromatism.

→ Prominent nucleus.

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16. Tic douloureux

It is trigeminal neuralgia.

Affects the 5th cranial nerve.

Classified into two types — Central trigeminal neuralgia
Peripheral trigeminal neuralgia

Central : Affects the upper motor neuron lesion.
Paralysis of lower part of face.

Peripheral :- Lower motor neuron lesion.

Clinical features - Bell's palsy is the most common.

- Frontal bossing
- Drooling of saliva
- Drooping of mouth
- Absence of lacrimal secretion.
- Nasolabial fold absent.
- Inability to close eyes.



DR MOTI KUMAR. K.P

Trigeminal neuralgia – clinical features

is extremely painful

Pain last for few seconds to 1 or 2 minutes.

Pain is severe

Patient cannot tolerate

~~Touched~~ Patient becomes touched.

The pain increases while trigger zones get activated.

Trigger zones are seen in face where facial trigeminal nerve supplies.

Triggering zones gets activated when they are stimulated.

- Slight breeze
- Shaving
- Crying
- Smiling
- Touch in trigger zones
- Applying ~~wash~~ face wash

These will lead to stimulate the trigeminal neuralgia and cause severe pain.

Treatment

Carbamazepine is given.

Analgesics for pain.

DR. KOUTHIMAR KB

Mechanical methods of gingival displacement

* Include
  - → Rubber dam
  - → Cotton rolls
  - → Magic foam

Rubber dam

- It is introduced by Barnum
- It can be used for gingival displacement and fluid control
- It is usually indicated during tooth preparation and restorative procedures.
- Rubber dam consist of
  - → rubber dam sheet
  - → rubber dam forceps
  - → rubber dam clamp
  - → Punch
  - → Frame

Other accessories include
  - → Cotton rolls
  - → cloth or tapes
  - → Dental floss.

Techniques used in rubber dam placement are
- → Clamp before sheet
- → Both rubber dam sheet and clamp together
- → Split - dam technique.

② Plasma mechanical methods

It includes gingival cord, which is a thread like strip placed into the gingival sulcus before placing the impression material. Gingival cord can be classified as

- Impregnated or plain
- Retraction or non retraction
- Twisted or braided

Gingival cord can be placed in two methods

- Single cord technique
- Double cord technique

Cords may be impregnated with various substances as aluminium chloride

• Single cord technique

In this technique: the gingival cord is placed into the gingival sulcus for 7-8 minutes

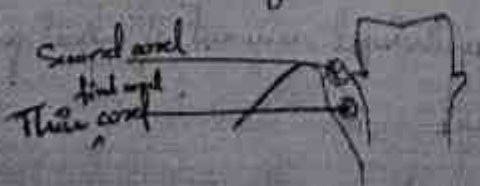
It cause minimum gingival displacement.

• Impression is taken immediately after the removal of the cord

• Double cord Technique

In this technique a first cord is placed into the gingival sulcus and which helps to displacement and hemostasis. Second cord is placed over the first one.

• Impression is taken immediately after removal of the second cord and the first cord remains in the sulcus.



Placement of cords in double cord Technique

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(3) Immediate Denture

Immediate denture is a type of complete denture prosthesis that is fabricated immediately after removal of the natural teeth. - GPT 8

Techniques in Fabrication of an Immediate Denture include
→ Single impression technique
→ Double impression technique

Steps in Immediate Denture Fabrication

- Primary impression is taken using hydrocolloid alginate impression material
  ↓
- Preliminary cast is poured
  ↓
  Single Impression Technique
  Custom tray is fabricated on the distal extension base area and wax added where are waste
  ↓
  Single impression technique
  Impression is taken using zinc oxide eugenol or polyvinyl siloxane impression material
  ↓

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Double line impression Technique

↓

Custom tray is fabricated on the divided stones base area and the remain the surgical surface of anterior teeth and canine visible are made

↓

Impression are taken using alg-zinc oxide eugenol impression material

↓

Once the impression is set, without removing the first impression, second impression is taken over the first impression with alginate impression material.

It is also called as pick up impression

↓

Then after this impression set, it is removed and reading and boxing done

↓

Master cast is made

↓

Jaw relation done
- Face bow transfer

↓

Articulation and
Teeth setting

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↓
Tmj is
↓
Dictate functions

(1) Occlusion

Occlusion is the static relationship between maxillary and mandibular arch when they are in functional contact
- GPT8

Concept of occlusion in final prosthodontic include
→ Balanced occlusion ← bilateral / unilateral
→ Monoplane occlusion
→ Pathological occlusion.
→ Non-balanced occlusion.

Balanced Occlusion

- Balanced occlusion in which is determined by various factors which include
→ Teeth
→ Male attachments.

- In balanced occlusion, teeth are in

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(A) Resistance form

→ Maintenance of dislodging forces
→ Preparation geometry
→ Path of placement/function
→ Roughness of surface irregularities
→ Method of cementation
→ Type of luting agents

(B) Retention form

→ Maintenance of dislodging forces
→ Preparation geometry
→ Type of luting agent
→ Path of insertion

(C) Structural Durability

→ Occlusal reduction
→ Axial reduction

(III) Aesthetic Principles

→ All ceramic crown
→ Partial veneer crown
→ Metal ceramic crown

DEPARTMENT OF PROSTHODONTICS
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(13) Indications and Contraindications of Dental implants

Indications

Tooth replacement

→ Single tooth placement
→ Multiple tooth placement

In patients with less complete denture acceptance

→ Increased gag reflex
→ Difficulty to maintain complete denture
→ Increased ridge resorption
→ Artificial appearance.

Contraindications

Absolute contraindications

→ High radiation therapy
→ Drug abuse
→ Below 18 years of age
→ Hematological disorders
→ Cardiovascular diseases.

Relative indications

→ Pregnancy
→ Patients with surgery contraindicated
→ Psychological disease
→ Leukemia.

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(85)

Posterior palatal seal

Posterior palatal seal is the soft tissue area present between the soft and hard palate

Posterior palatal seal is a ~~triangular~~ space present b/w hard palate and soft palate into which some portion the hamular hamular notch can be applied by the complete denture patient's

It is seen in between two imaginary lines

→ Anterior vibrating line

→ Posterior vibrating line.

Anterior vibrating line

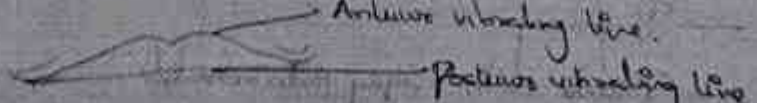
During secondary border moulding procedure, PPS can be made by identifying the two vibrating lines by "Valsava Maneuver" method.

Anterior vibrating line can be registered by asking patient to say 'ah' in short loud voice repeatedly.

- It is not a straight line
- It forms ~~cupid's bow~~ shape

Posterior vibrating line can be registered by asking pt to say 'ah' in short but in normal way.

It is a curved line.



Methods of recording RPS

(1) Scraping of master cast
   → Functional method
   → Arbitrary method.
(2) Impression method
   → with fluid wax
   → base fitting impression.

14) Palatal Bar Major Connector

- It is major connector used in Arbitrary method
- It is a metallic bar with narrow waved oval cross section which passes through the palatal surface from one side to opposite side
- It is used in Kennedy's class II and class III both replacement cases.
- Palatal bar is thicker in the center
- It should not be placed anterior to second premolar as it may cause patient discomfort

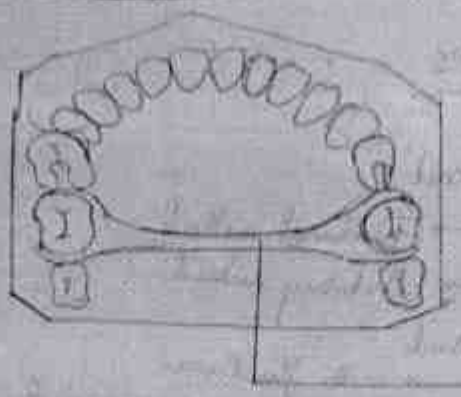
Disadvantages

- Bulkier
- Tongue interference case if placed inferior to anterior to 2nd premolar

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(4) Neutral zone

- Neutral zone is the area zone in which the force or pressure applied from the muscles of cheek and those from the tongue are equalized.

- In neutral zone is force is under equilibrium

- The opposing forces from the tongue and cheek muscles are get balanced in this zone

- It is seen the cervical line of teeth

Cheek muscles includes

- Buccinator muscle
- Orbicularis oris
- Mandibular.
- Mandible muscles



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Objectives of the impression making in Complete Denture

The fabrication of complete denture prosthesis, impression include
→ Preliminary impression
→ Secondary impression

Preliminary impression

Preliminary impression is first impression taken. It is usually taken with hydrocolloid alginate impression material.
Primary cast is obtained from this and on this special tray / custom tray is fabricated.
In this custom tray secondary impression is taken.
Secondary impression is given to produce the anatomical structures of the maxillary and mandibular arches with more accurately.

Objectives of impression taking include
→ For proper registration of anatomical structures like ridge contour, vestibular depth, palatal depth.
→ Identification to identify presence of any exostosis or tori

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- To ensure any undercut undercut is primary cast
- Impression should be impression material should flow right in the finishing line mouth.

(x) Arcon Articulator

Condylar guidance is present in the upper member and condylar element is present in lower member.

Path of pivot is straight.

Non arcon articulator

- Condylar guidance is present in lower member and condylar entrapment in upper member.

(xi) Types of Indirect Retainer

Denture base plate

→ acrylic Non-metallic ← acrylic
→ Metallic
→ Veneer

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(9) Overdenture

Overdentures are fixed or removable dental prosthesis that placed over the natural teeth / tooth root / implant supported of the teeth to provide stability and support for the dental prosthesis.

It can be ——→ Implant supported Overdenture
——→ Tooth supported overdenture

Indications

- In patients with reduced alveolar ridge resorption.
- To rehabilitate severely
- When patient needs to retain the remaining natural teeth
- For periodontally weak cases.

Contraindications

- Extensive caries cases,
- Presence of undercuts in the ridge
- Torii or bony projections.

Advantages

- Reduced ridge resorption
- Psychological goal of not all natural tooth is lost
- Caries can be controlled

Disadvantage

- Time consuming
- Cost.
- Difficulty in maintaining oral hygiene.

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11) Kennedy's classification

- ~~Bilateral edentulous~~

Class I : Bilateral edentulous space area with remaining natural teeth anteriorly



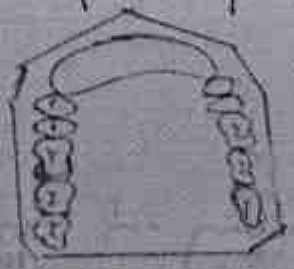
Class II : Unilateral edentulous area with remaining natural teeth anteriorly



Class III : Unilateral edentulous ~~ey~~ area with remaining natural teeth present both anteriorly and posteriorly



Class IV : Bilateral edentulous area crossing the midline with natural teeth present posteriorly



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Roll no: 39
Part II

Prosthodontics

RE-TEST

41½/70

1) Direct retainer

The component of a removable partial removable dental prosthesis used to retain the dental prosthesis and prevent dislodgement by forces including cross-functional clasp and intracoronal attachment

Classification

Direct retainer

Intracoronal — Attachments

Extracoronal — clasp assembly — Attachments.

Circumferential clasp — Bar clasp

Cast circumferential — Combination.

Direct retainer

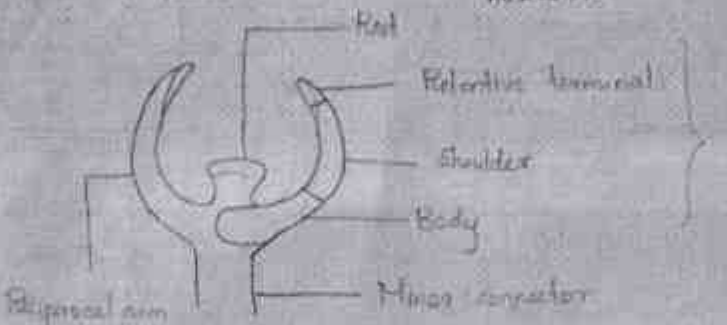
Intracoronal

Extracoronal

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Clasp assembly.

The component of a direct retainer that encompass the abutment tooth by more than 180° and prevent including opposite tooth movement through at least the extension of clasp and prevent displacement by functional, horizontal and rotational forces.



Components.

Retentive arm — It is a part of clasp assembly that provide retention. The retentive arm is usually present in the buccal surface and it engages the undercut.

It consist of

Retentive terminal : It is the terminal part of retentive arm, It is more flexible and engages the undercut Usually present below starts from the above the height of contour and terminate below the height of contour

Shoulder :- It connect the retentive terminal to body It is placed at tip has a limited flexibility

Body : It is the rigid part, less flexible, passes through the height of contours, It connect the

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stability and not to the minor connector.

First :- occlusal, incisal or lingual rests. It provide a vertical support, prevent tissue ward movement and movement of the denture against the basal tissue or underlying tissue. Horizontal stabilization.

Reciprocal arm :- The lateral forces originated and transmitted to the retentive arm passes through the occlusal rest over the fulcrum is counterbalanced by the retentive arm passes along the retentive to plane. reciprocal. Reciprocal arm is passing along the height of contour in the opposite direction of retentive arms. Its lingual aspect.

2) Direct Methods of gingival retraction.

The deflection of marginal gingiva away from the tooth is termed as gingival retraction.

1) Mechanical technique.

It is also known as physical technique.

It include.

1, Copper band.

A copper band is adjusted to the contour of gingiva is placed over the in to the gingival contour.

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(2) Laser surgery

Laser surgery is used to retract gingiva.

3) Immediate denture.

Immediate denture is a type of overdenture. Immediate dentures are given immediately after tooth preparation or implant placement. Here the immediately after the procedures involving removal of tooth or ~~tooth~~ ridge containing the marginal ridge the implants are placed.

The overdenture is a removable denture that cover or placed over one or more abutment tooth, root or implant.

~~Immediate dentures are given immediately after~~ take In case of immediate denture the impression is taken immediately after extraction, tooth preparation or implant placement without waiting for a time to ~~healing~~ heal.

- It Immediate impression is taken after extraction.
- Immediate replacement of denture before healing of extraction socket.
- It helps in preserving the vertical diamension, bone height.

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④ Double cord retraction :

The only difference is a small cord is used initially above which the second cord is placed and the smaller diameter cord is retained during impression procedure. ✱ Compromised gingival health condition.

5) Chemical method.

Here the chemicals are used like aluminium chloride it action is injected to the sulcus and it retract the sulcus gingiva and provide hemostasis. It act by less transient inflamin. Remove it with after 2-4 minute. Minimal retraction may be obtained.

⑤ Surgical method

① Gingival curettage.

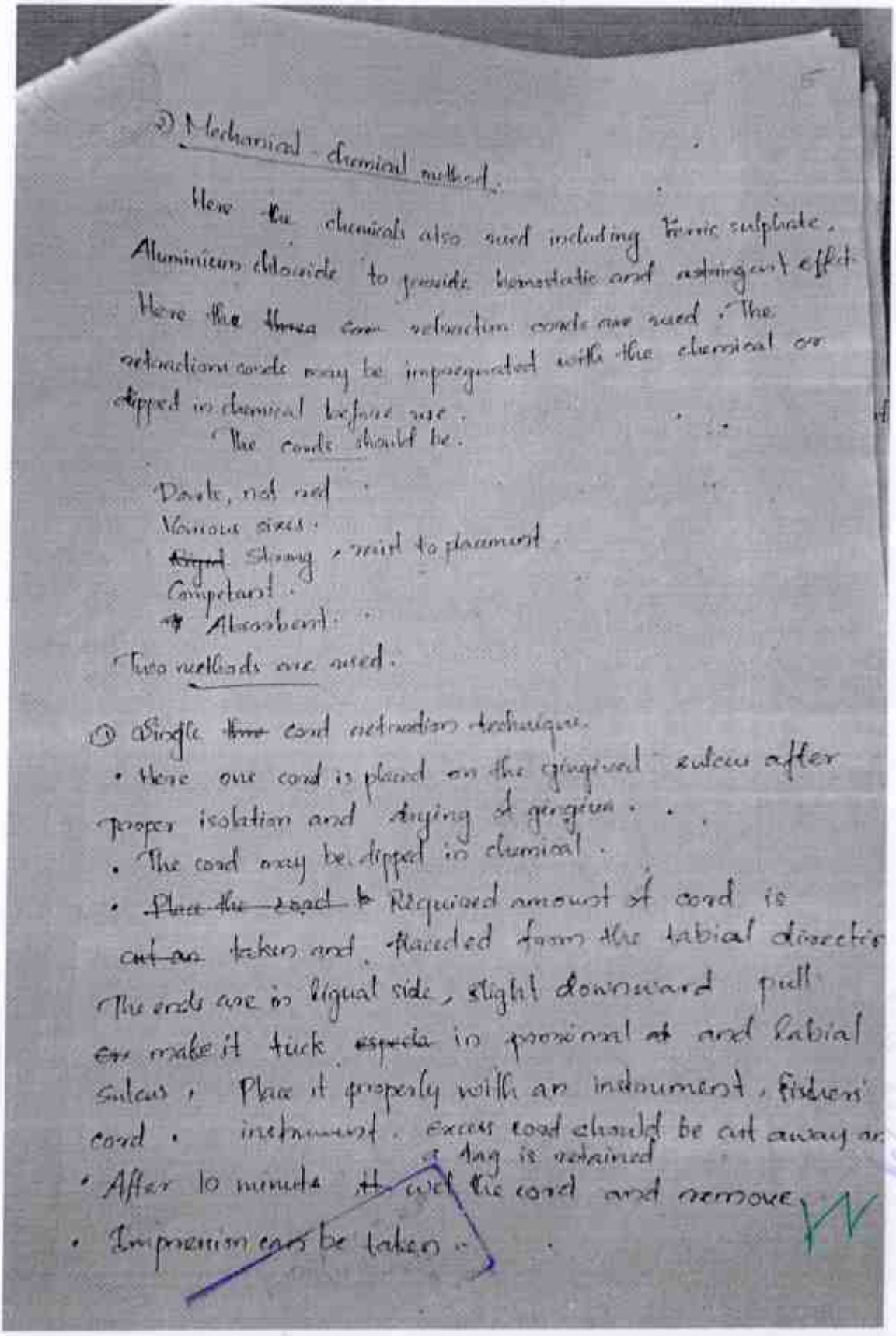
Here the bur is used to create the gingival sulcus as and extending the gingival line. The other side of bur cut the gingival sulcus portion. It can only be done in healthy gingiva. Hemostatic agents should be placed and wanted impression is taken

② Electrosurgery.

Electrodes are used. Heavy temperature is a slight area ; It destroys the tissue, the electrode should be completed.

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3) Mechanical - chemical method.

Here the chemicals also used including Ferric sulphate, Aluminium chloride to provide hemostatic and astringent effect. Here the three cord retraction cords are used. The retraction cords may be impregnated with the chemical or dipped in chemical before use.

The cords should be.

Paste, not used
Various sizes.
~~Rigid~~ Strong, moist to placement.
Competent.
Absorbent.

Two methods are used.

1) Single ~~two~~ cord retraction technique.
- Here one cord is placed on the gingival sulcus after proper isolation and drying of gingiva.
- The cord may be dipped in chemical.
- ~~Place the cord~~ Required amount of cord is ~~cut as~~ taken and placed from the labial direction. The ends are in ~~lingual~~ side, slight downward pull ~~to~~ make it tuck ~~especially~~ in proximal ~~at~~ and labial sulcus. Place it properly with an instrument, fishers' cord instrument. Excess cord should be cut away as a tag is retained
- After 10 minutes ~~the~~ wet the cord and remove.
- Impression can be taken.

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A tube with impression material is placed along with it to take impression. It will may not completely engage the cordover.

~~2, Pak~~

It is usually performed when ~~one to 3 teeth~~ to be ~~one~~ in cases where 1 to 3 teeth gingival retraction is needed for 1 to 3 teeth, Simple procedure.

2, Rubber dam.

Here the rubber dam is placed when few teeth in ~~are~~ an arch are considered. Rubber dam is used to retract the gingiva, ~~Prevent~~ provide dry field, isolation. It is not effective to produce gingival retraction.

3, Cotton thread.

Here the cotton thread is placed in the gingival sulcus ~~it~~ to provide gingival retraction The cotton thread is placed in the sulcus ~~and~~ to retract the gingiva. Hemostasis ~~cannot be pro~~ should be achieved prior to procedure.

4, Magic path

1) Occlusion.

Occlusion is the relationship of incising or masticating surfaces of teeth maxillary on mandibular teeth or on teeth analogue.

Concepts of occlusion.

1) Bilateral balanced occlusion.
2) Unilateral balanced occlusion.
3) Mutually protected occlusion
4) Canine guided occlusion.

3½

1) Bilateral balanced occlusion.

~~Here the both sides form a contact excursive contact on of the poster~~

- Here posterior teeth on both sides of the arch form an excursive contact during lateral movement.
- The contact is formed in both sides during protrusion of mandible.
- Functional teeth are protected.

2) Unilateral balanced occlusion.

Here it

- It is also known as group function occlusion.
- Here the posterior teeth on ~~one~~ one side forms

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contact during the lateral excursive movement of mandible, that is the functioning side

- On protrusion of mandible there is no contacting teeth.
- The functional cusp on tooth is protected.
- The nonfunctioning side does not contact during lateral movement.

Mutually protected occlusion.

- Here the anterior teeth protect the posterior ~~teeth~~ teeth during protrusive movement.
- The posterior teeth protect the anterior during maximum intercuspation.
- During protrusive movements the molar does not contact
- ~~The~~ During maximum intercuspation the anteriors does not contact.
- ~~Done~~ In centric relation, the mandible can now ~~is~~ the perform slight anterior and lateral movement.
- In centric relation, there may not be maximum intercuspation.
- The distance is 0.5 - 1.5 mm.

Canine guided occlusion.

The mutually protected articulation in which the canine teeth disengage the molar teeth in excursive movement of the mandible.

5) Principles of tooth preparation.

Preservation of tooth structure
Obtaining retentive form
Resistance of form.
Preservation of periodontium.

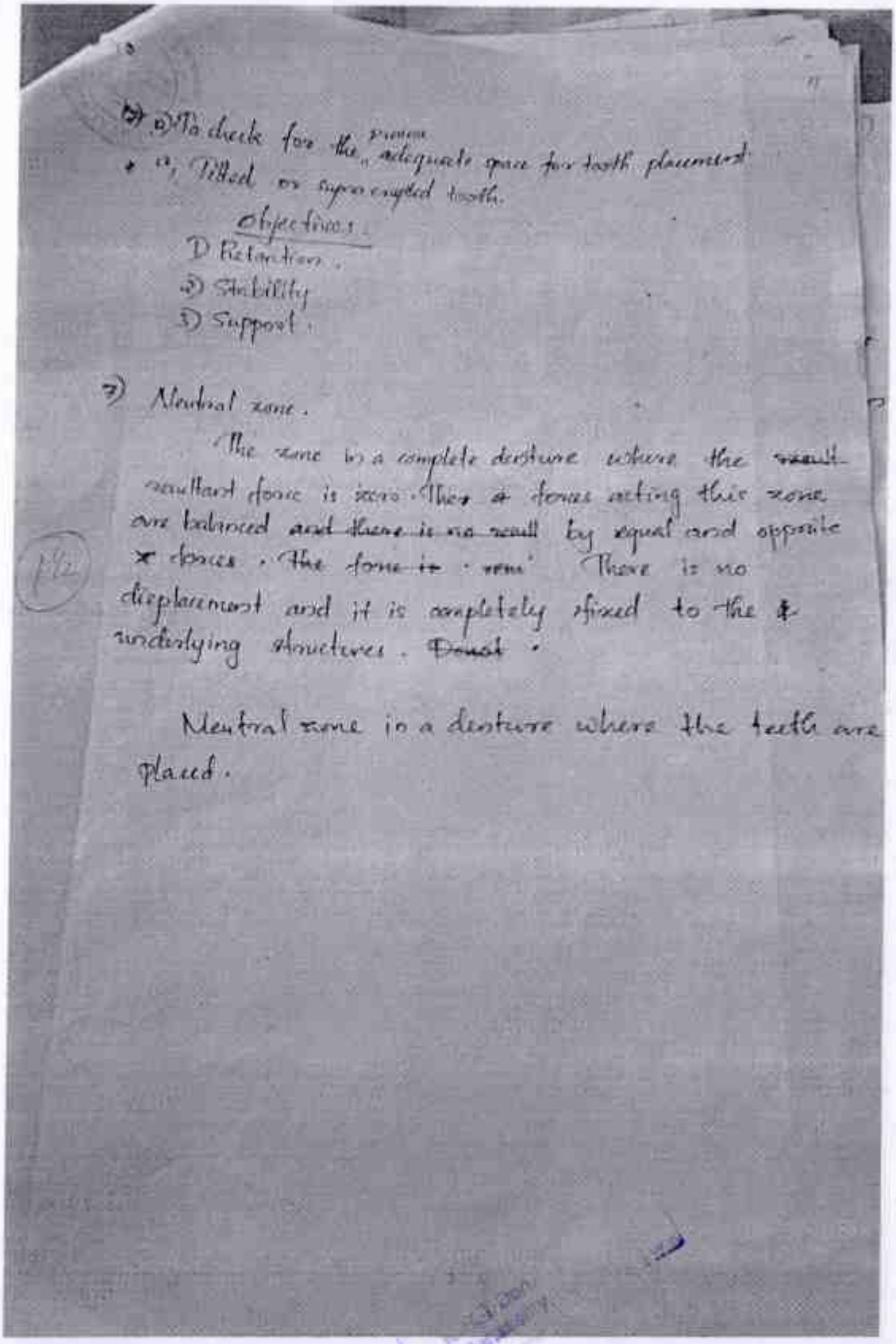
6) Objectives of impression making

~~Complete~~ —

1, To ~~be~~ completely reproduce the oral ~~and~~ structures of oral cavity.
2, Determine the position, and condition of the tooth
3, Locate retentive undercuts.
4, Duplicate the maxillary and mandibular arch ~~by cast~~
5, Locate the contour of tooth.
6, For cast preparation to orient it to centric relation, for a three dimensional view, simulate jaw movement
7, for ~~cast~~ Laboratory procedures, preparations.
8, 6. To compare ~~the treatment~~ oral condition before and after treatment.
9, ~~For~~ To obtain the exact contour of the prepared tooth for crown placement
10, Diagnostic purpose and for treatment plan.
11, Accurately measure the contours to adapt the denture accurately.

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5) a) To check for the presence adequate space for tooth placement
b) Tilted or supraerupted teeth.

Objectives:
1) Retention.
2) Stability
3) Support.

7) Neutral zone.

The zone in a complete denture where the ~~result~~ resultant force is zero. The forces acting this zone are balanced ~~and there is no result~~ by equal and opposite forces. The force is 'zero' There is no displacement and it is completely fixed to the & underlying structures. ~~Donut~~.

Neutral zone is a denture where the teeth are placed.

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8) Ans Arcon articulator

The condylar element is the lower member
The condylar guidance is the upper member.
Simulate the temporomandibular joint.
Simulate mandibular movement.

Non arcon articulator.

Condylar element is the upper member
Condylar guidance is the lower member.
Reverse of the temporomandibular joint.
Does not simulate mandibular movement

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13

9) Overdenture.

Overdenture is a removable complete denture that cover or plaed over the one or more abutment tooth, root or implant.

It can be

① Tooth supported overdenture
② Implant supported overdenture.

2nd

~~Indian~~

Advantages.

It preserve the abutment and bone support.
It preserve the alveolar ridge from resorption.
Preserve the Vertical dimension.
Aesthetically ~~pleasing~~
Better retention, no dislodgement.

Disadvantage.

Adequate bone support is required
Difficult to maintain oral hygiene.

10) Type of occlusal retainer.

1. Occlusal rest retainer / posterior rest
2. Canine rest retainers.
3. Canine extension of occlusal rest / Canine extension of posterior rest
4. Lingual bar Linguobar retainer.

1. Occlusal rest retainer / posterior rest.

It can be used in kennedy I class I and class II situation. Here the minor connector is placed in the form of occlusal rest on the premolar. Especially on second P It is given to the tooth which is away from the prosthesis. Canine cannot be used as it does not have much periodontal support. Then the mesial marginal ridge of premolar is site of giving minor connector. Given bilaterally

2, Canine extension of occlusal premolar rest

Here a finger extension to the canine from the premolar rest is given for additional retention. Given bilaterally.

3) Canine rest.

Here the rest is given to the lingual aspect of canine.

4) Lingual bar retainer.

Here the lingual bar is placed which does not extend to middle third of anterior teeth because of poor alveolar bone support.

5) Dental implant

Indications.

Adequat height of alveolar bone.
In case where the bone height should be maintained
Minimal number of teeth to be replaced.
Healthy periodontium.
Better aesthetic is needed.
Healthy bone and soft tissues.

(3)

Contraindicated.

Severe periodontal - gingival problems.
Soft tissue undercuts.
Excessive bone loss.
Adjacent to anatomical structures like, maxillary sinus
In case of osteoporosis, immunocompromised conditi
Reduced bone density, cyst, tube tumor.

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ii) Kennedy's classification -

Class I

Bilateral edentulous area distal to the remaining teeth

Class II

Unilateral edentulous area posterior to the remaining teeth. 1½

Class III

Unilateral edentulous area surrounded by teeth on both anterior and posterior aspect.

Class IV

Bilateral edentulous area on the most anterior ~~for~~ aspect of the jaw with ~~teeth~~ on ~~the~~ both posterior aspects.

13) Posterior palatal seal area.

It is the posteriormost extension of a ~~complete~~ maxillary complete denture. It is the junction of both hard and soft palate. Usually 2½ rounded during the impression making and border moulding procedure for complete denture.

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It consist of an anterior vibrating line and a posterior vibrating line. Anterior vibrating line is recorded by asking the patient to say 'Ah' in short bursts and posterior vibrating like is recorded by variable pressure method. Ask the client the patient to close the nose slightly and ask him to exhale through nose. The anterior vibrating line is a cupid bow shaped and posterior vibrating line is straight. It can also be evaluated with a 'T' burnisher.

14) Palatal ~~major~~ bar major connector.

It is ~~a~~ the one of the major connector used in maxillary prosthesis.

A palatal bar which is of thick metalic bar and adapted to the palate.

It help in better adaptation.

Patient may have discomforts in ~~eat~~ speaking, chewing

Better retention.

Indicated

In class II, class III situations.

~~Both~~ Palatal dont can be relieved down entend.

Contraindicated

Higharched palate

Narrow palate.

~~Palatal bar~~

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(d) Pier abutment

- It is the single abutment tooth to which the denture is attached.
- Single tooth to which the esterne masticatory forces are transmitted.
- The tooth should ~~be periodontally~~ have better periodontal support.
- Sometimes the both side of the tooth will be ~~each~~ edentulous, If forces are transmitted to this tooth may cause its fracture, Periodontal problems, ~~tooth loss~~
- Tooth should be caries ~~to~~ free.
- Circumferential clasps can be used. ~~In cases of~~ Implant can also be given to support.
- Tooth should have a intact enamel

1½

(e) Pindex system.

~~In a~~ In some cases pins are placed in abutment tooth is called pindex system. Retentive pins and to which the crown is ~~atta~~ along with the denture is attached.

1½

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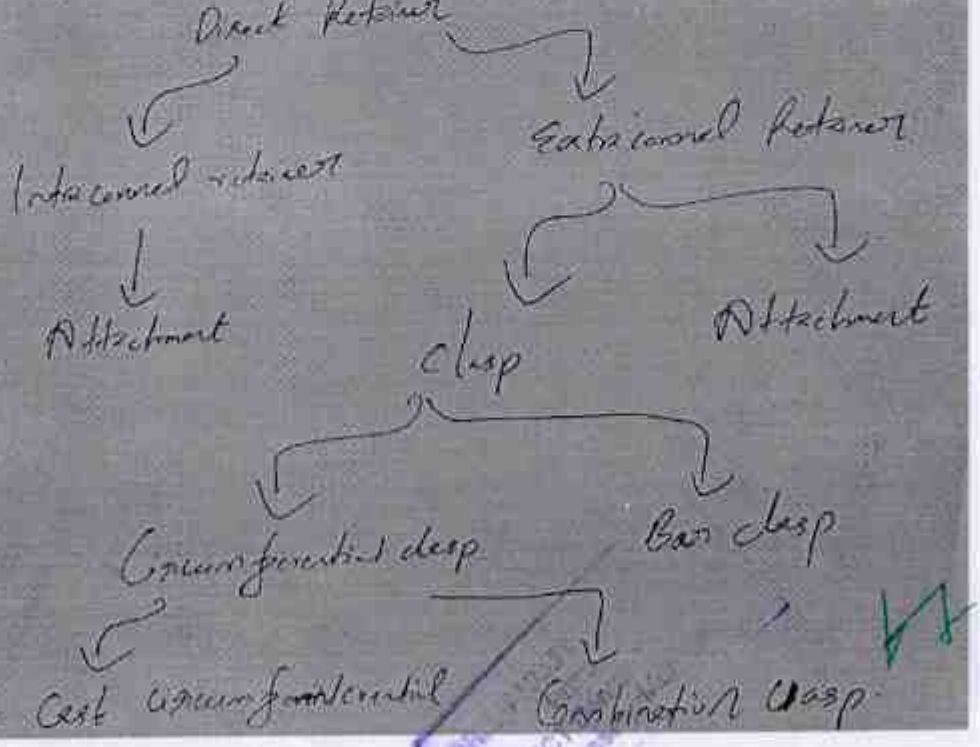
Ashika Hasan
Roll No: 14

Department of prosthodontics

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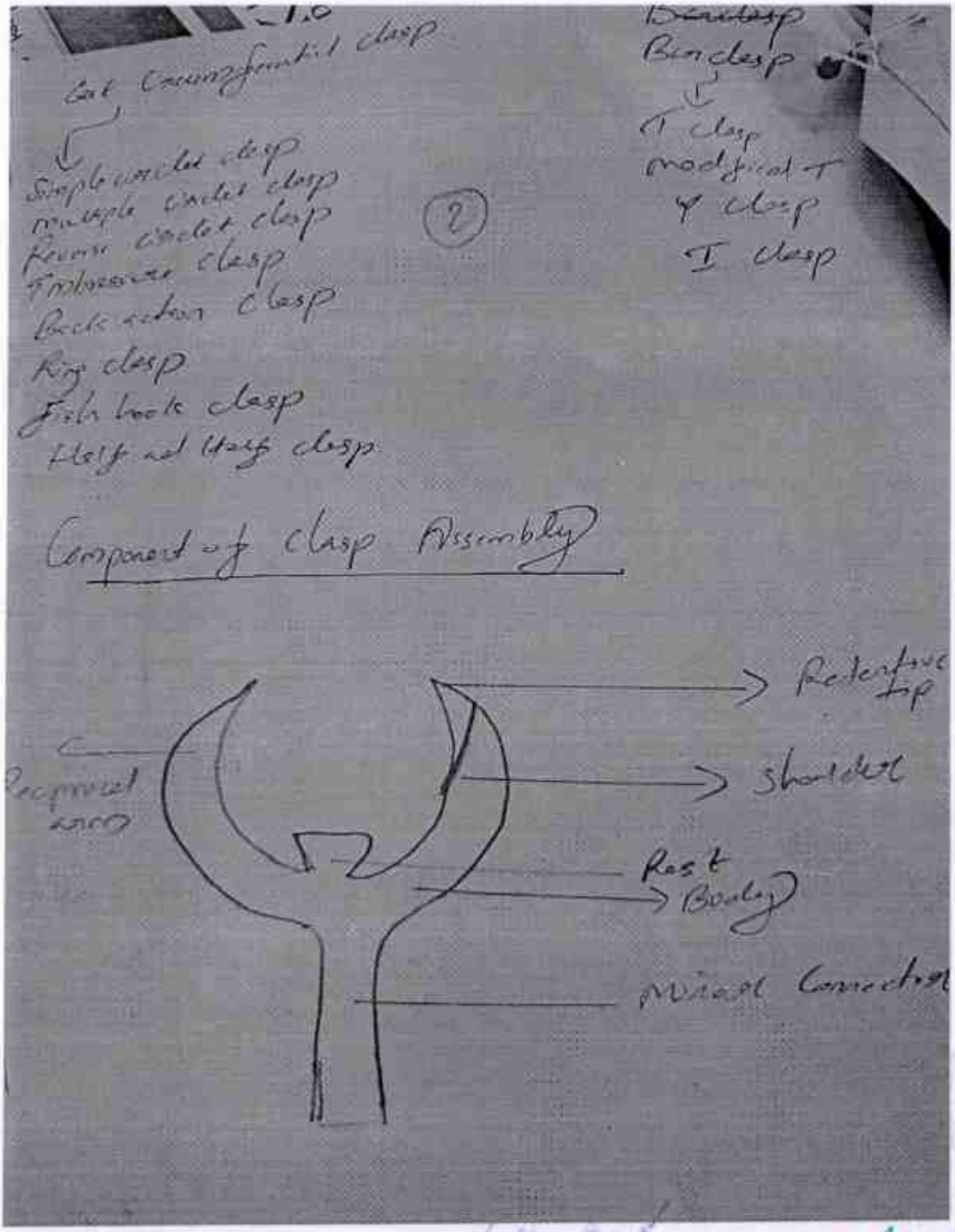
Direct Retainer can be defined as
Component of Removable partial dental prosthesis
~~to prevent and dislodgement~~ to retain and prevent the
dislodgement by class activity and provide
attachment (GPT 8)

Classification



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Suprabulge

Height of contact

Infrabulge

2) Rest - Rest is the major component to gives Vertical Support for the clasp assembly and provides control placement of forces

3) Retentive arm :- Retentive arm consist of

~~3 parts~~

① Retentive tip
② Shoulder
③ Body

Body :- Body connects the Rest to the minor Connector
~~Not~~ flexible and ~~placed above the height of~~ Contact engages the undercut maximum

Shoulder :- It Connect the Body to the Retentive tip
It is minimum flexible and ~~engages to~~ show minimum engage to the undercut

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Retentive tip - It is a important Component of the Retentive arm it is not flexible and placed above the height of Contour

⇒ Retentive tip is placed above the height of Contour opposite to Surface of retentive arm

Reciprocal

⇒ It helps ~~Cannot Correct the Rest to the framework of clasp assembly~~

③ Reciprocal arm - It is placed above the height of Contour opposite to the Surface of Retentive arm

⇒ No particle entrapment

⇒ Close adaptation adaptation of clasp to the tissue

⇒ Reciprocal arm should be rigid and non flexible

⇒ It is placed in the gingival third between the gingival and middle third

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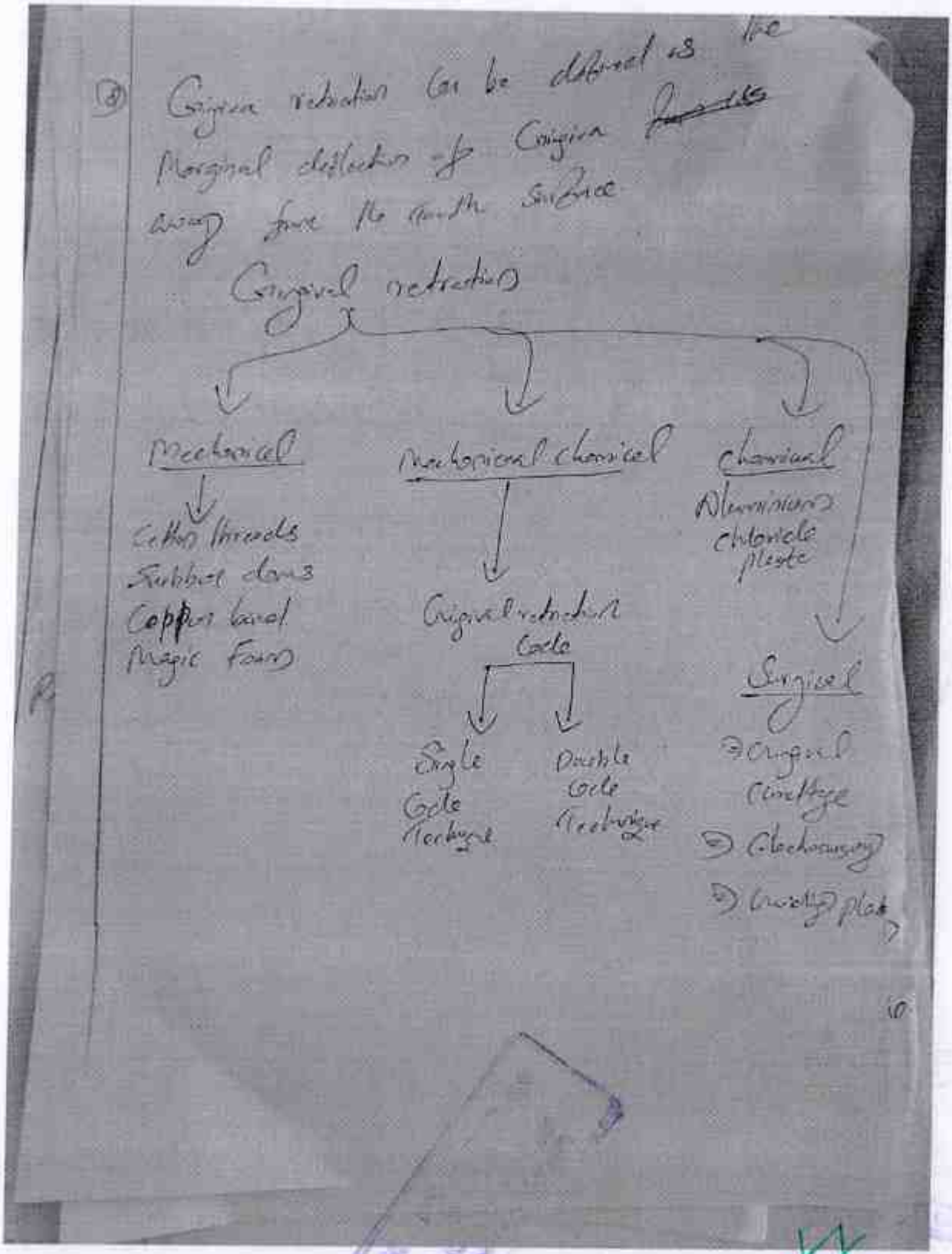
Minor Connector :- It Connect the Rest to the framework of the clasp assembly

Characteristics of extracoronal clasp

- distributing forces ~~act~~ along the stress bearing and - line of gravity should be perpendicular to plane of occlusion
- Prothesis one Theory
  Two portions each shares a common base like two cones with same base
- A line joining to connect these 2 cones known as height of Contour



Prothesis one Theory



9) Gingival retraction can be defined as the Marginal displacement of Gingiva away from its tooth surface

Gingival retraction

Mechanical
- Cotton threads
- Rubber dams
- Copper band
- Magic foam

Mechanical chemical
- Gingival retraction Cords
  - Single Cord Technique
  - Double Cord Technique

Chemical
- Aluminium chloride paste

Surgical
- Gingival curettage
- Electrosurgery
- Gingivectomy

10

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(4)

Mechanical

① Upper bend

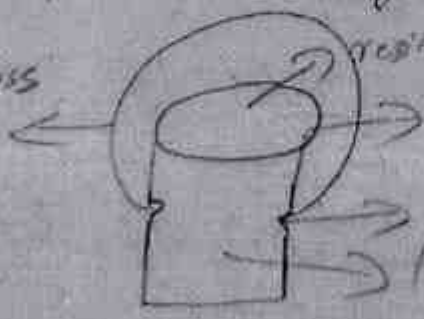
⇒ It is mostly used gingival reduction method

⇒ Upper bend Consist of a plaster made of resin in the top

⇒ Vent is present on either side of Upper bend

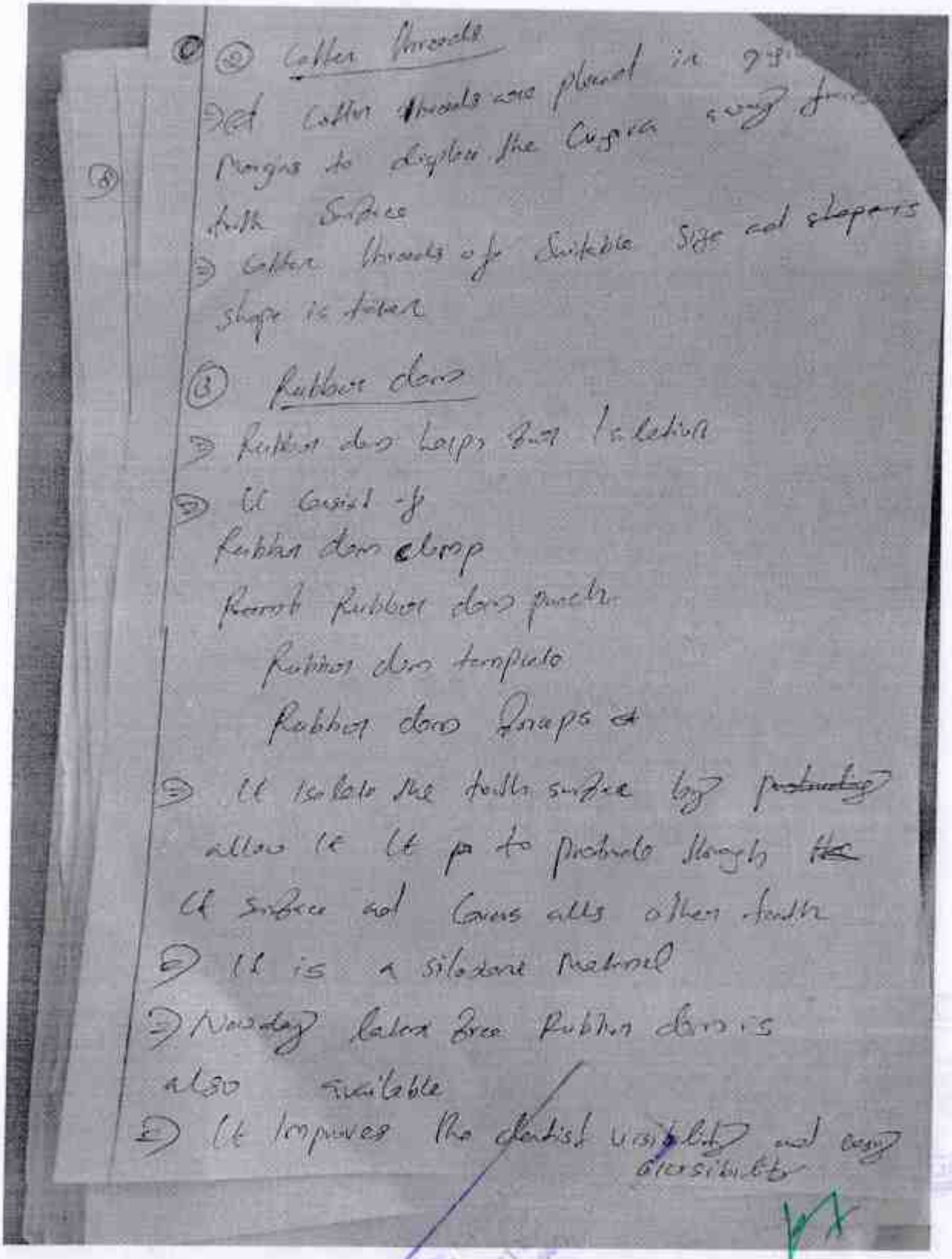
⇒ It is Connected with a Gloss

⇒ Upper bend is filled with Impression material and placed parallel to the tooth surface for the reduction of gingiva.



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② Gutter threads

⇒ Gutter threads are placed in 90°
⇒ Gutter threads are placed in the cervical margins to deepen the cervical tooth surface
⇒ Gutter threads of suitable size and shapes shape is taken

③ Rubber dam

⇒ Rubber dam keeps dry isolation
⇒ It consist of
Rubber dam sheet
Round rubber dam punch
Rubber dam template
Rubber dam clamps
⇒ It isolate the tooth surface by protecting
allow it to protect gingival tissue
it surface and causes allergic tooth
⇒ It is a siloxane material
⇒ Nowday latex free Rubber dam is also available
⇒ It improves the dentist visibility and easy accessibility

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(5)

~~Post Extract~~

Contraindication

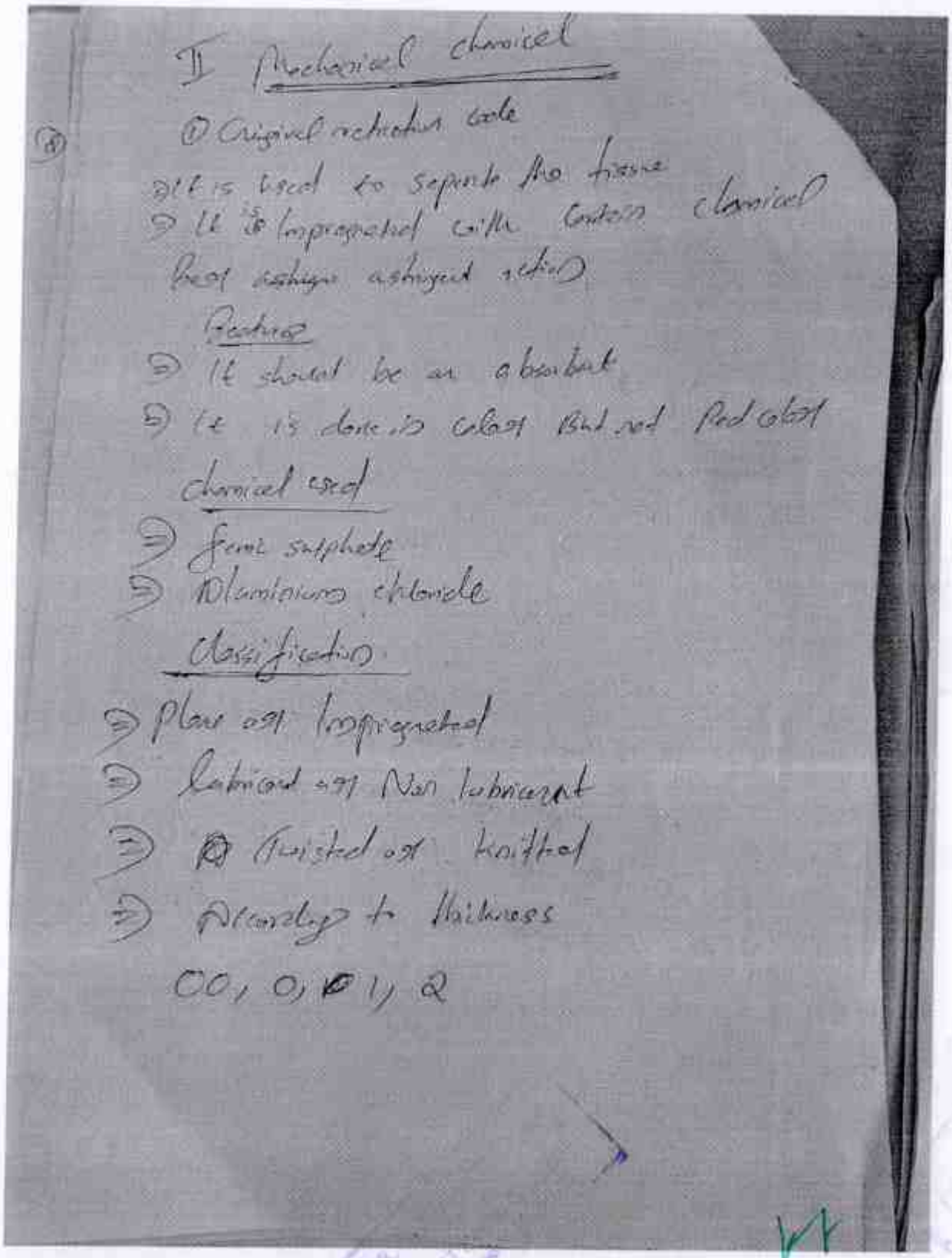
⇒ Asthmatic patient
⇒ Nasal congestion
⇒ Uncooperative and mentally disturbed patient

⑥ Magic foam

⇒ Magic foam consist of Hollow cotton roller and magic foam plate
⇒ It is ~~Coapt~~ Copre Compat
⇒ Magic foam is filled in Copre Compat and placed in ~~the~~ prepared tooth and then filled
⇒ ~~It is~~ Copre compat is placed on to the tooth surface and patient is asked to bite for 3-4 minutes.

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I Mechanical chemical

① Original retraction cord

⇒ It is used to separate the tissue
⇒ It is impregnated with certain chemical that retains retracted retract

Factors

⇒ It should be an absorbent
⇒ It is done in clot but not Red clot

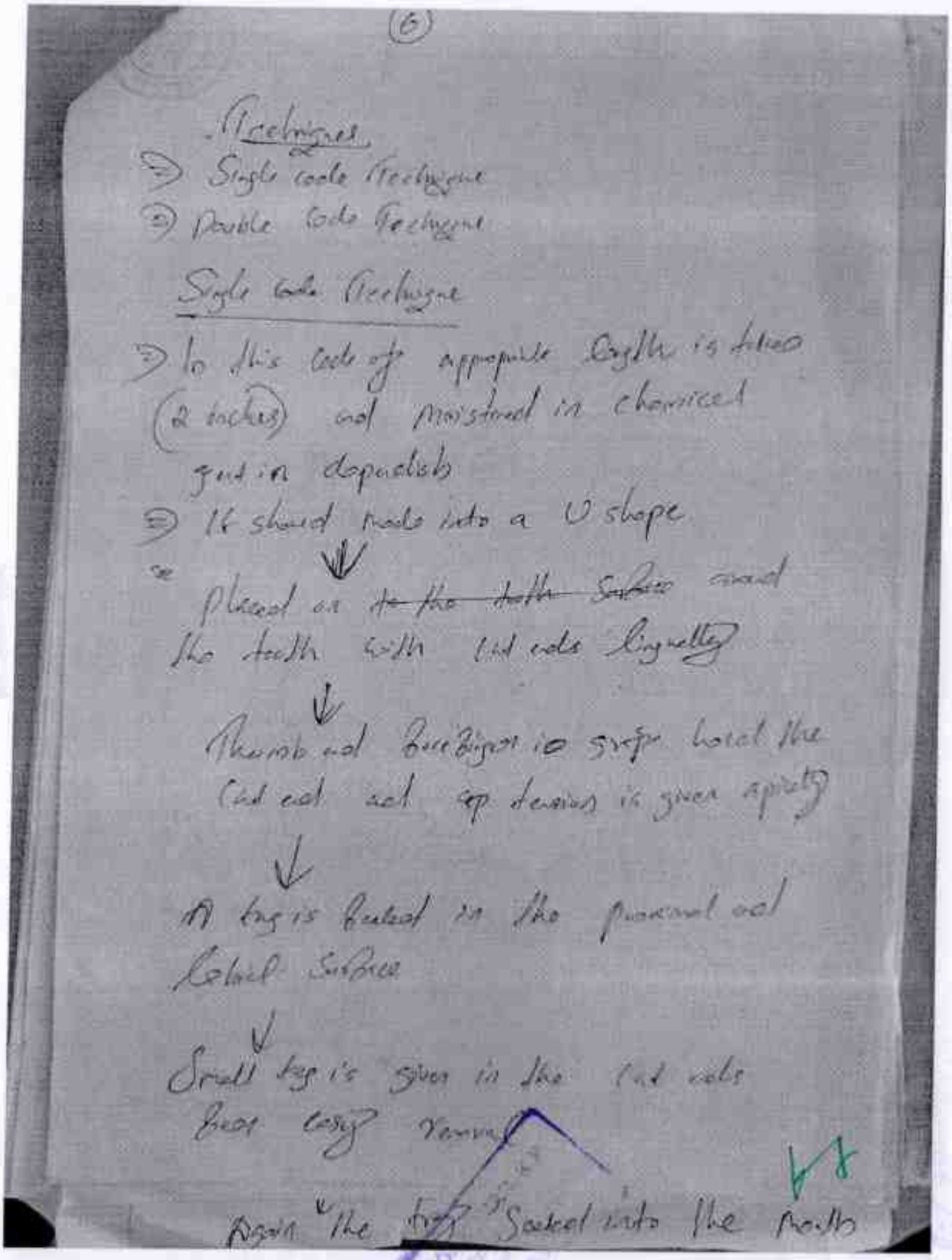
chemical used

⇒ ferric sulphate
⇒ Aluminium chloride

classification

⇒ Plain or impregnated
⇒ Lubricated or Non lubricant
⇒ Twisted or knitted
⇒ According to thickness

00, 0, 1, 2



(6)

Techniques

1. Single cone Technique
2. Double cone Technique

Single cone Technique

- In this cone of appropriate length is taken (2 inches) and moistened in chemical gut in dapsolab
- It should make into a U shape
- Placed on the tooth Surface and the tooth with end cone lingually
- Thumb and fore finger is used hold the end cut and top towards is given apically
- A tug is felt in the proximal and labial Surface
- Small tug is given in the end cone then easy removal
- Again the tug is taken into the mouth

↓

1) After 10 minutes ⓔ place the impression it is taken out by moistening after wise. Cavity blanks



Double cord technique

2) In this technique cord of smaller diameter is placed in the sulcus which by moistening
3) Then a cord diameter larger than it is placed on to it
4) ~~Last~~ second cord is kept 8-10 minutes and removed prior to impression
5) Impression is taken with keeping the first cord in the sulcus after it is removed by moistening application



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(7)

(8)

III Chemical

Chemical used was Aluminium chloride paste
It is applied on the tooth surface and
left for 3-4 minutes for the ~~retraction~~
retraction and the impression is taken

IV Surgical

1. Gingival Curettage
2. Electrosurgery
3. Cavity Planes

Short Essay

3) Immediate denture
It can be defined as the process of
removable denture prosthesis with immediate
fabrication and placement of denture
following the extraction of teeth

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Techniques

① Single Impression Technique

② Double Impression Technique

① Diagnostic and treatment planning

② Extraction of posterior teeth and ill fitted Gs was done before taking

③ Impression

⇒ Impression is taken with irreversible hydrocolloid

↓

Master cast is poured and custom tray is fabricated

↓

① In Single Impression Technique, the impression of

② Spacers : ~~2 base plate~~ in edentulous area and teeth is taken

① Spacers : 2 base plate was for teeth one base plate was for edentulous area

② Steps :- In the one of the anterior region often in the other side of first molar with region

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(8)

↓

~~Impression is done with~~ Vestibular extension of ~~the~~ ~~ab~~ of ~~dista~~ ~~g~~

↓

Border moulding is done with low fusing green stick material

↓

Interdental area of ~~Ad~~ Anterior teeth is blocked with wax

↓

Final impression with ZnO is taken.

(9) In double impression technique

Impression is taken for edentulous area and lingual region of Anterior teeth

↓

Border moulding is done only in the edentulous area with low fusing Compound Final impression is taken

↓

After that ~~that~~ impression tray is removed and ~~the~~ handle of the tray is cut at ~~the~~ region

↓

Again the tray ~~is~~ seated into the mouth

POST OPERATIVE INSTRUCTIONS FOR VARIOUS CLINICAL PROCEDURES

* After extraction

- Avoid vigorous mouth washing, violent excessive stimulation or very hot food/drinks for rest of the days to prevent hemorrhage
- The wound should be cleaned by rinsing the mouth with warm saline immediately before going to bed of on the the day of ~~surgical~~ operation.
- Use hot saline mouthwash frequently
- Patient should be warned, biting lips, tongue. they remain numb for 2-3hrs.
- Sutures should be left for 7 days
- Analgesic should be given if pain exist

AFTER AMALGAM RESTORATION

- Regular tooth brushing after meals and before food
- Avoid vigorous flossing
- If the margin is ~~fractured~~ fractured try to brush that tooth well and consult dentist.

FOR TOOTH COLOURED RESTORATION

Hard brush bristles, tooth picks, hard food and restorations which are opposite to composite and will affect the potential wear of tooth ~~restoration~~.

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FOR REMOVABLE APPLIANCE INSTRUCTIONS

Instructed on the number of hours to wear

Appliance and teeth should be cleaned after every meal

- Detergent solution should be used for cleaning
- Patient and parent should be given clear instructions to activate the appliance
- Patient should not leave the appliance of mouth for long

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AMALGAM

Classification

1 According to content

Copper amalgam
Silver amalgam
Preamalgamated alloys
Amalgam with noble metals.

2 According to number of alloy metals

Binary
Ternary
Quaternary

3 According to whether powder consists of unmixed / admixed alloy

Admixed alloy
Single compositional alloy.

4 According to shape of powder particles

Spherical shape
Lathe cut
Combination of spherical and lathe cut

Composition

Low copper amalgam:

Silver - ~~63 - 70~~
Tin - 26 - 28%
Copper - 2 - 5%
Zinc - 2%.

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High copper amalgam (Admixed)

Silver - 69%
Copper - 13%
Tin - 17%
Zinc - 1%

Single compositional

Silver - 60%
Copper - 15%
Tin - 25%
Indium - 4%

SETTING REACTION

Low conventional amalgam alloy

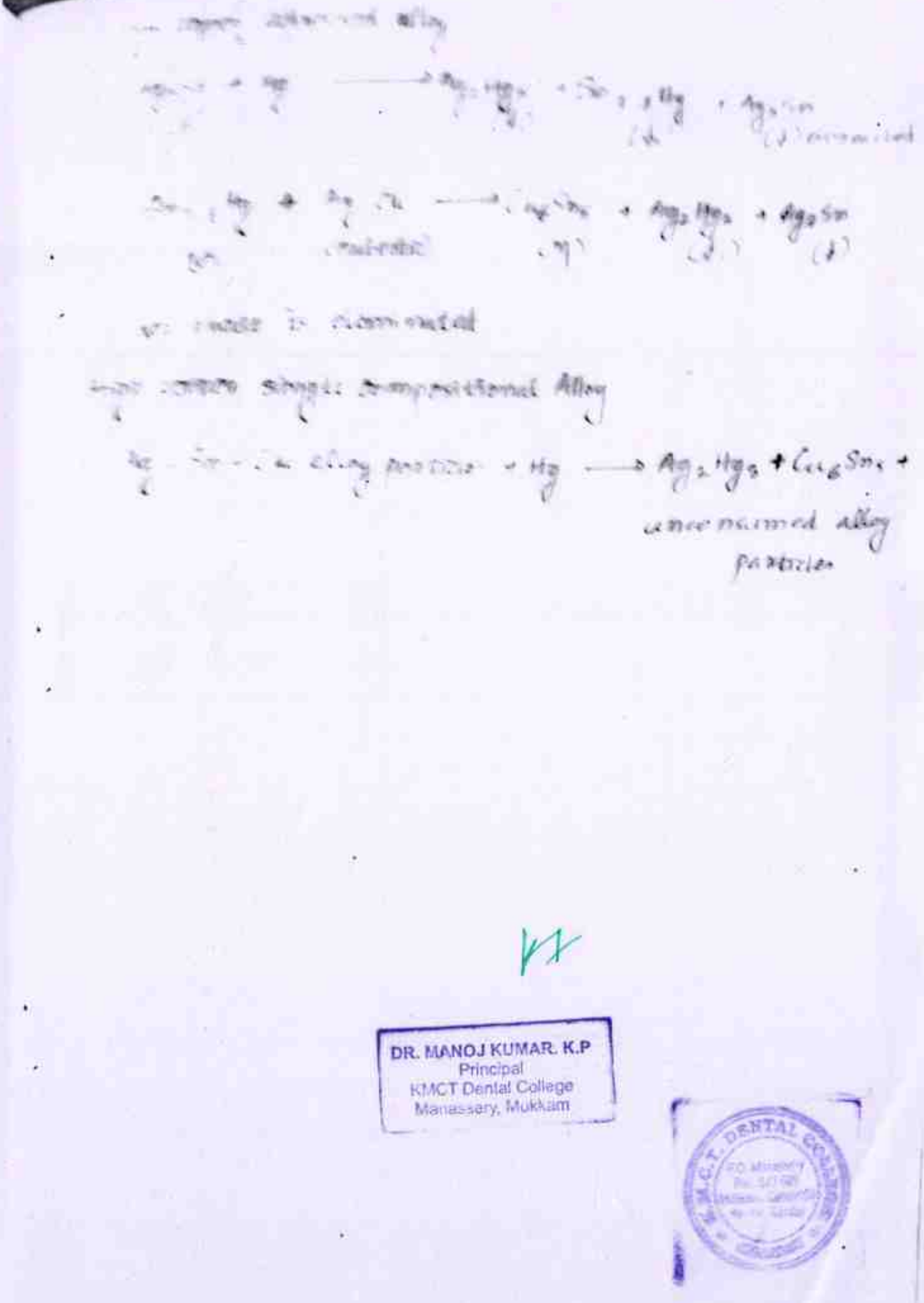
- When silver alloy triturated with mercury, mercury diffuses into γ-phase of the alloy mainly silver and tin.
- Hg has limited solubility for Ag than Sn
- When this solubility exceeds the 40% Ag starts precipitating first the γ_1 phase and γ_2 phase.
- Unconsumed particles are present in the set amalgam

$$Ag_3Sn + Hg \longrightarrow \underset{(\gamma_1)}{Ag_2Hg_3} + \underset{(\gamma_2)}{Sn_{7-8}Hg} + \underset{\text{Unreacted}}{Ag_3Sn}$$

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Dental Materials

Type

Type I : Luting and lining cements
Type II : restorative cements
Type III : liners and bases
Type IV : pit and fissure sealants
Type V : orthodontic cement
Type VI : core build up material
Type VII : fluoride release
Type VIII : Aesthetic restorative material
Type IX : cements endodontic use

Composition

→ Powder

Ingredients	Percentage	Function
Silica (SiO_2)	35.2 - 41.9	Glass matrix former, increase translucency
Alumina (Al_2O_3)	20.1 - 28.6	Reinforcing filler, increase reactivity of glass, increase opacity
Aluminium fluoride	16.7 - 20.1	Act as flux
Calcium fluoride (CaF_2)	16.7 - 20.1	Act as flux

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Sodium fluoride (NaF)	3.6 – 9 %	Act as flux
Aluminium phosphate ($AlPO_4$)	3.8 – 12	Glass modifier lowers processing temperature
Zirconium oxide (ZrO_2)	Trace amount	Increases final strength
Lanthanum Strontium Barium and zinc oxide	Minute amount	Imparts radiopacity

→ Liquid

47.5 % solution of 2:1 polyacrylic acid / Itaconic acid copolymer in water

Setting Reaction

- Leaching – The acid attacks glass particles when mixed.
- Calcium cross linking – Ca ions cross linked with polyacrylic acid and forms a solid mass
- Aluminium cross linking – Al also cross link with acrylic acid chain
- Sodium and fluoride ion – Sodium replaces hydrogen ions and rest combines with fluoride to form sodium fluoride
- Hydration – Water serves as a medium for it to hydrate the matrix adding strength.

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Reference

Pediatric dentistry SHOBHA TANDON

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Hawley's Appliance

Hawley's appliance is the most basic type of removable appliance
It was designed in 1920 by Charles A Hawley
- It is the most useful removable appliance used by dental surgens
- It is most frequently used retainer
- It is used for preventive, interceptive and limited corrective orthodontics.
- Hawley's appliance is also called dental crotch

→ Basic appliance consists of 3 parts.
  a) Labial bow
  b) Base plate
  c) Clasps on molar for retention.

→ Indications
- Useful for closing space in anterior region.
- ~~Usefut~~ Used for retract minor proclination.
- Used as retainer appliance → Hawley's appliance.
- Hawley's appliance with biteplate is used for deep bite correction.
- Used in TMJ problem.
- Used as habit ~~breaking~~ appliance
- Hawley's appliance with biteplate ~~re~~ improve retaining effect in reversible and allow further growth

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DENTAL AGE AND ASSESSMENT METHOD

The determination of age plays a significant role within forensic science not only in identification of bodies but in connection with crime and accidents.

The age estimation can be considered in two periods.

- The developmental period which begins in utero and ends when dentition has reached maturity.
- The post developmental period which extends from the time of dental maturation to termination of life.

In children, the determination of age is considered during the first developmental period from the utero till the dentition matures. The method that are used can be applied to two separate timing as human dentition of two times.

1. Developmental Period.

A) Methods applicable during first stage

First stage of development is when calcification of primary dentition begins as early as three months in utero and is completed during fourth year when the roots of the second primary molar teeth are usually fully formed.

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the methods used are

Observation method

In the fetus/infants where teeth are not present in the mouth, any evidence of dental development is concealed within the jaws. Observation can be made on the mineral content of the fetal and infant teeth relationship between the square roots of the crown of the ashed teeth and known age of the subject can be determined.

Histological approach

Development of the hard tissue of a teeth is a rhythmic process with the formation of successive layers of tissue. Evidence for this is to be found in incremental lines that can be observed microscopically in undecalcified sections of the enamel and dentin.

Visual and radiographic method

These two are regarded complementary to each other. The examination provides the information regarding the no. of teeth that are present in the dental arches and the dentition to which they belong. Radiograph would reveal the resorption of the roots of the primary teeth

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5) Methods applicable during second stage

At about 5 years emergence of teeth into the oral cavity occurs between the first and thirteen years

Demirjean method.

Demirjean and co workers have developed an age estimation method that assess the mandibular left side teeth. The method is the most widely used technique for assessing age in children and adolescent. While method originally excluded the third molar, a modification was made to include this teeth. In the modified method, the calcification of the teeth was divided into 10 stages and numbered 0 to 9. Based on amount of calcification seen in radiograph, each teeth is given a maturity score and a total maturity score is calculated. The total is substituted in regression formula to derive age.

Males: Age = $27.4351 - (0.0097 \times 5^2) + (0.000089 \times 5^3)$

Females: Age = $23.7288 - (0.0088 \times 5^2) + (0.000085 \times 5^3)$

Mornstad (1994) estimated the age with aid of teeth development by a new method, based on objective measurements, such as crown width, height, width and root length.

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GUSTAFSON'S METHOD

Gustafson (1950) introduced a multifactorial histological approach to determination of the age and advocated six of teeth. Many other have suggested to the secondary dentin formation, temporary to root formation from age appear to be directly related to the chronological age are affected by environmental factors.

This method is based on morphological and histological changes of teeth.

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a) enamel surface changes (S)

b) amount of occlusal attrition (A)

c) secondary dentin deposition (S)

d) level of periodontal attachment (P)

e) root resorption at apex (R)

f) dentin translucency (T)

g) cementum apposition at root apex (C)

Different scores are assigned as

Stage 0 - indicate no change

Stage 1 - beginning of change

Stage 2 - obvious change

Stage 3 - maximum change

Age = (11.43 + 4.56 X) years

X = A+S+P+C+R+T = Total score.

Nolla's Method

Nolla evaluated the mineralization of permanent teeth to 10 stages

10 - Apical end of root completed

9 - Root almost completed - crown apex

8 - Two-third of root completed.

7 - One-third of root completed

6 - Crown completed

5 - Crown almost completed

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- Two-third of crown completed
- One-third of crown completed
- Initial calcification
- Presence of cupt
- Absence of cupt

- Total of scores added and compared.

- Advantage

Male and females are dealt separately with third molar not included in the study

Graon and Moorrees Method

- Commonly used method
- Involves scoring of 10 permanent teeth according to crown and root formation using standard dental film
- Teeth scored maxillary and mandibular incisors, mandibular canines, premolars and molars.
- Scores are plotted on a chart composed of horizontal segment for each tooth with demarcation for developmental stages and vertical segments in years of age
- For each tooth appropriate stage is checked and vertical line drawn through corresponding yielding mean dental age.

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method

...a new method ... for ... All teeth are ... a ...

... teeth having ... stage ... converted into ... scores ...

... of all teeth are then added to give ... maturity score ... was then converted to ... age by a table by Demirjian in 1973.

Stage	Description
0	No signs of calcification
A	Beginning of calcification seen at ... level of crypt
B	Fusion of calcification point in cuspal area forming occlusal surfaces
C	Enamel formation is complete with convergence towards cervical region beginning of dentinal deposit. Outline of pulp chamber has a curved shape at the occlusal border

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D — Root formation is completed. The superior border of pulp chamber in uniradicular teeth is curved and in molar it is in triangular form.
Projection of pulp horns starts.
Beginning of root formation in form of apicales.

E — In uniradicular teeth, pulp chamber forms straight line whose continuity is broken by pulp horns.
Initial formation of bifurcation is seen in molars.
Root length is less than crown height.

F — Wall of pulp chamber form a triangle and apex ends in funnel shaped in uniradicular teeth.

G — Walls of rootcanals are parallel and apical end is still open in molars.

H — Apical end of distal root in molars is closed.
Periodontal membrane has uniform width of coronal ~~root~~ apex.

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Method

[illegible] provide the information regarding [illegible] evil habit are present in the dental [illegible] as when they occur

[illegible] which relies on the visual examination that the [illegible] dentition is usually functional. In beginning of the 3rd year no significant changes can be seen in the occlusal relationship until the 4 years when the 1st permanent molars erupt. And visual examination of the primary dentition could only provide information that could provide information that could evaluate the professional in the age between 2 and 6 years. Radiograph could show the resorption of roots of primary teeth.

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TOPICAL FLUORIDES

Topical fluorides are directly applied to the erupted teeth. Fluoride ions in such agents do not penetrate deeply into enamel.

* Indications

- Caries active children
- In children, shortly after periods of tooth eruption
- In patients with reduced salivary flow due to medication.
- For those receiving radiation for head and neck.
- For patients with fixed or removable appliances.
- After placement or replacement of restorations and before cementations of stainless steel crowns.
- Patients with eating disorders.
- Disabled or alternatively abled children.

Topical fluorides can be divided into:

① Professionally applied fluorides.

a) Neutral NaF
b) Stannous fluoride
c) APF
d) Amine fluoride
e) Fluoride varnish
f) Fluoride gels

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② Self applied fluorides

a) Tooth brushing dentifrices
b) Mouth rinses
c) Tooth brushing solutions
d) Tooth brushing prophylaxis pastes

Sodium Fluoride

Knutson and Feldman (1948) recommended a technique of four applications of 2% NaF at weekly intervals a year at 3, 7, 11, and 13 years.

Methods of Preparation

About 2% of NaF solution can be prepared by dissolving 20g of NaF powder in 1L of distilled water in a plastic bottle.

It is essential to store fluoride in plastic bottles because it stored in glass containers, the fluoride ion of solution can react with silica of glass forming SiF_2, thus reducing the availability of free active fluoride for anticaries action.

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Moistened dry cotton

wiping out excess of the fluid

↓

Quadrants are isolated by cotton rolls and the teeth are dried thoroughly

↓

NaF is then applied with cotton applicator on the surface

↓

Permitted to dry on the teeth for about 4 min

↓

The procedure is repeated for the remaining quadrants

↓

Patient is instructed to avoid eating, drinking or rinsing for 30 minutes so as to prolong the availability of fluoride ion to react with the tooth surface

↓

Second, third and fourth application are given at weekly intervals at age 3 yr and 4 yrs

Mechanism of Action

When NaF is applied, it reacts with the apetite crystals of the tooth enamel to form fluorapatite, which is the insoluble product of reaction

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↓

↓

↓

- Less susceptible to dissolution by acids
- Interferes with plaque metabolism through antienzyme action.
- Helps in remineralization of preinitial decalcified areas

$Ca(PO_4)_6(OH)_2 + 2OH \rightarrow 10\,CaF_2 + 6\,PO_4 + 2OH$

$CaF_2 + 2\,Ca_8(PO_4)_2OH \rightarrow 2\,Ca_8(PO_4)_3F + Ca(OH)_2$

- Advantages
  - Chemically stable
  - Acceptable taste
  - Non irritating to gingival tissue
  - Does not discolour the teeth
  - Cheap and inexpensive

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Advantages

continuous application for 4 minutes

Control bacteria make lines visible for a short time

Helps up to 48 hours

Disadvantages / Drawbacks

Study was found, that is three times more effective than NaF

Pinkerton and Mahler in 1971 tried single annual application of 8% SnF_2 and reported 82% caries reduction.

Methods of Preparation

- SnF_2 solution has to be freshly prepared before use each time, as it has no shelf life.
- The convenient preparation number "0" gelatin capsule are prior filled with 0.8 g powder SnF_2 and are stored in air-tight plastic containers. Just before application, the content of one capsule is dissolved in 10ml of distilled water in plastic container and the solution thus prepared is shaken briefly. The solution is then applied

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Method of application

The recommended procedure for application of [illegible] begins with thorough prophylaxis followed by rinsing with water and drying preferably with compressed air.

- Either a quadrant or half of the mouth can be treated at one time.

A freshly prepared 8% solution of SnF_2 is applied continuously to the teeth with cotton applicator and reapplication of the solution to a particular tooth is done every 15 - 30 seconds so that the teeth are kept wet for 4 minutes.

- The recommended frequency of application is once per year.

Mechanism of Action

SnF_2 reacts with hydroxyapetite in addition to fluoride and forms a new crystalline products - Stannous trifluorophosphate

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Rapid penetration of tin and fluoride in 30 sec therefore continuous reapplication after 15 - 30 se

is neutral

↓

In addition to stannous fluorophosphate these two additional products are formed stannous hydroxyapatite, calcium fluoride and calcium tetrafluorostannate.

- Disadvantages
  - Should be prepared freshly
  - Low pH
  - Metallic taste due to stannous hydroxyl phosphate
  - Causes gingival irritation
  - Produces discoloration of teeth.
  - Causes staining on margins of restorations.

Acidulated Phosphate Fluoride

- Brudevold et al did systemic investigation to find out an optimal fluoride acid solution which would provide maximal fluoride deposition, while causing minimal demineralization.
- Semiannual application of 1.23% APF for 4 minutes is helpful in reducing caries by 28%

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Method of Preparation :

[illegible] prepared by dissolving [illegible] of [illegible] in propylene glycol to this hydrochloric acid added to adjust the pH at 2.0 and it was made up to 100 ml

For the preparation of 5% gel, 5 gelling agent i.e. methyl cellulose or hydroxyethyl cellulose is added to the solution and the pH is to be adjusted between 4 and 6.

Method of Application

After thorough prophylaxis, the teeth are isolated with cotton rolls on both labial and buccal sides

↓

For the application of gel, position the patient upright & provide saliva ejector

↓

Place enough gel to fill one-third of the tray so that it is [illegible] cover the [illegible]

↓

Place loaded tray over the arch and squeeze the buccal and lingual surfaces forcing gel between

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thin and allow it to uniformly remain in mouth for 4 minutes

↓

Instruct the patient to expectorate immediately and avoid drinking and eating for the next 30 minutes.

↓

Recommended frequency of APF topical application is semiannual.

Mechanism of Action.

When APF is applied on the teeth, it initially leads to dehydration and shrinkage in the volume of hydroxy apatite crystals.

↓

Hydrolysis and formation of intermediate product

↓

Dicalcium phosphate dihydrate (DCPD)

↓

This DCPD is highly reactive with fluoride leading to formation of fluorapatite. The amount and depth of fluoride deposited as fluorapatite would be dependent on the amount and depth at which

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It gets formed

↓

Once the precipitate which [CaF] is formed into fluorapatite deeper penetration and continuous use of fluoride is required. so API has to be given every 30 seconds and the teeth be kept wet for 4 minutes.

- Advantages
  - Has acceptable taste
  - No staining.
  - No gingival irritation
  - Stable with long shelf life
  - Cheap
- Disadvantages
  - Teeth have to be kept wet for 4 minutes
  - Solution is acidic

Newer Topical Fluorides

1. Amine fluoride
2. Stannous hexafluorozirconate

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Fluoride Varnish

1. Commonly used Varnishes
   1. Duraphat (5% Varnish containing 2.26% F)
   2. Fluor protector (Silane fluoride with 0.7% F)

Self applied topical Fluoride

Commercially available pediatric dentifrices

Name of toothpaste	Components
Kidodent	1. Sodium monofluorophosphate – 0.38% w/w 2. Xylitol 3. Fluoride content – 500ppm
Cheerio	1. Sodium monofluorophosphate – 0.35% w/w 2. Fluoride content – 458 ppm
Bubble	1. Sodium monofluorophosphate – 0.35% w/w 2. Fluoride content – 500ppm
Inssiabe	1. Sodium monofluorophosphate – 0.38% w/w 2. Xylitol 3. Fluoride content – 500ppm.

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Fluoride dentifrices

Nal

Sn F2

Sodium monofluorophosphate

Amine fluoride

Recommendation for use of fluoride toothpaste

Child age	Recommendation	Strength	Rem...
Eruption of 1 tooth to 2 year	Smear or rice grain size equivalent	1000ppm twice daily	Rinse after brushing don't keep bare mother
2-6 years	Pea size equivalent	1000 ppm twice daily	
6-12 years	atleast pea size equivalent	atleast 1000 ppm twice daily	
13 and above	atleast pea size equivalent	atleast 1000 ppm twice daily	

Age (years):

Below 4 — Not recommended

4-6 years — Once daily with fluoride paste and twice without paste.

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3 - 10 years Twice daily with fluoride paste and once without paste

Above 10 Thrice daily with fluoride paste.

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PULP VITALITY TESTS

Pulp Vitality test – Assessment of the pulpal blood supply
Helps in monitoring the state of health of dental pulp

1. Thermal test

- Work by hydrodynamic forces in the dentin which generator potential in the nerve endings by depolarizing surface membrane potential.
- 2 types – cold test
  heat test

Cold Test

Agents used – Stream of cold air
Ethyl chloride spray
Cold water bath
Ice pencil
Dry ice (newer agents)

Response to cold indicate vital pulp regardless if the pulp is normal or abnormal

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- Advantages

Ability to effectively pass cold through crowns and metallic restorations.

Vitality test for immature teeth.

Do not cause pain in the dentin or irreversible damage to the pulp.

Heat test

Agents used - hot gutta percha
hot burnisher
hot compound
hot water bath

Limitations

- Increase to the anxiety of the child
- Heat stimulates damages the pulp
- Injury to adjacent soft tissue -- uncooperative child.

2. Electric Pulp Testing

The electric pulp test is more reliable than some of the test used to determine pulp vitality.

The electric pulp test is often used when testing for pulp vitality uses nerve stimulation instead.

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- Tooth which is to be tested as pulpal response is lowered (as tooth is in resorbing stage of root)
- Non vital tooth that cannot be safely tested using pulp vitality
- Teeth with intact restoration and a pulp pathosis
- Recently traumatized teeth
- Recently erupted teeth

Conventional pulp testing

Method	Technique / Material	Symptoms interpretation
1. Thermal	. Ethyl chloride ice, air, hot burnisher, heated gutta percha	Lingering pain in pulpitis Hypersensitivity subsiding pain in normal pulpitis.
2. Electric	Instrument such as odontomed	Higher current required (non vital or chronic inflammation) Low current required (acute pulpitis) Recently traumatized Malformed teeth

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Resorption	Vertical Lateral	Apical periodontitis Lateral periodontal cyst Inflammation
Radiograph	IOPA	Thickening of PDL Widened periodontal Inflammation

Newer Methods

Laser Doppler Flowmetry

It is a new method of evaluating pulp vitality by measuring the velocity of RBC in capillaries.

First described by Graselius et al (1986)

A near infrared with a wavelength of 640 nm is produced by 1mW helium neon laser within the flowmeter and this is transmitted along the flexible fiber optical conductor inside a specially designed round dental probe with diameter 2mm.

- Uses electro-optic principle based on laser source that is absorbed by pulp and the laser light travels to the pulp using the dentinal

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Calculus gingivitis

- Probe from the gingival margin to the ideal position for the probe tip so that creates a balance between minimizing the noise and having a recognisable signal volume.

- Disadvantage
  - Radiographic sensitive
  - Reading affected by movement of patient.
  - False negative results - endodontically treated tooth gingival blood flow is measured.

Pulse Oximetry

- This is an oxygen saturation monitoring device widely used in medical practice for recording blood oxygen saturation level during administration of intravenous anaesthesia.
- Invented by Aoyagi (1970s)
- It is an entirely objective test requiring no subjective response from the patient.
- Pulse oximeter sensor consist of 2 LED one

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DEPARTMENT OF PEDIATRIC AND PREVENTIVE DENTISTRY

ASSESSMENT OF STUDENT: SREENANDANA

RUBRICS CRITERIA

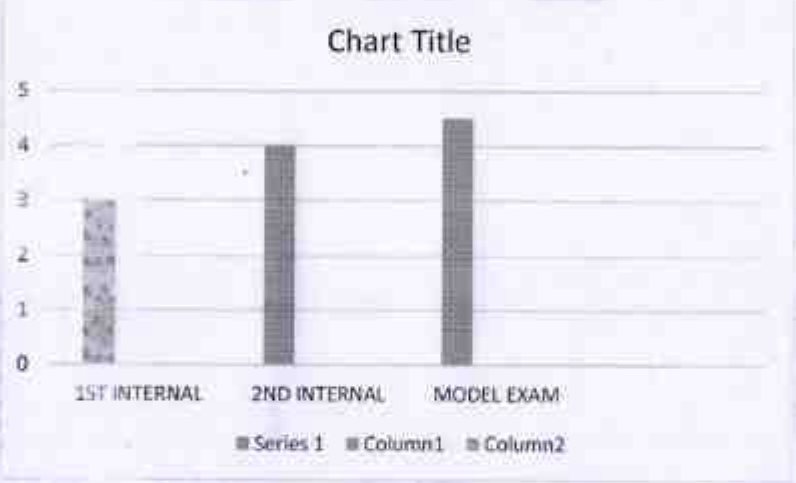
SL.NO	CRITERIA	POINTS
1	INTERNAL MARKS	2
2	PRACTICAL/CLINICAL SKILLS AND VIVA VOCE	1
3	ATTENDANCE	2
4	SEMINAR PRESENTATION FOR ASSESSING THE KNOWLEDGE ON SUBJECT	1
5	PROFESSIONALISM AND COMMUNICATION SKILLS	1
6	TOTAL SCORE	7

Inference- Slow Performer

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STUDENT'S PERFORMANCE REVIEW- SREENANDANA

Sl No	Student Name	Theory(10 Marks)		
		1st Internal	2nd Internal	Model Exam
1.	SREENANDANA	3	4	4.5



Student's performance review:

Academic Performance: Slow Performer to Moderate Performer

Attendance Performer: Slow Performer to Moderate Performer

Sreenandana was a slow performer initially who had difficulty to cope up with the lessons and his performance was below average. We implemented various programs inorder to improve his academic performance. This includes regular assignments, quizes, discussions, viva voce, class tests etc. Later own she has worked hard and demonstrated excellent progress and changed to a moderate learner.

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MILESTONES OF DEVELOPMENT

Age	Milestones of development	physical parameters
0-1yr	Baby starts making cooing, cooing sound Baby can stand by 1st year Baby can sit without support Baby can crawl forward Baby can creep on hands and knees Baby is fully mature Baby can smell of his mothers breast milk Baby increasing attention towards speech Baby cries when mother or father leaves	- expected height 50-75cm - Expected weight 6.15-9.75 kg - expected head circumference 35-45cm
1-3yrs	Baby can walk up and down stairs holding on for support Baby recognizes names of familiar people like mama and papa Baby points to body parts Baby imitates behaviour of others, especially adults Baby can [illegible] Baby can [illegible] Baby can [illegible] age	- Expected height 75-95cm - Expected weight 10-14kg - Expected head circumference 45-47cm

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3-4y

Expected height
95-100cm
Expected weight
14-18kg
Expected head circumference
49-50cm

Doctors : SHUBA TANDON

900

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VACCINE

BCG, OPV, HBV

OPV, DPT, HBV, Hib

OPV_2, DPT_2, Hib

DPT3, OPV_2, HBV, Hib

measles vaccine

MMR, OPV, DPT, Hib

TT/Td

OPV, DTPT

Tetanus, Toxoid

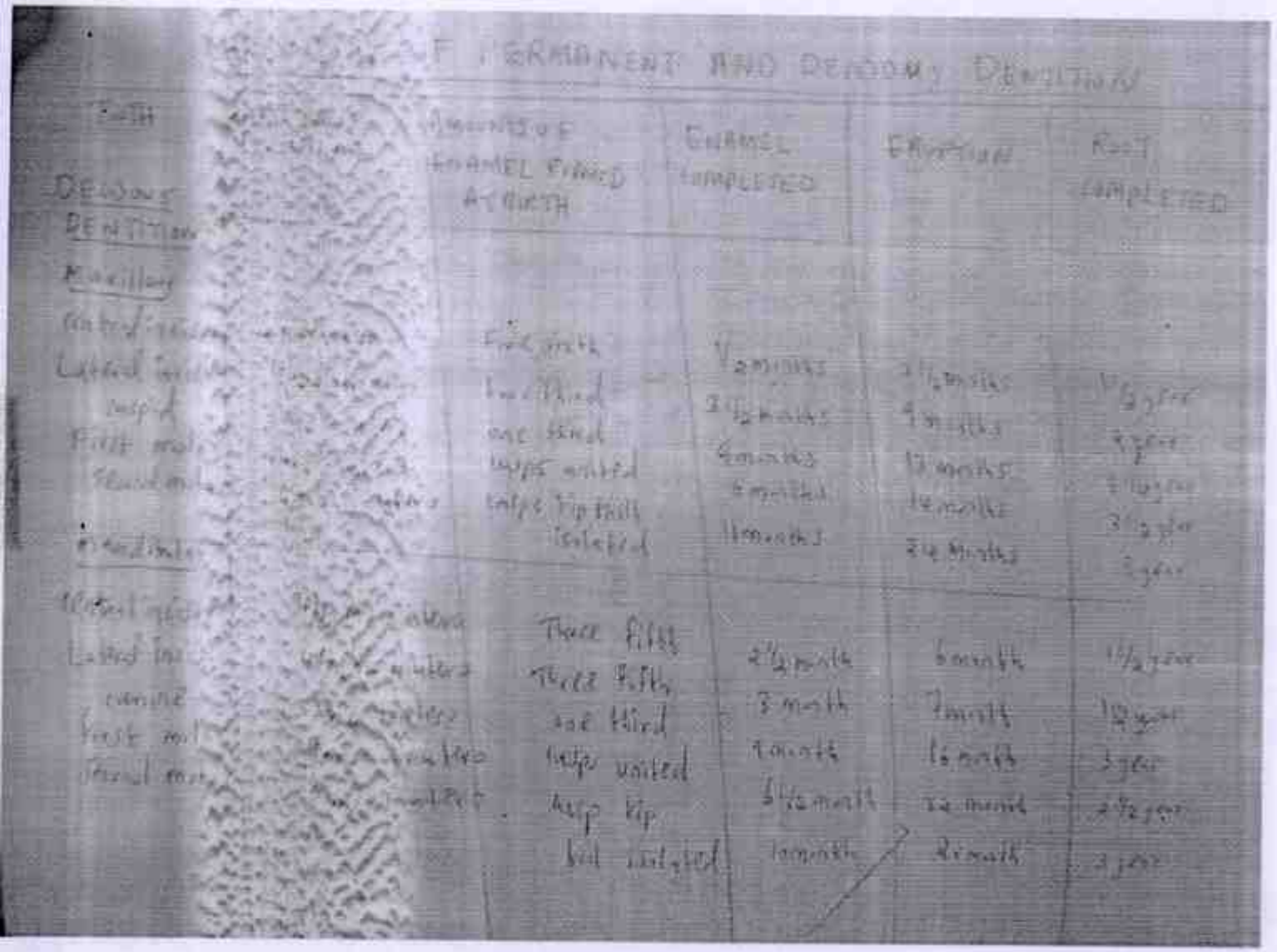
TT

2 doses of TT

* OPV - oral polio vaccine
* BCG - Bacilla calmette guerin
* DPT - Diphtheria pertussis, tetanus
* HBV - hepatitis B vaccine
* TT - tetanus toxoid

Reference: SHARMA TANDON, Page no: 866

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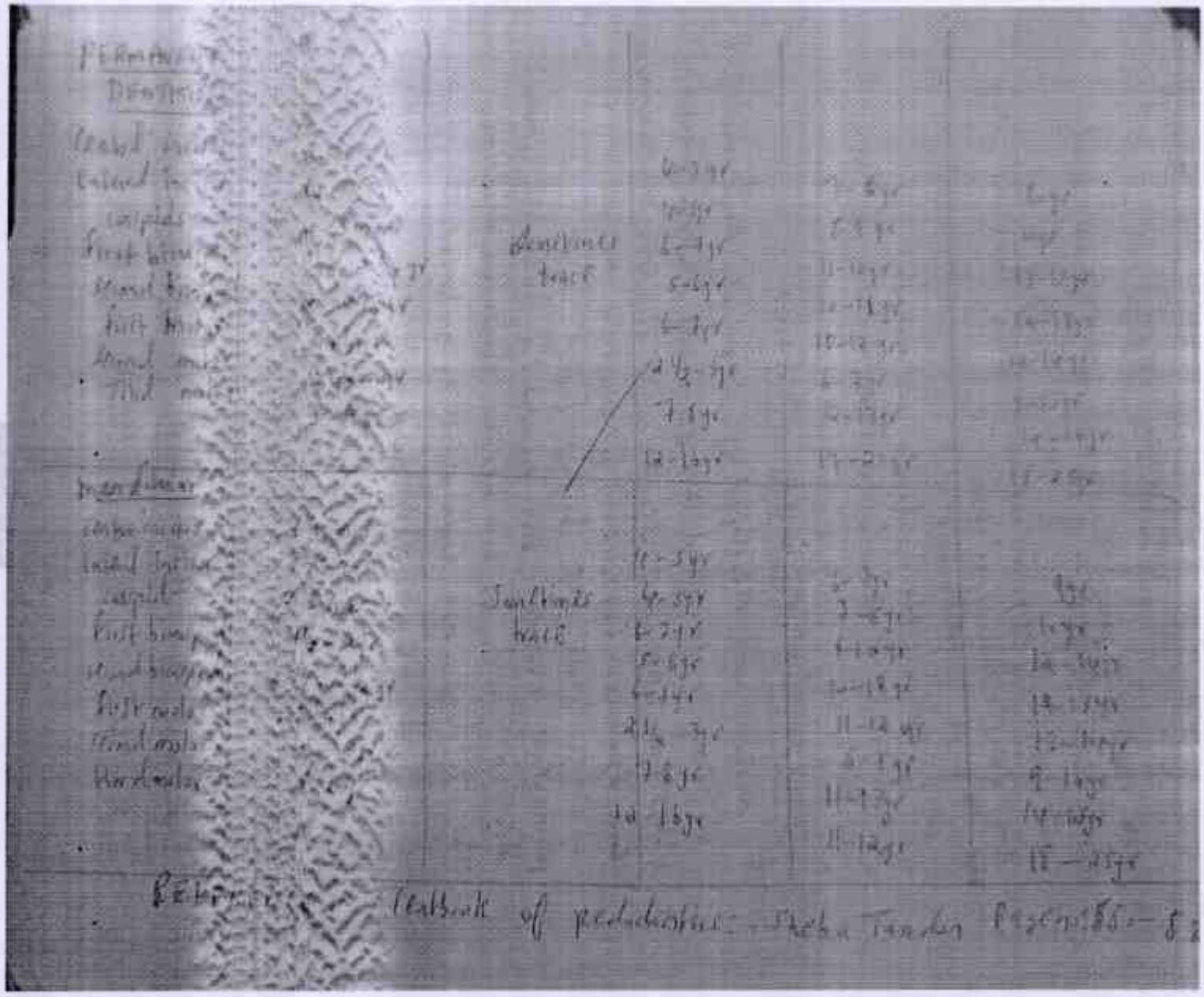


F / ERMANENT AND DECIDUOUS DENTITION

TEETH	AMOUNT OF ENAMEL FORMED AT BIRTH	ENAMEL COMPLETED	ERUPTION	ROOT COMPLETED
DECIDUOUS DENTITION				
Maxillary				
Central incisor	Five-sixth	4½ months	7½ months	1½ years
Lateral incisor	Two-third	5½ months	9 months	2 years
Canine	One-third	9 months	18 months	3¼ years
First molar	Cusps united	6 months	12 months	2½ years
Second molar	Cusps tip free, not isolated	11 months	24 months	3 years
Mandibular				
Central incisor	Three-fifths	2½ months	6 months	1½ years
Lateral incisor	Three-fifths	3 months	7 months	1½ years
Canine	One-third	9 months	16 months	3 years
First molar	Cusps united	5½ months	12 months	2½ years
Second molar	Cusps tip not isolated	10 months	20 months	3 years

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Reference: Textbook of pedodontics - Shobha Tandon Page no: 55 - 82

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H NUMBERING SYSTEM

provides dentist with an essential
universal record keeping
system universal like shortcuts, key
& save times
many systems
dental federation notation
numbering system
palmer notation

PALMER NOTATION

developed by Zsigmondy and modified
so called as Zsigmondy palmer notation
the dentition is divided into quadrants
(brackets) are used to designate in
which the tooth is found
teeth are numbered 1-8 with lowest
to the teeth closer to midline
are indicated by a letter A to E

upper right quadrant
upper left quadrant
lower right quadrant
lower left quadrant

DENTITION

C B A | A B C D E

E D C B A | A B C D E

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A] Upper right central incisor

B] Upper right lateral incisor

C] Upper right canine

D] Upper right first molar

E] Upper right second molar

F] Upper left central incisor

G] Upper left lateral incisor

H] Upper left canine

I] Upper left first molar

J] Upper left second molar

[A] lower left central incisor

[B] lower left lateral incisor

[C] lower left canine

[D] lower left first molar

[E] lower left second molar

A] lower right central incisor

B] lower right lateral incisor

C] lower right canine

D] lower right first molar

E] lower right second molar

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8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
4	3	2	1					1	2	3	4	5	6	7	8
4	3	2	1					1	2	3	4	5	6	7	8

1. upper right central incisor
2. upper right lateral incisor
3. upper right canine
4. upper right first premolar
5. upper right second premolar
6. upper right first molar
7. upper right second molar
8. upper right third molar

1. upper left central incisor
2. upper left lateral incisor
3. upper left canine
4. upper left first premolar
5. upper left second premolar
6. upper left first molar
7. upper left second molar
8. upper left third molar

1. lower right central incisor
2. lower right lateral incisor
3. lower right canine
4. lower right first premolar

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5	lower right	second premolar
6	lower right	first molar
7	lower right	second molar
8	lower right	third molar
1	lower left	central incisor
2	lower left	lateral incisor
3	lower left	canine
4	lower left	first premolar
5	lower left	second premolar
6	lower left	first molar
7	lower left	second molar
8	lower left	third molar

UNIVERSAL NUMBERING SYSTEM

This system was suggested by parfitt in 1812 and has numbers 1-32 for permanent teeth and upper case letters A to T for primary teeth. The numbering starts with upper right third molar and ends in lower right third molar in clockwise direction

DENTITION

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upper right central incisor

upper right lateral incisor

upper right canine

upper right first molar

upper right second molar

upper left central incisor

upper left lateral incisor

upper left canine

upper left first molar

upper left second molar

lower left central incisor

lower left lateral incisor

lower left canine

lower left first molar

lower left second molar

lower right central incisor

lower right lateral incisor

lower right canine

lower right first molar

lower right second molar

Key

Permanent dentition

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17

1 upper right third molar
2 upper right second molar
3 upper right first molar
4 upper right second premolar
5 upper right first premolar
6 upper right canine
7 upper right lateral incisor
8 upper right central incisor
9 upper left central incisor
10 upper left lateral incisor
11 upper left first premolar
12 upper left second premolar
13 upper left canine
14 upper left first molar
15 upper left second molar
16 lower left third molar
17 lower left second molar
18 lower left first molar
19 lower left second premolar
20 lower left first premolar
21 lower left canine
22 lower left lateral incisor
23 lower left central incisor
24 lower right central incisor
25 lower right lateral incisor
26 lower right canine
27 lower right first premolar
28 lower right second premolar

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lower right second premolar
lower right first molar
lower right second molar
lower right third molar

WORLD DENTAL FEDERATION NOTATION

→ 2 digit notation also known as ISO - 3950

→ both deciduous and permanent is given two number

→ 1st indicates dentition, arch and quadrant
i.e., the dentition divided into quadrants numbered from 1 to 4 in a clockwise starting from upper right quadrant

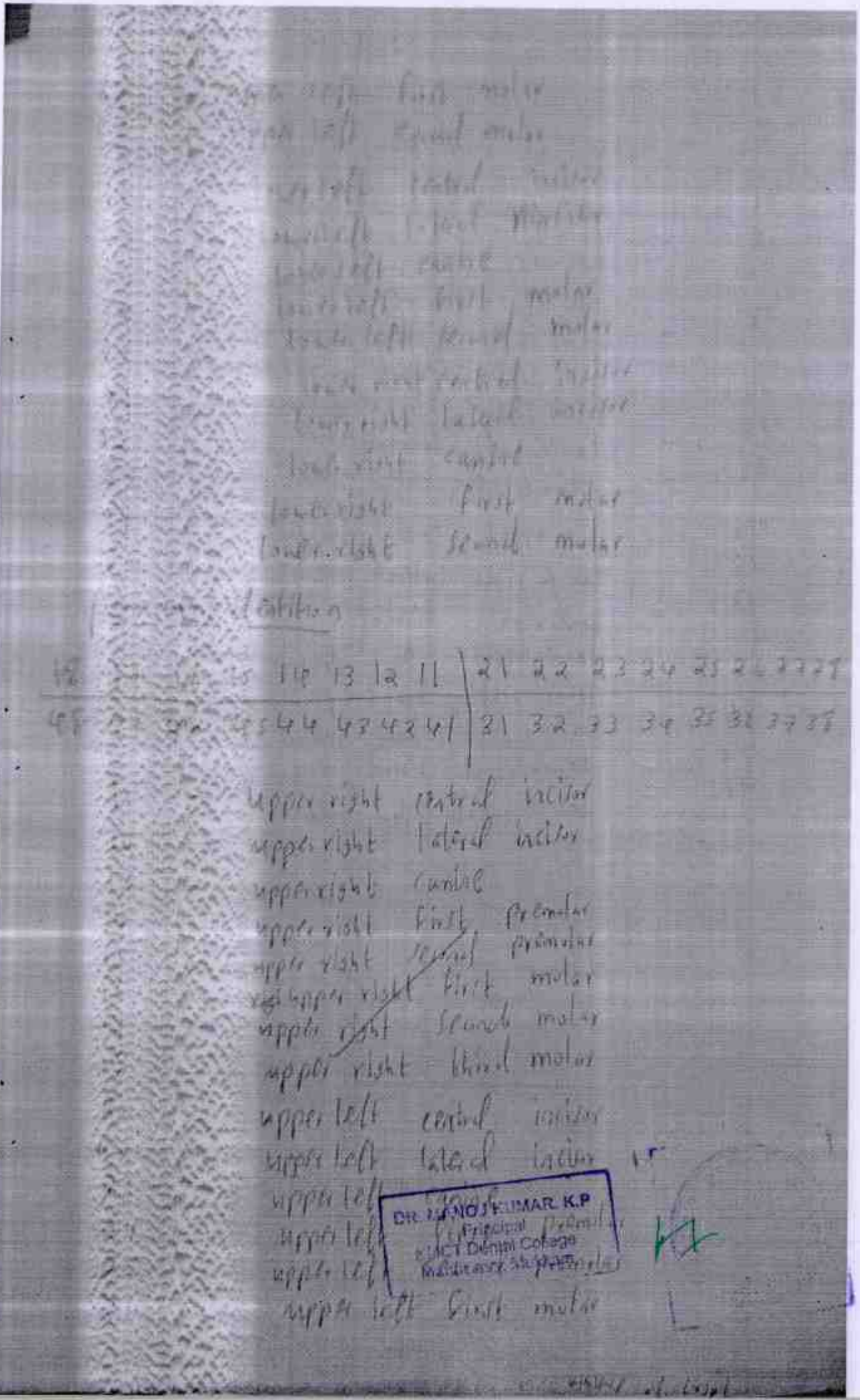
→ the deciduous dentition is divided into units which are numbered from 5-8 in a clockwise direction starting from upper right quadrant

Permanent dentition

18 17 16 15 14 13 12 11	21 22 23 24 25 26 27 28
48 47 46 45 44 43 42 41	31 32 33 34 35 36 37 38

upper right central incisor
upper right lateral incisor
upper right canine
upper right first premolar
upper right second premolar
upper left first premolar
upper left lateral incisor
upper left canine

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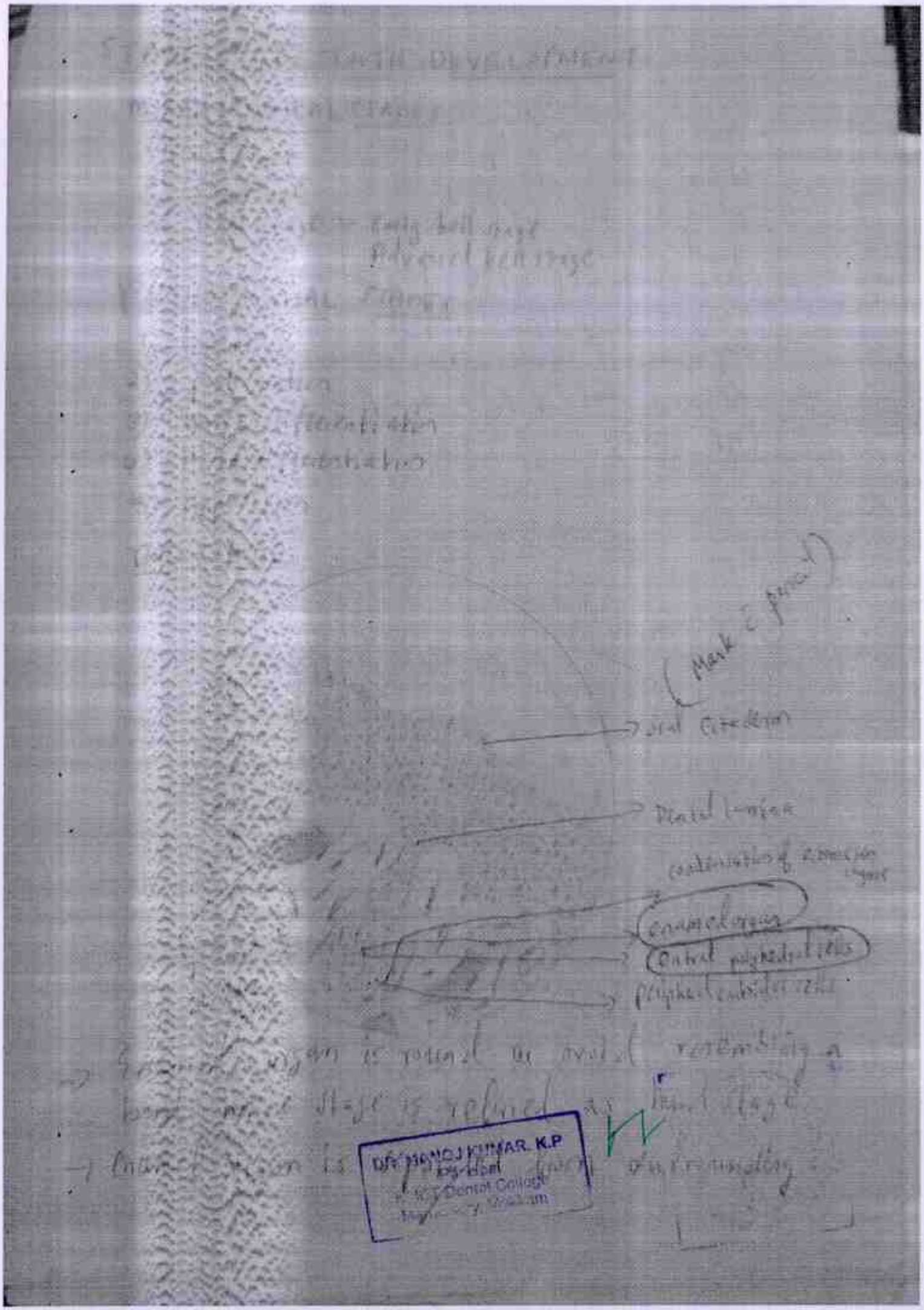


upper right central incisor
upper right lateral incisor
upper right canine
upper right first premolar
upper right second premolar
upper right first molar
upper right second molar
upper right third molar
upper left central incisor
upper left lateral incisor
upper left canine
upper left first premolar
upper left second premolar
upper left first molar

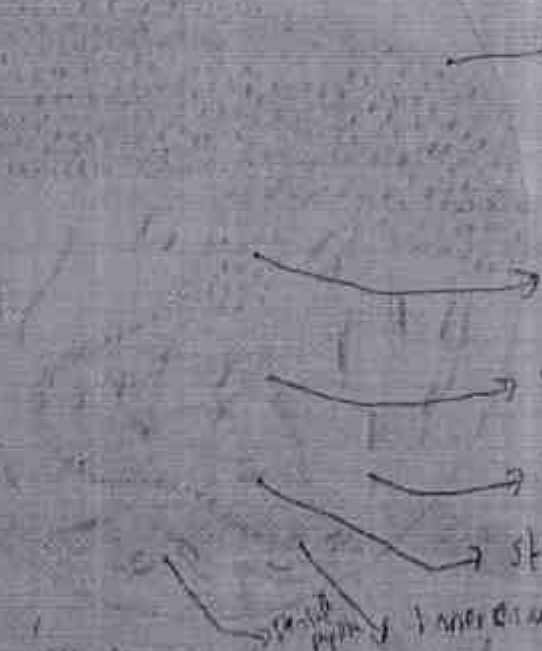
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27 left second molar
28 left third molar
31 upper lower left central incisor
32 lower left lateral incisor
33 left canine
34 lower left first premolar
35 lower left second premolar
36 lower left first molar
37 lower left second molar
38 lowerleft third molar
41 lower right central incisor
42 lower right lateral incisor
43 lowerright canine
45 lower right first premolar
46 lower right second premolar
47 lower right first molar
48 lower right second molar
lower right third molar

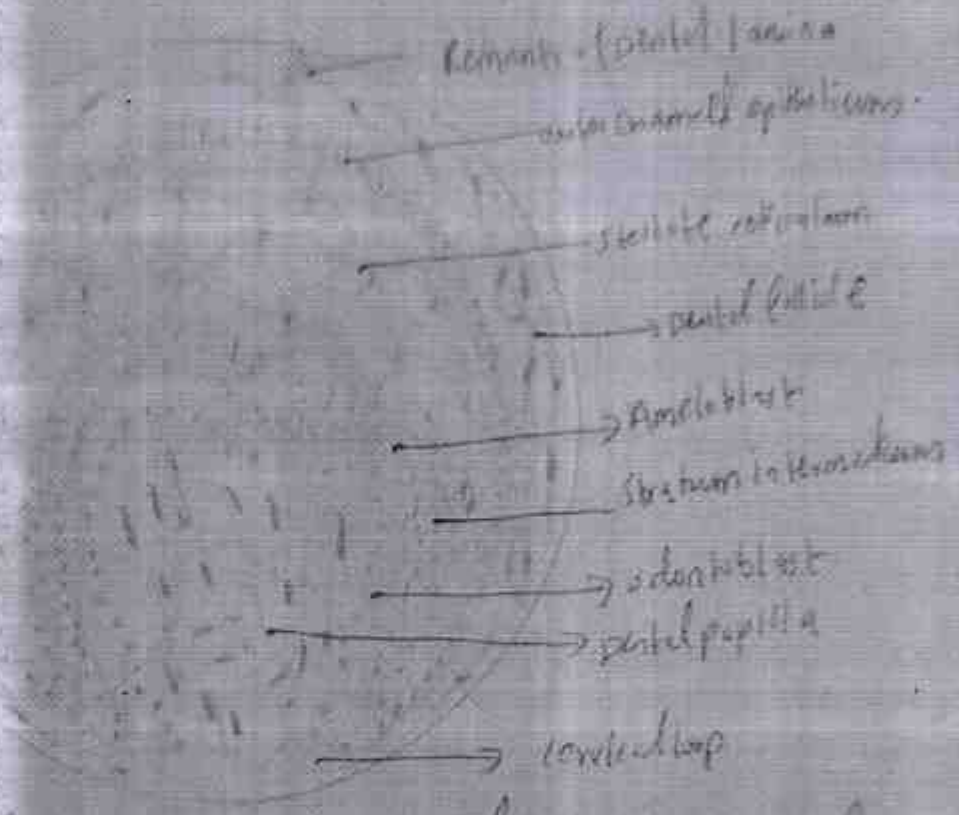
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BRITISH MUSEUM (N.H.)
Zoological
Department
Manuscript Museum



- Enamel organ overlies inner and outer shape of crown formation of deep portion of bud
- Cells at periphery of cap - outer enamel epithelium cuboidal shape
- Cells at concave surface of enamel organ change to columnar shape
- Cervical loop consists of outer and inner epithelial cells

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organ having bell shape

enamel organ - inner epithelium

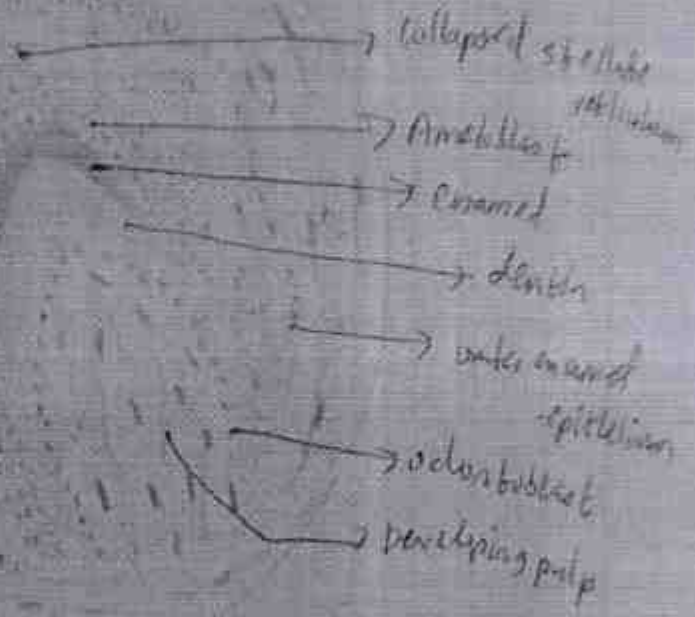
dium, stellate reticulum, outer enam

cells at periphery cells differentiating

blast

dental papilla

BELL STAGE



shows four distinct layers

epithelium, stratum intermedium

reticulum, outer enamel epithelium

by difference from early bell stage

tissue formation

cells

epithelial

enamel

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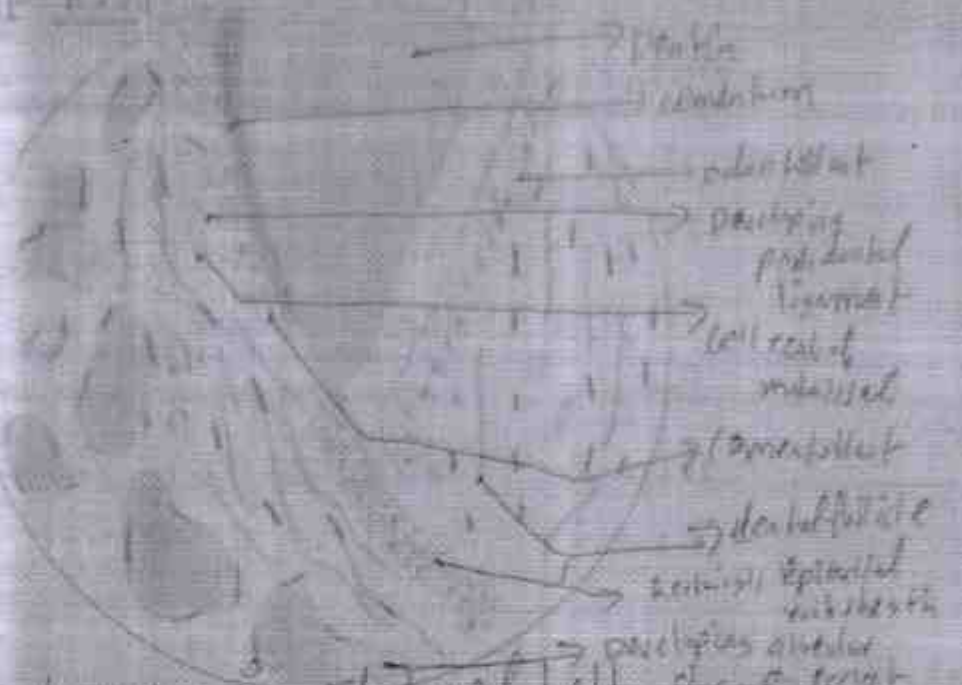
folding of outer

arrangement of epithelial cells

of dental

enamel blast

DEVELOPMENT OF Root



- Root development occurs in advanced bell stage. Root after the enamel and dentin formation reaches cervical region.
- Inner enamel epithelium and outer enamel epithelium at the cervical loop proliferate to form Hertwig's epithelial root sheath which determines the size and shapes and number of root to be formed
- formation of radicular dentin
- formation of AMERS
- formation of cementum
- formation of periodontal ligament

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Eruption sequence

age and sex

Preparatory stage
migration of tooth bud epithelium
Emergence of crown into oral cavity
first occlusal contact
full occlusal contact
functional eruption

	TOOTH	ERUPTION
Deciduous dentition	central incisor	7½ months
	lateral incisor	8 months
	canine	16-20 months
	first molar	12-16 months
	second molar	20-30 months
Permanent dentition	central incisor	6½ months
	lateral incisor	7 months
	canine	16-20 months
	First molar	12-16 months
	second molar	20-30 months
Permanent dentition	central incisor	7-8 yr
	lateral incisor	8-9 yr
	canine	11-14 yr
	first molar	10-13 yr
	second molar	6-9 yr
	third molar	17-21 yr

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Incisal edge	0-2 yr
Occlusal surface	2-3 yr
Canine	4-5 yrs
First premolar	4½-5½ yrs
Second premolar	5½-6½ yr
First molar	2½-3 yrs
Second molar	7½-8 yr
Third molar	12-16 yr

Stages of tooth development

Apical end of root completed
Root almost completed open apex
2/3 of root completed
1/3 of root completed
Crown completed
Crown almost completed
2/3 of crown completed
1/3 of crown completed
Initial calcification
Presence of crypts
Absence of crypts

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DELAYED ERUPTION

[illegible] teeth is one often dealt with [illegible] published under [illegible] refer to lack of hypothyroidism and [illegible]

[illegible] of a single tooth is most frequently [illegible] by local etiological and [illegible] [illegible] teeth which is [illegible] with often [illegible] delayed [illegible]

[illegible] eruption and late eruption can be [illegible]

- [illegible] origin
- [illegible] formation
- [illegible] problems
- [illegible] disorders
- [illegible]
- [illegible] disorders

Eruption

[illegible] are less frequent in permanent dentition [illegible] than deciduous dentition and most late eruption [illegible] significant clinical effects [illegible] be considered to be late when [illegible] [illegible] 6 months beyond the [illegible] age [illegible] [illegible] the [illegible] teeth [illegible] for [illegible] eruption [illegible] for [illegible] teeth

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...delayed ...ption

...ion

...ral ...ginia

...bdominal hysterectomy

...dynamic

...m of dynamic

...ATION IN DENTAL OFFICE

...ation

...by which an article, surface/medium is ...
... all microorganisms either in vegetative form ...

...ATION STERILIZATION

...ents

- Spontaneous sterilization under natural conditions unreliable is of medical interest
- Flaming, incineration, hot air oven
- Sterilization by boiling, steam under pressure
- dry, moist, ionic, uv radiation

...ents

- ethyl, isopropyl alcohol
- Formaldehyde, glutaraldehyde
- Iodophores, hypochlorite
- ... chlorhexidine, ...
- ... active ... phenolic, ... ethylene oxide
- Ethyl ... Beta ... peroxide

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STERILIZATION & DISINFECTION IN DENTAL OFFICE

DRY HEAT OVEN

- Forceps and elevator
- Hand pieces
- Mirror
- Glass tumbler
- Explorer and probe
- Syringes
- Rubber material

— Temperature : 134°C
- Pressure : 216 kpa
- Exposure time : 60-120 min
- Corrosion : no corrosion
  non toxic
  items wrapping after cycle
  can be stored for later
- Precautions :- long cycle time
  may damage rubber and plastics
  Door can be opened during cycles
  unwrapped items quickly contaminated
  after cycle

AUTOCLAVE

- Temperature : 121°C
- Exposure time : 15 min wrapped
  20 min unwrapped
- Corrosion : no corrosion

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non toxic
items are dry after cycle
- may damage rubber and plastics
Door can be opened during cycle
unwrapped items quickly contaminated
after cycle

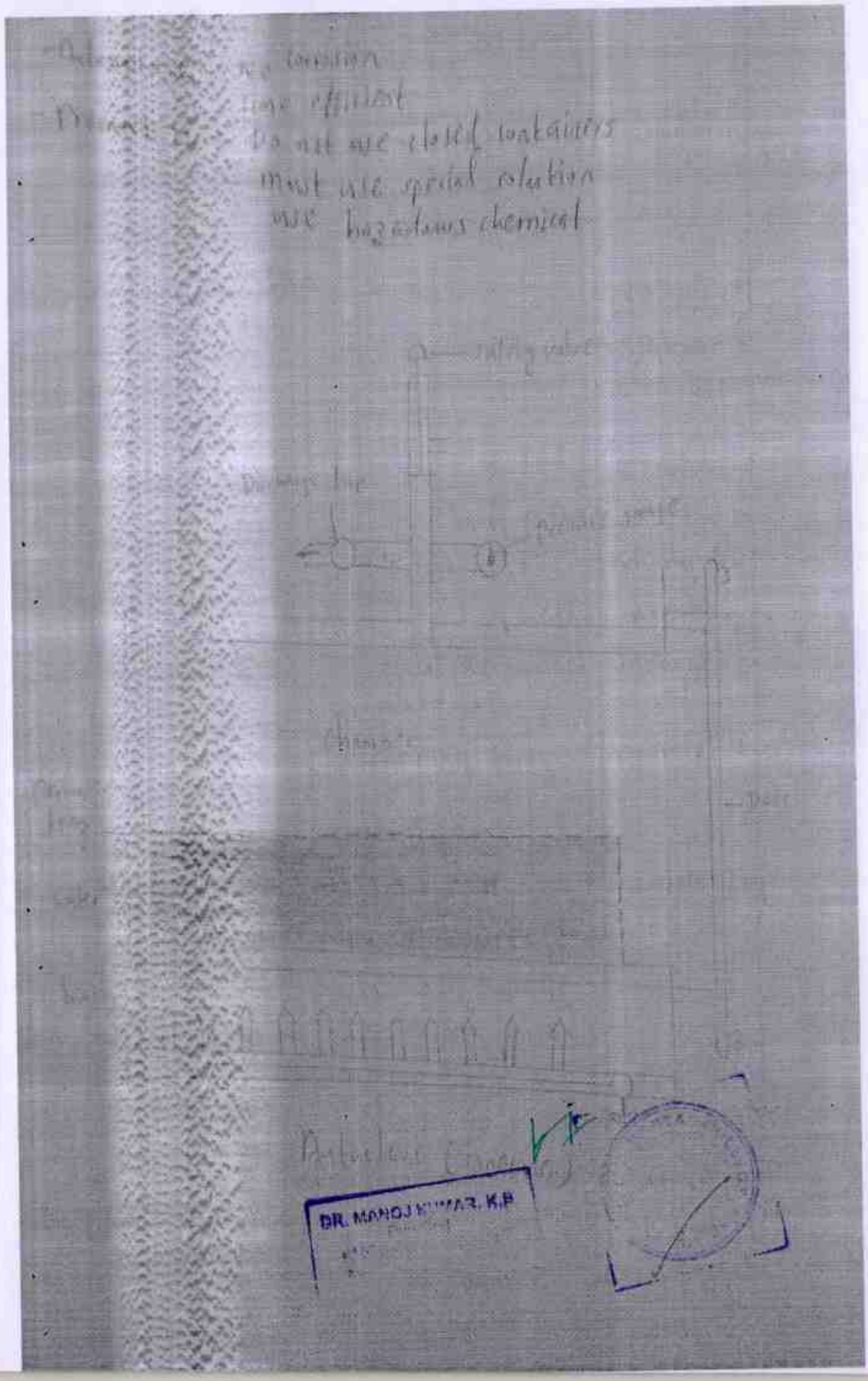
PLASMA

gauze, gloves
- temperature -121°C (9m F)
- 115 kPa
- exposure time: 13-3 min
3.5 - 12 min
- damage - good penetration
non toxic
Time efficient
- corrosion - non stainless steel items corrode
may damage rubber and plastics
Do not use clear containers
Unwrapped items quickly contaminated
after cycle

Chemical

- temperature - 134°C
- time -
- cycle time: 90 min

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Amalgam

Classifications

1. According to content
   - Low copper amalgam
   - High copper amalgam
   - Unicompositional alloys
   - Amalgam with noble metals
2. According to number of alloy metals
   - Binary alloys (silver-tin)
   - Ternary alloys (silver-tin-copper)
   - Quaternary alloys (silver-tin-copper-indium)
3. According to whether powder content is unmixed or mixed
   - Admixed alloys
   - Mixed (dispersion) blended alloys
   - Unicompositional / unicomponential alloys
4. According to shape of powdered particle
   - Spherical
   - Lathe-cut
   - Combination of spherical and lathe-cut
5. According to powder particle size
   - Fine cut
   - Coarse cut
   - Admixture cut.
6. According to copper content of powder
   - Low copper content alloy (less than 6%)
   - High copper content alloy (6-30%)
7. According to addition of noble metals
   - Platinum
   - Gold
   - Palladium

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Purpose of Zn

Setting

Manipulation

Low copper amalgam

Ag - 70%

Sn - 28%

Cu - 2%

High copper amalgam - admixed

High copper amalgam - Single composition alloy

Lathe cut alloy in spherical form

Ag - 60%

Sn - 25%

Cu - 15%

Conventional alloy in spherical form

Ag - 54%

Sn - 13%

Cu - 29%

Zn - 2%

Advantages of High copper amalgam alloy

- Less corrosion
- Less creep
- Less marginal deterioration
- Less tarnish
- Less gamma 2 phase

Disadvantages of High copper amalgam alloy

- Difficult to manipulate
- Longer setting time
- Longer finishing time

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DEPARTMENT OF PEDIATRIC AND PREVENTIVE DENTISTRY

ASSESSMENT OF STUDENT: RABEEN

RUBRICS CRITERIA

SL.NO	CRITERIA	POINTS
1	INTERNAL MARKS	2
2	PRACTICAL/CLINICAL SKILLS AND VIVA VOCE	1
3	ATTENDANCE	1
4	SEMINAR PRESENTATION FOR ASSESSING THE KNOWLEDGE ON SUBJECT	1
5	PROFESSIONALISM AND COMMUNICATION SKILLS	1
6	TOTAL SCORE	6

Inference- Slow Performer

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FINAL YEAR BDS PART –II RETEST

PROSTHODONTICS AND CROWN & BRIDGE

TIME: 3HRS MAX MARKS: 100

- Answer all questions
- Draw diagrams wherever necessary

ESSAYS (2x14=28)

1. Classify direct retainers. Name the components of clasp assembly. Enumerate the principles of clasp design.
2. Classify methods of gingival retraction and briefly explain each technique.

SHORT ESSAYS (4x8=32)

3. Immediate Denture.
4. Describe the various concepts of occlusion in complete denture prosthodontics.
5. Principles of tooth preparation.
6. Discuss the principles and objectives of impression making.

SHORT NOTES (10X4=40)

7. Neutral zone.
8. Difference between arcon and non arcon articulators.
9. Over dentures – advantages, disadvantages.
10. Types of indirect retainers and discuss each in detail.
11. Kennedys classification for partially edentulous arches
12. Dental implants – Indications and contraindications
13. Posterior Palatal Seal
14. Palatal Bar Major connector
15. Pindex system.
16. Pier Abutment.

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Date: 21/11/22

Anusha Dinesh
Roll no: 9

PROSTHODONTICS

Retent

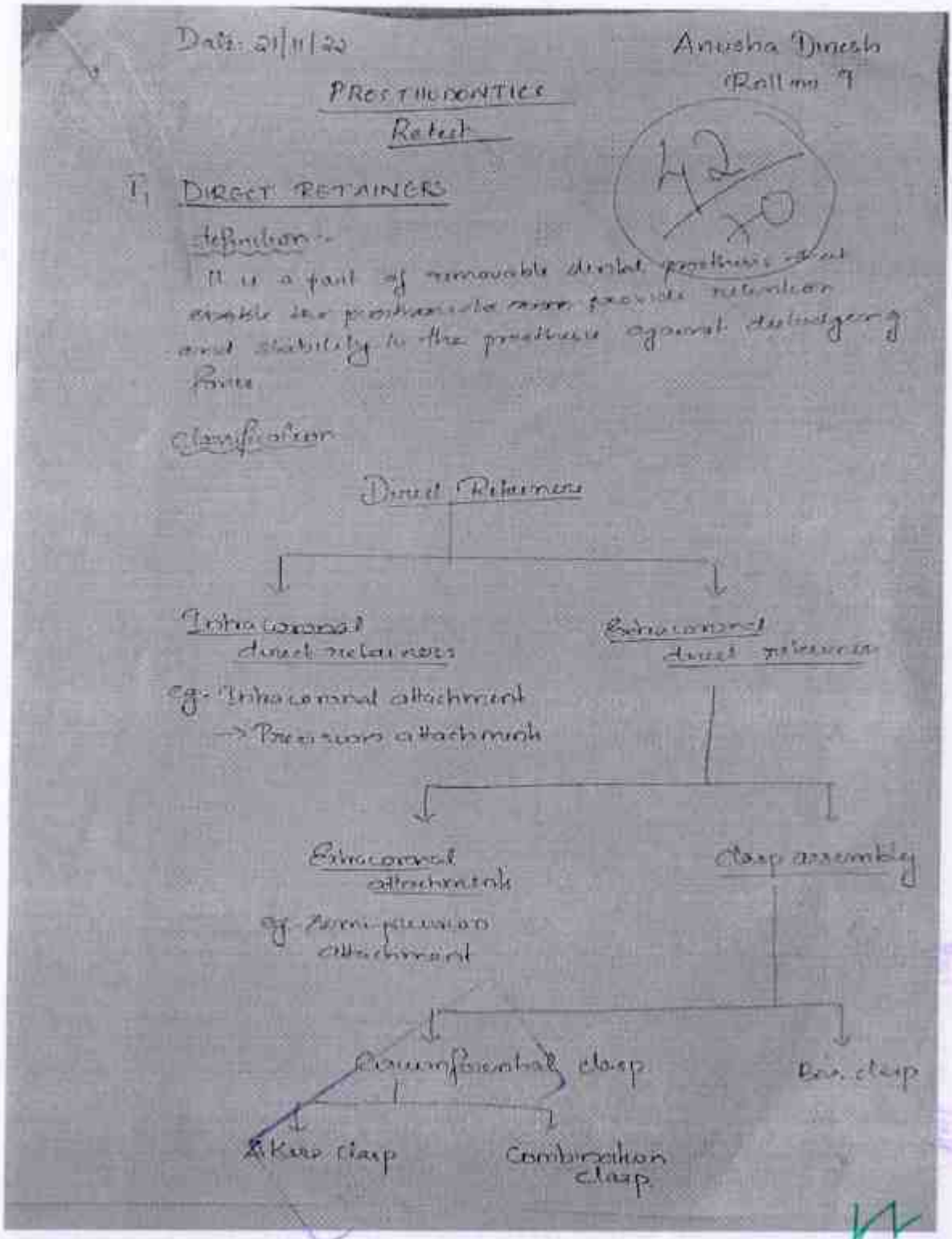
42/50

I. DIRECT RETAINER

definition:-

It is a part of removable dental prosthesis that enable the prosthesis to provide retention and stability to the prosthesis against dislodging forces

Classification



Clasp Assembly

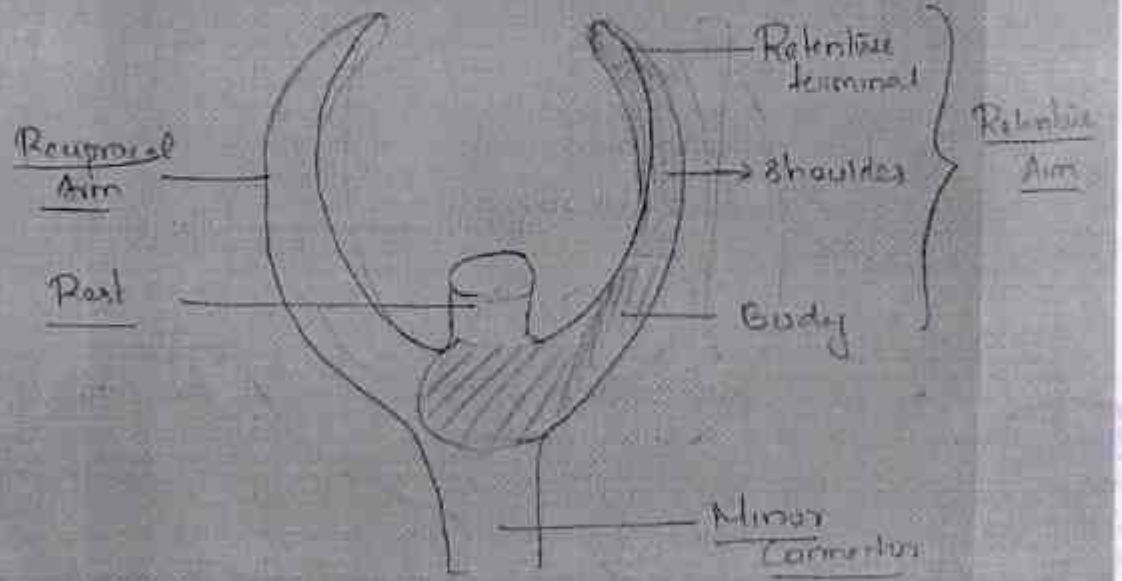
Components of clasp assembly include,

(i) Retentive Arm
- → Retentive terminal
- → Body
- → Shoulder

(ii) Reciprocal Arm

(iii) Rest

(iv) Minor Connector



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Retentive Arm

→ The component of clasp assembly engages the undercut areas

→ It has 3 part

(i) The retentive terminal is flexible and engages the undercut areas

(ii) The shoulder part, connect the retentive terminal and the body of retentive arm
- It engages a part of undercut and above the height of contour

(iii) The body, connects or attaches the retentive arm to the minor connector
- It is rigid and not flexible and rest over the height of contour of abutment teeth

Reciprocal Arm

→ The component engages the tooth surface opposite to the retentive arm, set at above the height of contour

→ It reciprocates the lateral forces from the retentive arm

→ While seating the RDP, the reciprocal arm first come in contact with tooth surface and keeps in contact till the retentive arm engages the undercut area.

(iii) Minor Connector

→ It connects the clasp assembly to the major connector or denture base

→ It may arise from the denture base or major connector and attaches to the Occlusal rest near the edentulous space

→ Or, it can also arise from the soft tissue surface as an approach arm and cross the gingival margin at 90° to engage the undercut area



Approach arm minor connector

(iv) Rest

→ It gives support to the clasp assembly

→ It prevent the displacement of denture towards the basal tissue or bone

→ Act as a vertical stop.

→ A minor tooth preparation needed at the Occlusal surface of the tooth to seat the rest

~~15) Proton Syndrome~~

⇒ Types of clasp assembly

* Simple circlet clasp
* Reverse circlet clasp
* Embrasure clasp
* Fish-hook clasp / hair-pin clasp
* Ring clasp
* Back-action clasp
* Bar clasp
  - → I-bar clasp
  - → T-bar clasp
  - → Modified T-bar clasp
  - → Y-clasp

5) GINGIVAL RETRACTION

definition:- It is the lateral and movement of marginal gingiva from the tooth surface

Indications

* During impression taking to get the finish line configuration that is present subgingivally or equigingivally
* During tooth preparation, to prepare finish line
* Periodontally healthy tooth

Methods of Gingival Retraction

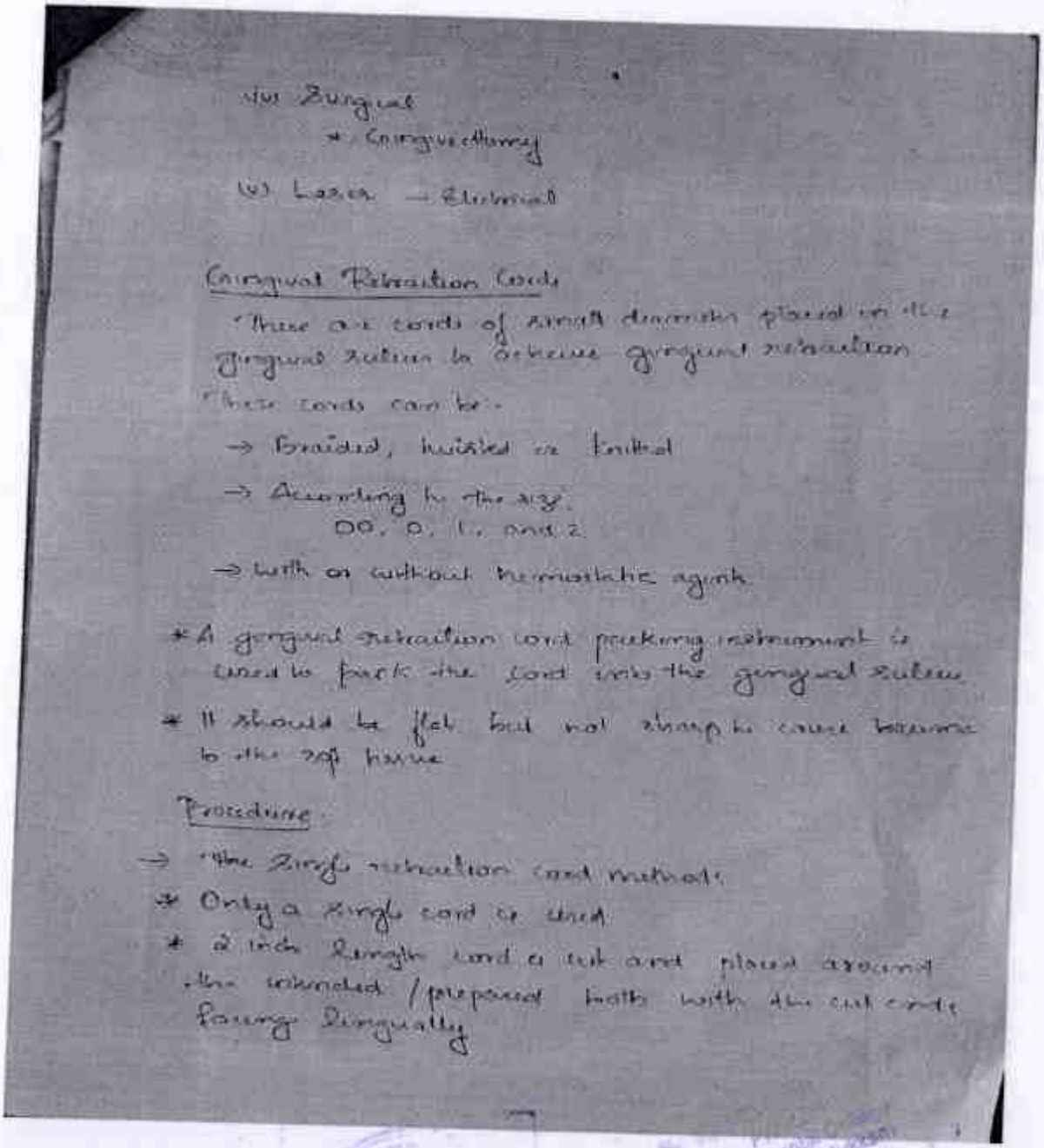
(i) Mechanical Methods
  * Rubber dams
  * Cotton threads

(ii) Chemical methods
  * Anticholinergic drugs. eg: Atropine
  * Antihypertensive drug

(iii) Mechano-chemical Methods
  * Retraction cords

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(iii) Surgical
* Gingivectomy

(iv) Laser → Electrical

Gingival Retraction Cords

* These are cords of small diameter placed in the gingival sulcus to achieve gingival retraction.
* These cords can be:
→ Braided, twisted or knitted
→ According to the size:
00, 0, 1, and 2
→ With or without hemostatic agents

* A gingival retraction cord packing instrument is used to pack the cord into the gingival sulcus
* It should be flat but not sharp to cause trauma to the soft tissue

Procedure:

→ The single retraction cord method:
* Only a single cord is used
* 2 inch length cord is cut and placed around the intended / prepared tooth with the cut ends facing distally

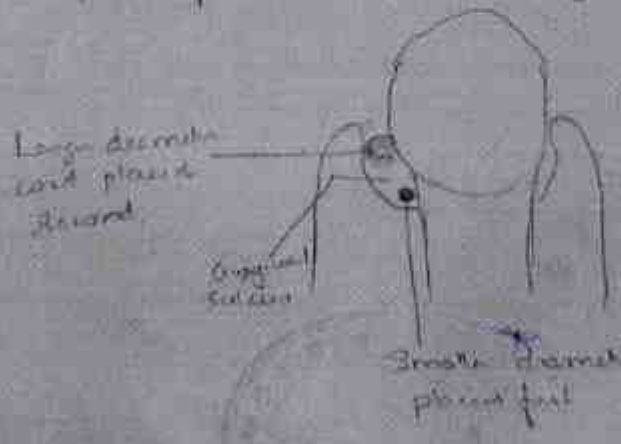
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The cord is packed into the sulcus using the post. instrument, starting from the proximal aspect and continuing towards the labial and lingual surfaces. The instrument is directed towards the tooth surface

* After packing resin is cut and waited for 4-5 minutes after which the cord is removed and impression is taken immediately
* Cord is removed by rocking it with water and without causing injury to tissues

→ Double cord technique

* Here two cords are used.
* One smaller diameter size cord is first placed in the sulcus. It is a hemostatic agent used to control bleeding
* Then a larger sized cord is packed
* After 2-5 minutes the larger diameter cord is removed and impression is taken without removing the smaller sized retraction cord
* After impression the small size cord is also removed



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(ii) Using chemical method:-
e.g:- Anticholinergic drugs
eg- Absopine, - 0.4 mg

Certain antihypertensive drug can also be used if the patient is not under antihypertensive drug.

⇒ These drug help maintain hemostasis and control gingival fluid flow.

(iii) We can also directly use paste
~~Arimemisia phosphate~~
The paste is directly injected into the gingival sulcus area and after 5 minutes it is washed off

* But the retraction obtained is inferior to the gingival retraction cord
* Traumatic Injuries to the soft tissue is less.
* Contains hemostatic agent, therefore control bleeding

(iv) Rubber dam.
* Rubber dam can be used to control fluid flow
* But before impression, clamps should be removed.

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→ Cotton thread can also be indicated for gingival retraction.

(v) Surgical Method

→ During tooth preparation when finish line is prepared, along with the epithelial keratinized tissue is also removed from the gingival sulcus

→ It is indicated only in periodontally healthy patient and if there is adequate epithelial keratinization

→ It is technique sensitive and excess removal of gingiva can also occur if alcohol is not expressed.



(vi) Electrical Method

→ Using laser, the tissue surface in the sulcus area can be removed.

→

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3]. IMMEDIATE DENTURE

Denture prosthesis that is given to the patient immediately after extraction of teeth

Two types -

(i) Conventional Immediate denture

This is fabricated while the natural anterior teeth are intact and only inserted after the extraction of anterior teeth

(ii) Interim Immediate denture

This is inserted after the extraction of both anterior and posterior teeth.

It is only for temporary ~~as a~~ ~~take a~~ until new complete denture is fabricated and inserted.

Method of fabrication (Conventional Immediate denture)

First the patient is diagnosed and if indicated for immediate conventional denture, the posterior teeth are extracted

↓

After a period of 6-8 weeks for healing of the residual ridge, impression is taken and preliminary cast is poured

↓

Custom tray is fabricated.

(i) Either complete space applied over the tray - the natural teeth and custom tray fabricated final impression taken using elastomeric impression material

(ii) Or. Custom tray fabricated for the edentulous space and border moulding done. Pick up impression taking using irreversible hydrocolloid.

↓

Final impression taken and mask cast is obtained

↓

denture base waxed and Occlusal rim is fabricated

↓

~~Teeth arranged according to the size of~~

Maxillary and mandibular cast are mounted according to centric relation and posterior teeth arranged

↓

Try-in is done for posterior teeth.

↓

After according to the patient desire:

(i) If the natural teeth arrangement is needed to be maintained, each teeth is removed from the diagnostic cast one-at-a time and replaced by artificial teeth of appropriate size

(ii) If the natural teeth alignment is not needed The whole anterior segment of the cast is made edentulous and teeth arranged appropriately

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Then the test cast is waxed up and processed. Occlusal correction made and then finished and polished

↓

During insertion, the anterior teeth are extracted with minimal trauma

↓

Using acrylic impliat of the edentulous area of the master cast, modification made in the area

↓

The denture is inserted

→ If retention and fit is not adequate, tissue conditioner can be used while protecting the surgical site.

→ Occlusal correction made

Post insertion Guidelines

→ Patient is asked to wear the denture without removing for 24 hours

If denture is removed in this period, it will be difficult to reinsert for another several days due to tissue inflammation and swelling

→ After 24 hours recall the patient

denture is removed and cleaned, pt is asked to use mouth wash

Occlusal discrepancies corrected

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Patient is asked to wear the denture at night for 1 week

→ Recall after 1 week
Inflammation / swelling subsides.
Gross occlusal corrections made

→ Recall after 1 month
Occlusal corrections are made
denture is relined

→ Recall after 6 months
denture is relined

In Intrum Immediate denture:

B. All postures and anterior teeth will be extracted at the same time indicated in periodontally weak patients

→ Initially preliminary impression is taken and diagnostic cast is poured

→ Wax is melted and poured in both space upto the gingival margin and remaining poured on dental stone

→ Again in the same impression, dental stone is poured completely

→ Then a set of cast obtained which is interlocked

→ The denture flange area is created by wax
Gingival Margin are demarcated

→ Wax up and the denture the cast

→ In the tooth space, acrylic resin of tooth shade is poured and then heat cure acrylic applied

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denture is processed and polished.
After the teeth all are extracted, then immediate denture is inserted.
Post insertion instructions are similar to conventional immediate denture and then will have the complete denture fabricated.

6] OBJECTIVES OF IMPRESSION MAKING IN COMPLETE DENTURE

Objectives:-

1. Retention
2. Stability
3. Support
4. Preservation of residual ridge
5. Aesthetics

Retention:-

Innate or inherent ability of the dental prosthesis to withstand the vertical distodging forces

→ factors that affect the retention:

i) Anatomic factors:

* Amount of surface area present for intimate contact with denture
* Soft tissue condition

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(ii) Physiological factors

→ Saliva :- If thin, watery, flowable consistency then good retention

If highly viscous - Can cause dislodgement

→ Xerostomia: Causes irritation and ulceration in tissue surface in contact with denture

(iii) Physical factors

(a) Adhesion :-

→ The attraction between two dissimilar molecules

In between the denture and the mucosa, saliva is present which increases the adhesion.



(b) Cohesion :

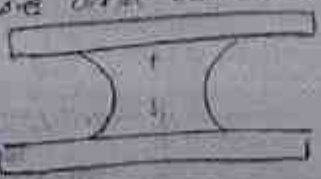
→ Attraction between two similar molecules

Indicates viscosity of saliva

(c) Inherent surface tension

→ The inherent property to not separate between two dissimilar molecules

→ depend on adherence and cohesive property of saliva



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(d) Atmospheric pressure
(e) Gravity

Stability

Ability of denture to remain constant and not displace in other forces.

Depends upon:

(i) Height of residual ridge
(ii) Vertical dimension
(iii) Surface area of base contact
(iv) Thickness of denture flange
(v) Polished surface of denture

Support

→ Depend upon the forces from the musculature
→ Forces from the tongue on one side and cheek and lip on the other side may dislodge the denture. If teeth are not arranged in neutral zone
→ Also, teeth should be arranged in balanced occlusion.
→ Overextension of the denture should be reduced
→ Thickness of the denture flange can also affect support of the denture
→ Any bony prominence or loss can affect the denture stability and may cause discomfort

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Preservation of Residual Ridge

Bone resorption continues if constant force is applied on the residual ridge

→ We should aim to reduced ridge resorption maintain ridge height

→ Occlusal prematurities are also corrected

→ Excessive force may also affect TMJ and cause discomfort to patient

Aesthetic

→ Should maintain patient aesthetic

→ Arrangement of teeth should be correct and facial profile should be aesthetic

→ Severe proclination of teeth may cause difficulty in lip closure and affect on facial expression - staircase fallacy.

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(10)

b) PRINCIPLES OF TOOTH PREPARATION

Can be classified as:

(a) Biological principle
- → Damage to adjacent structures
  - adjacent teeth
  - Soft tissues → Gingival tissue damage
    - Damage to pulp
- → Marginal integrity
  - Marginal placement
  - Geometry – Finish line.
- ~~→ Structural durability~~ → Conservation of tooth structure
- ~~b) Mechanical principles~~
  - ~~Initial or Delayed retention~~
  - ~~Axial retention~~

(b) Mechanical principles
- → Retention
  - Against dislodging force
  - Type of luting cement
  - Single path of insertion
  - Rough tissue tooth contact surface of the crown or pontic

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→ Resistance form
- Debonding force
- Type of luting cement

→ Structural durability
- ~~Functional cusp bevel~~
- Axial reduction
- Incisal or Occlusal reduction

c) Aesthetic
→ Full veneer crowns
→ Partial veneer crowns

→ Biological principle → Marginal integrity
Marginal placement →
- Supragingival
- Subgingival or equigingival
  Least recommended

Marginal Geometry
- Finish line configuration
→ Chamfer
→ Shoulder
→ Radial shoulder

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- knife edge
- Shoulder with bevel

Mechanical properties

Retention form

- Taper — at least 15° taper given



- Functional cusp bevel

for all metal crowns → 1.5 mm in functional cusp and 1mm in non-functional cusp

for metal-ceramic crown → 1.5 – 2mm in functional cusp and 1 – 1.5 mm in non functional cusp

for all ceramic crown → 2 mm bevel in functional and non-functional cusp.

- Single path of insertion

→ more retention if only one path of insertion present

- Rough surface of prosthesis

→ tooth contact surface of prosthesis is abraded to make it rough for retention

→ Tooth surface is not made rough.

- Type of luting agent used

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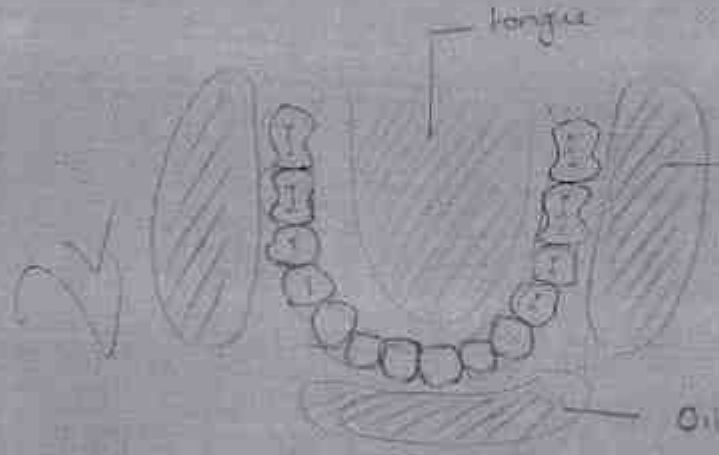
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7) Neutral zone in Complete Denture

It is defined as the area in which the forces from the cheek and lips on one side and tongue on the other side becomes neutral.

→ Teeth are arranged in the neutral zone

→ If artificial teeth are placed either lingual or buccal to the neutral zone, then displacement of the denture can occur due to the forces from Oral Musculature



→ Muscles involved include,

(i) Buccinator Muscle

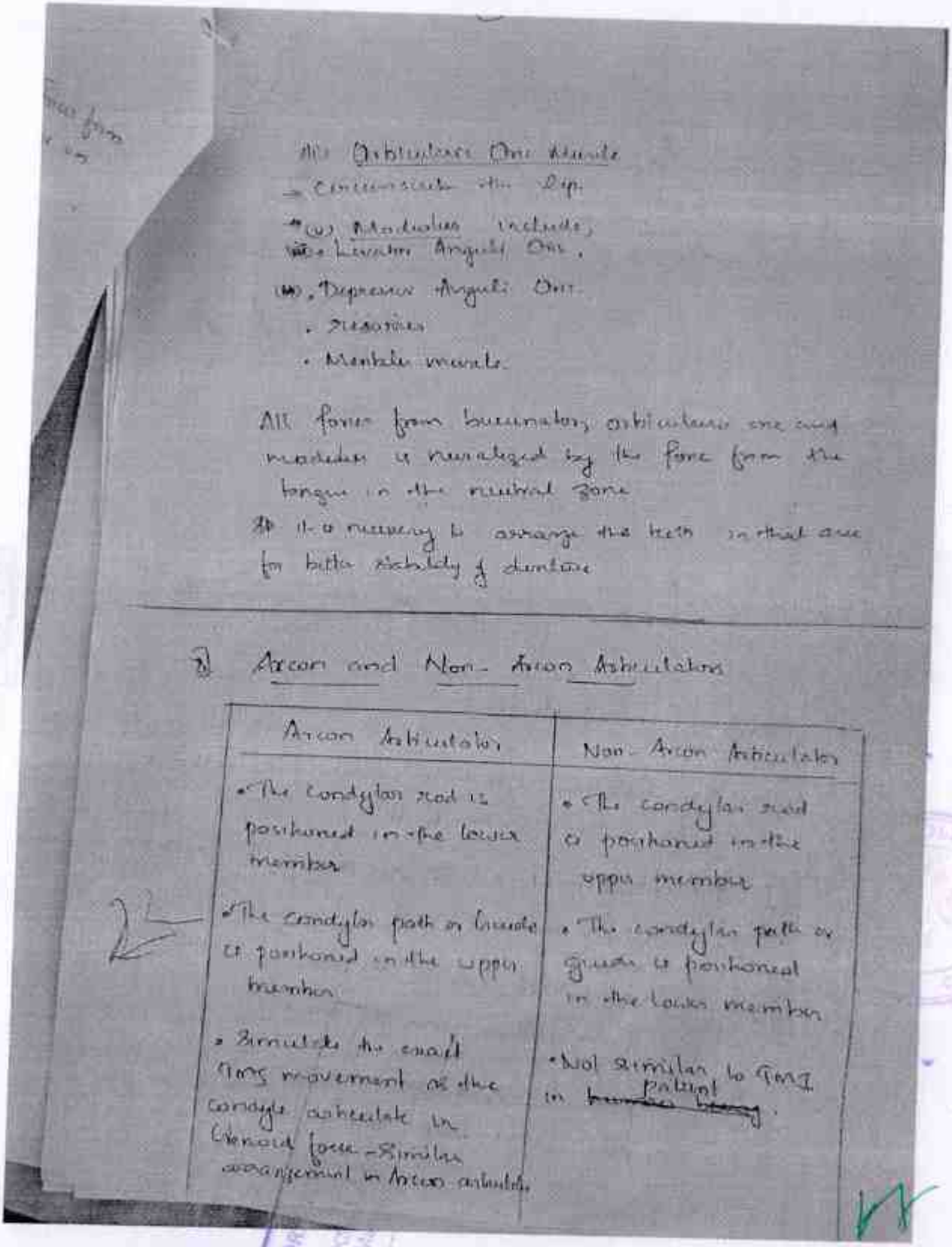
Extends from pterygomandibular raphe to the anterior medial area.

(ii) Tongue

- Strongest muscle in Oral cavity

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All Orbicularis Oris Muscle
→ Encircles the lip
→ (a) Modiolus includes,
(b) Levator Anguli Oris,
(c) Depressor Anguli Oris
- Zygomatic
- Mentalis muscle

All force from buccinator, orbicularis oris and modiolus is neutralized by the force from the tongue in the neutral zone

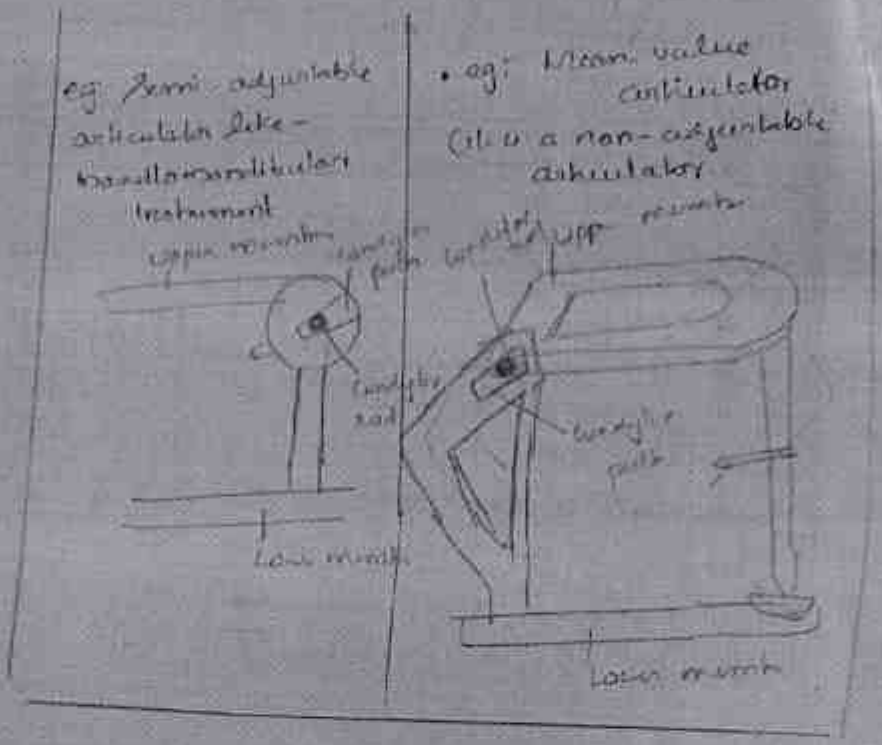
It is necessary to arrange the teeth in that area for better stability of denture

3) Arcon and Non- Arcon Articulators

Arcon Articulator	Non- Arcon Articulator
• The condylar ball is positioned in the lower member	• The condylar ball is positioned in the upper member
• The condylar path or Guide is positioned in the upper member	• The condylar path or guide is positioned in the lower member
• Simulate the exact movement of the condyle articulate in cranial fossa - Similar arrangement in Arcon articulator	• Not similar to TMJ in Patient

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11) Kennedy's classification

Class I :- Bilateral edentulous area with natural teeth anterior to it

Class II :- Unilateral edentulous area with natural teeth anterior to it

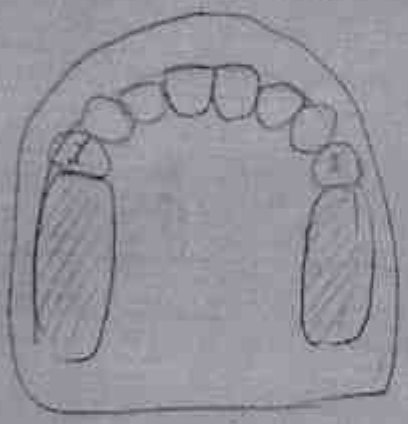
Class III :- Unilateral edentulous area with natural teeth anterior and posterior to it

Class IV :- Bilateral edentulous area crossing the midline with natural teeth posterior to it

Modification

Class V :- Unilateral edentulous area with natural both anterior and posterior teeth But with weak anterior abutment eg: Lateral Incisor

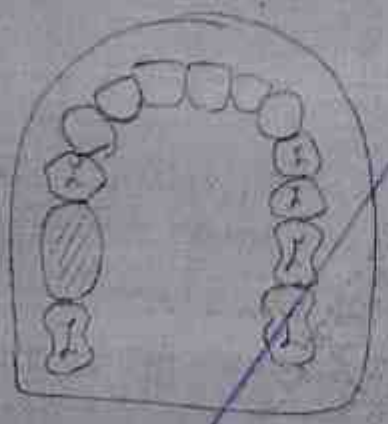
Class VI :- Indicated in young patient with Unilateral edentulous area with natural both anterior and posterior teeth with only tooth-supported denture prosthesis indicated.



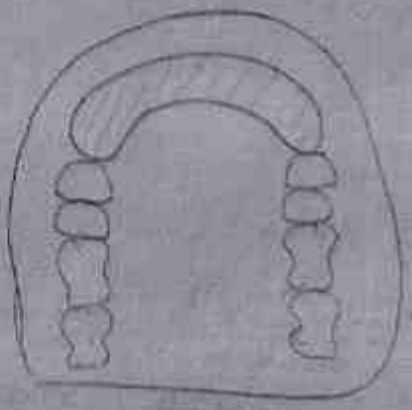
Class I



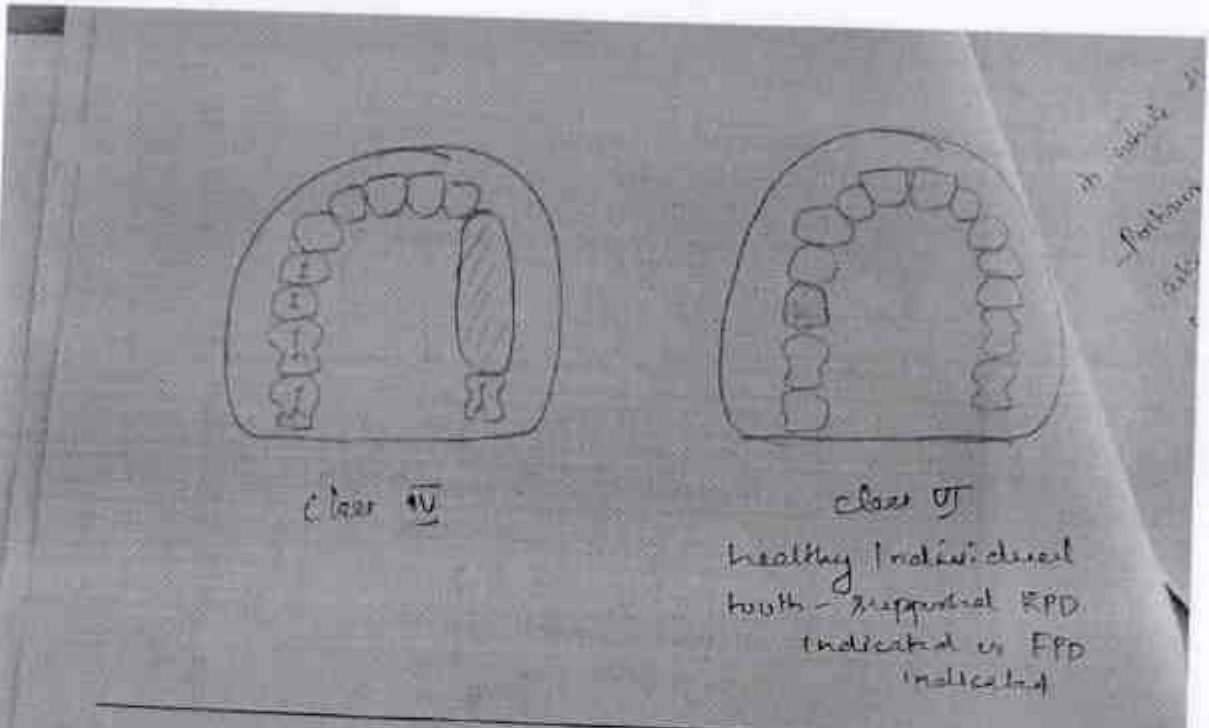
Class II



Class III



Class IV



Class II

Class III

healthy / natural dental tooth - supported RPD indicated vs FPD indicated

13] Posterior palatal seal

It is the functional junction between the soft tissue of hard palate and soft palate

~~It is recorded by using~~

~~It helps the patient~~

→ Consist of two vibrating line

* Anterior Vibrating line
* Posterior Vibrating line

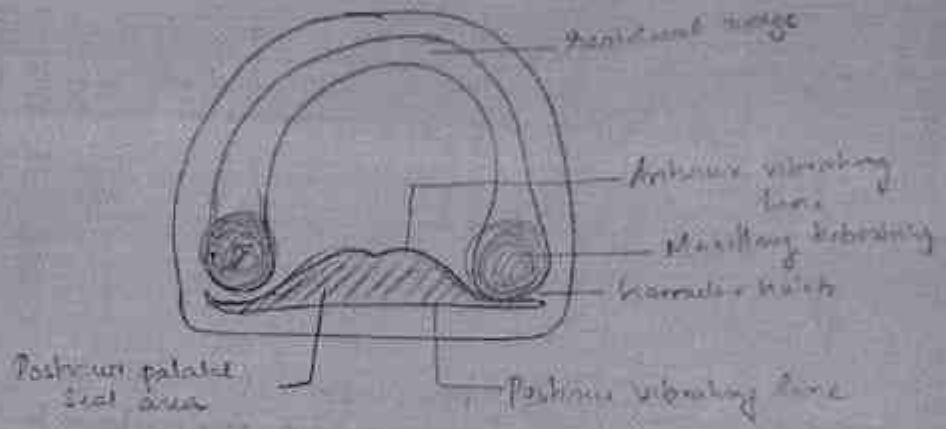
Anterior vibrating line recorded by asking the patient to say 'ah' short vigorous sound

Another method is Valsalva maneuver

Patient is asked to blow through the nose

in which the denture keep the muscle closed

- Posterior vibrating line is recorded by asking the patient to say ah! a short hum (Not vigorous)



- Significance:

→ Proper seal in this area will help in the retention of the denture.

→ Over extension of posterior palatal area can cause gag reflex

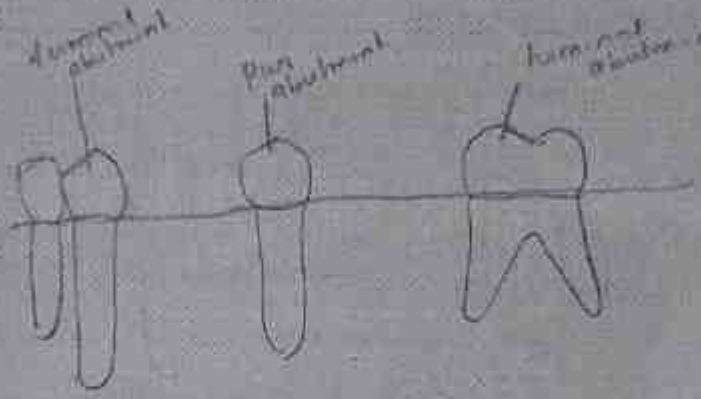
→ Under extension can cause dislodgement and food entrapment

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b) Pier abutments

→ It is the natural teeth present between two terminal abutment teeth



→ If a 5 unit FPD is fabricated and connected in other condition, it will cause force to be distributed towards the terminal abutments

→ This causes the weaker terminal abutment (formerly Anterior abutment) to become loose

→ FPD failure occurs ; FPD acts as a lever

→ Prosthesis becomes loose and microleakage and secondary caries occurs

→ To avoid this, non-rigid connectors is used to allow for flexibility.

The FPD is split at the pier abutment and Key is attached to the mesial aspect of pier pontic and key to the distal aspect of mesial pontic.

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⇒ This reduces the stress on the terminal abutment teeth

9] Over denture

→ It is denture fabricated over the natural teeth / tooth root or dental implants

→ Goal is to preserve the natural teeth or tooth roots

→ Can be of two types:

(i) Tooth supported Over denture

(ii) Implant supported Over denture

Types of tooth supported Over denture

(i) Bar root Overdenture

⇒ Here the tooth is endodontically treated, crown height reduced to 2-3mm and restored with amalgam, GIC or composite restoration

(ii) Metal copings

(iii) Shell core copings

⇒ Teeth endodontically treated

→ Height reduced to 2mm

→ Metal crown of dome shaped cemented over the tooth prepared tooth.

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b) Long cone coping
→ teeth may / may not need to be endodontically treated
→ height of crown reduced by 5-6 mm
→ Overdenture placed over the dome shaped metal coping

14) Palatal bar Major Connector
→ Indicated in Maxillary arch
→ half - Oval shape cross-section
→ Thick - bar, placed 2-2mm below the gingival Margin.
→ Indicated in Class III Kennedy's Cases
With bilateral teeth anterior and posterior to it
→ ~~Tongue interference~~
→ Patient discomfort due to thick bar may be seen.

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10) Types of Indirect retainer

→ Indirect retainers are part of a removable dental prosthesis that prevent tipping or torquing of the dental prosthesis

→ It is placed at the largest distance & perpendicular to the fulcrum line

Types of indirect retainer include

① Auxiliary Occlusal rest

→ Rest placed on the occlusal surface

② Canine Rest

→ Rest is placed on the cingulum of canine tooth

→ Most common

③ Modified Canine Rest

④ Cingulum Rest

→ In Broken teeth, sometimes rest may be needed to placed in all incase both of lateral incisor is used as indirect retainer

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12) Indications and Contraindication of dental implants

dental implants are prosthesis that are placed instead of or placed of missing or extracted natural teeth

Indications

- Partial edentulism or need
- Periodontally healthy ridge
- Adequate residual ridge height
- Implant Over dentures
- Replacement of Single tooth
- Indicated in FPD with periodontally weak abutment teeth

Contraindication

- Any infection or systemic illness
- Diabetic patients
- hematological disease patients
- Decreased residual ridge height
- Osteoporosis
-

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Prosthodontics
Retest

Akhina Krishnan
Part B
Roll no: 16

Direct Retainers

Direct retainers are components of removable partial dentures used to retain and prevent displacement/movement of attachments and clasp arms assembly - GPT 8

Classification of Direct Retainers

Direct Retainers

- Intracoronal Retainers
  - Precision attachments
- Extracoronal Retainers
  - Attachments
  - Clasps
    - Circumferential clasp
      - Cast circumferential clasp
      - Continuous clasp
    - Bar clasp

Components of Clasp Assembly

It includes

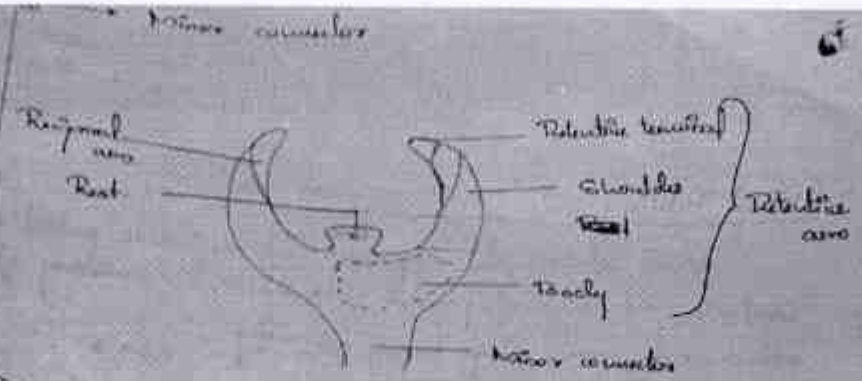
① → Rest

② → Retentive arm → Retentive terminal
→ Shoulder
→ body

③ → Reciprocal arm

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Rest

Rest provides the vertical support for the clasp assembly
It is rigid.

Retentive Arm

Retentive arm is divided into

→ Retentive terminal
→ Shoulder
→ Body

Retentive terminal : It is flexible part of the clasp
- It engages the undercut areas. below the height of contour.
- It causes movements

Shoulder
- It connects the rest and body
- It is minimally flexible.

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Body

Connects the rest and shoulder to the palate
It is rigid and does not warp

Reciprocal arm

- It engages or gives above the height of contour opposite to retentive arm
- It helps in neutralizing the lateral forces caused by the retentive arm

Thus, reciprocal arm should first contact the tooth surface before the retentive arm

Minor Connector

Minor connector connects the clasp to other parts of the prosthesis

2. Gingival Retraction Methods

Definition

Gingival retraction is gingival displacement is method of retracting the gingival tissue away from the tooth surface

Classification of Gingival retraction methods are

→ Chemical methods
→ Mechanical methods
→ Mechano-chemical methods
→ Surgical methods
→ Laser.

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Mechanical Methods of Gingival Displacement

1. Retraction
   - → Rubber dam
   - → Cotton rolls
   - → Magic foam

Rubber dam

- It is introduced by Barnum
- It can be used for gingival displacement and fluid control
- It is usually indicated during tooth preparation and isolation procedures
- Rubber dam consist of
  - → rubber dam sheet
  - → rubber dam forceps
  - → rubber dam clamp
  - → Punch
  - → Punch

Other armoria include
- → Cotton balls
- → cloth or tissues
- → Dental floss

Techniques used in rubber dam placement are
- → Clamp before sheet
- → Both rubber dam sheet and clamp together
- → Split - dam technique.

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Mechanical Methods of gingival displacement

Include
- Rubber dam
- Cotton rolls
- Magic foam

Rubber dam

- It is introduced by Barnum
- It can be used for gingival displacement and fluid control
- It is usually indicated during tooth preparation and restorative procedures
- Rubber dam consist of
  - rubber dam sheet
  - rubber dam forceps
  - rubber dam clamp
  - Punch plate
  - Punch

Other accessories include
- cotton rolls
- cloth or tissues
- Dental floss

Techniques used in rubber dam placement are
- Clamp before sheet
- Both rubber dam sheet and clamp together
- Split dam technique

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5. Principles of Tooth Preparation in Fixed Prosthodontics

Principles are classified into

→ Biological Principles
→ Mechanical Principles
→ Aesthetic Principles

(1) Biological Principles

(A) Prevention of damage:

→ Abutment teeth
→ Soft tissue
→ Pulp

(B) Conservation of Tooth structure

(C) Marginal Integrity

→ Placement
→ Geometry
→ Adaptation

(2) Mechanical Principles

It includes

→ Resistance form
→ Retention
→ Structural durability

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F Wall of pulp chamber form a triangle and apex is funnel shape in uniradicular teeth.

Calcified region of bifurcation in molars is more developed thus giving roots of teeth a more distinct outline

The root length is equal to or greater than crown height.

G Walls of root canal are parallel and apical end is still open in molars.

H Apical end of distal root in molars is closed

periodontal membrane has uniform width around root apex

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⇒ Gravenstein method

- In the fetus / infant teeth are not present in the mouth evidence of dental development is concealed within the jaws. Observation can be made on the mineral content of fetal and infantile ~~growth~~ teeth and relationship between Square root of weight of the asked teeth and known age of Subject can be determined. These methods appears to be reliable method as the variation in the rate of tooth development during the period is minimal

⇒ Gustafson's method

Introduced as multifunctional histological approach to determination of age and advised scale of points. ~~Methest~~ Many others have suggested root formation from apex appears to be directly related to chronological age and affected by environmental factors this method is based on morphological and histological changes of teeth.

→ This assesed regressive changes such as —

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a) Amount of occlusal attritions (A)

b) Coronal dentin deposition (S)

c) Loss of periodontal attachment (P)

d) Root resorption at apex (R)

e) Dentin translucency (T)

f) Cementum apposition at root apex

Different scores are assigned

Stage 0 : No change

Stage 1 : Beginning of change

Stage 2 : Obvious change

Stage 3 : maximum change

Age = (11.43 + 4.58 X) years

X = A + S + P + C + R + T

Total Sum

Histologic approach

In order to understand the rationale of the technique a knowledge of pattern of dentin formation is necessary.

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Development of hard tissues of tooth is a rhythmic process with formation of successive layer of tissues

Evidence to this to be focused in the cervical line that can be observed microscopically is

In primary teeth when hard tissue formation begins prenatally and is completed postnatally The neonatal incremental line can be sometimes seen which is believed to reflect disturbances in metabolism occurring during neonatal period

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Topical Fluorides

Topical fluorides are directly applied to the erupted teeth

fluoride ions in such agents donot penetrate deeply into enamel

These ions provide only topical protection

Indications

- Caries active children
- In children, shortly after periods of tooth eruption.
- In patients with reduced salivary flow due to medications
- for those recieving radiation to head & neck.
- patients with fixed / removable appliances
- After placement / replacement of restorations and before cementations of stainless crowns
- patients with eating disorders
- Disabled children.

Can be divided into :-

Personally applied

- Neutral NaF
- Stannous fluoride
- APF
- Amine fluoride
- fluoride varnishes, gels

Self applied

- Tooth brushing dentifrice
- Tooth brushing solutions
- Tooth brushing prophylactic pastes
- mouth rinses

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Sodium fluoride

Knutson & Feldman - A technique of 4 application of 2% NaF at weekly intervals in a year 3, 7, 11, 13 yrs

NaF → pH neutral

F - 9200 ppm

- Caries reduction rate in 1st year 45% & in 2nd year 36%

Methods of preparation

- 2% NaF prepared by dissolving 20g of NaF powder in the distilled water in a plastic bottle.
- NaF is not stored in a glass container because it react with silica of glass forming site, thus reducing availability of free alkaline fluorides

Methods of application - Knutson's technique

Cleansing & polishing of teeth.

↓

Quadrants are isolated with cotton rolls and teeth are dried thoroughly

↓

permitted to dry on the teeth for about 4 minutes

↓

The procedure is repeated for remaining quadrants

↓

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↓

Pt is instructed to avoid eating, drinking/ rinsing for 30 min so as to prolong the availability of fluorides ions to react with tooth surfaces.

↓

Second, third or fourth applications are given at weekly intervals at ages, 3, 7, 11, 13 years

⇒ Mechanism of Action

When NaF applied topically, it reacts with hydroxy apatite crystals to form CaF_2 which is dominant of reaction

↓

Choking off effect: This occurs bcz once a thick layer of CaF_2 gets formed, it interferes with further of fluoride from the topical fluoride solution to react with hydroxy apatite.

↓

CaF_2 reacts with hydroxy apatite to form fluoridated hydroxyapatite which increase the concentration of surface fluoride.

- making the tooth structure stable
- less susceptible to dissolution by acids

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- Interferes with plaque metabolism through anti enzymatic action
- Helps in remineralisation of initial decalcified areas

Advantages

- Chemically stable
- Acceptable taste
- Non irritating to gingival tissues
- Doesnot discolor the teeth
- Cheap & inexpensive

Disadvantage

- Continous application for 4 minutes
- patient has to make four visits in a short time
- follow up is difficult

Stannous Fluoride

SnF_2 was found to be three times more effective than NaF
Dudding and Muhler in 1957 tried Single annual application of 8% SnF_2 and reported 32% caries reduction

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Method of preparation

- Stannous fluoride solution has to be freshly prepared before use each time (stannous form of tin gets oxidised to stannic form, thus making SnF_2 inactive for anticariogenic action) as it has no shelf life

For convinient preparation number '0', gelatin capsules are precisely filled with 0.8g powdered SnF_2 and are stored in airtight plastic containers. Just before application, the content of one capsule is dissolved in 10ml of distilled water in a plastic container and the solution ~~boat~~ thus prepared is shaken briefly. The solution is then applied immediately.

Method of Application

- The recommended procedure for application of SnF_2 begins with thorough prophylaxis followed by isolation with cotton rolls and drying preferably with compressed air.
- Either a quadrant or half of the mouth can be treated at one time.
- A freshly prepared 8-1. Solution of SnF_2 is

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applied continuously to the teeth with brief application and reapplication of the solution to particular teeth is done every 15 sec so that the teeth are kept wet for 4 minutes

- The recommended frequency of application is once per year

Mechanism of Action

SnF2 reacts with hydroxy apatite in addition to fluoride and forms a new crystalline product

- Stannous trifluorophosphate

↓

Rapid penetration of tin and fluoride in 30 seconds therefore continous reapplication after 15-30s is needed

↓

In addition to Stannous trifluorophosphate three more additional products are formed.,
Stannous hydroxy phosphate, Calcium fluoride, and calcium trifluorostannate.

Disadvantages

- Should be prepared freshly
- ~~low pH~~
- ~~Metallic taste due to Stannous hydroxyl phosphate~~

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low pH

Metallic taste due to Stannous hydroxyl phosphate

- Causes gengeval irritation
- produce discoloration of teeth
- Causes staining on margins of restoration

ii) Acidulated phosphate fluoride

- first clinical trial - Wellack & Boudevold (1961) 1.23% APF for 4 minutes with caries reduction by 28%.

Method of preparation

By dissolving 20g of NaF in 1L of 0.1M phosphoric acid to this added 50% hydrofluoric acid → to adjust the pH of 3.0 and fluoride conc at 1.23%.

- for the preparation of APF gel, gelling agent methyl cellulose or hydroxy ethyl cellulose is to be added to the solution and pH is to be adjusted between

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Method of application

Oral prophylaxis

↓

Isolated with cotton rolls

↓

place enough gel to fill 1/3rd of the trough area of the tray so that it is sufficient to cover dental arches

↓

place loaded tray over the arch and squeeze buccal and lingual surface forcing gel b/w them and allow tray to remain in mouth for 4 minutes

↓

Instruct the patient to expectorate immediately and avoid drinking and eating for next 30 minutes

↓

Recommended frequency of APF is Semiannual

Mechanism of Action

When APF is applied on the teeth it initially tends to dehydration and Precipitation of in the volume of hydroxyapatite Crystals

↓

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Hydrolis and formation of intermediate product

↓

Dicalcium phosphate dihydrate (DCPD)

↓

This DCPD is highly reactive with fluoride leading to formation of fluoroapetite.

The amount and depth of fluoride deposited as fluoroapetite would be depended on the amount and depth at which DCPD get formed

↓

Since the conversion of whole DCPD, So formed into fluoroapetite, deeper penetration and continous supply of fluoride is required; So APF has to be applied every 30s and we teeth be kept wet for 4minutes

Advantages

- Has a acceptable taste
- No staining
- No gingival irritation
- Stable with long storage
- Cheap

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Disadvantages

- Teeth have to be kept wet for 4 minutes
- Solution is acidic

Newer topical fluorides

- Amine fluoride
- Stannous hexafluorozirconate

Fluoride Varnish

→ 2 most commonly used Varnish are:-

1. Duraphet (NaF Varnish containing 2.26% F)
2. Flourprotector (Silane fluoride with 0.7% F)

⇒ Self applied Topical Fluorides

1. Fluoride dentifrices
   - NaF
   - SnF
   - Sodium monofluorophosphate
   - Amine fluoride

Recommendations for use of fluoride dentifrice

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Age	Recommendations
<4 years	Not recommended
4-6 years	Once daily with fluoride paste and twice without paste
6-10 years	Twice daily with fluoride paste and once without paste.
Above 10 years	Thrice daily with fluoride paste.

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Pulp Vitality test

- Pulp Vitality test
  - Assessment of the pulp's blood supply
  - Help in monitoring the State of health of dental pulp

1) Thermal test

Work by hydrodynamic forces in the dentin - initiating generator potential in the nerve endings by displacing Surface membrane potential

- 2 type - Cold test
  - Hard test

Cold test

Agents used :- Steam of Cold air
- Ethyl Chloride spray
- Cold water bath
- Ice pencil
- Dry ice

Response to cold indicate whether pulp is normal or abnormal regardless of

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Advantage

- Ability to effectively pass cold through canals and metallic restorations
- Vitality test for immature teeth
- Donot cause crack in the dentin or irreversible damage to the pulp

Heat test

Agents used: Hot gutta percha
Hot burnishes
Hot compound
Hot water bath.

Limitations

- Increase in the anxiety of the child
- Heat stimulus damage the pulp
- Injury to adjacent soft-tissue.
- Uncooperative child

2) Electric pulp testing

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The electric pulp test is more accurate than some of the test used to determine pulp vitality

The electric pulp test when testing for pulp vitality uses nerve stimulation instead

The objective is to stimulate a pulpal response by subjecting the tooth to an increasing degree of electric current

The electric pulp test cannot be solely depend on testing pulp vitality.

Teeth with intensive restoration and a pulp protecting base

Recently traumatised teeth

Recently erupted teeth

Conventional pulp

Method	Technique/material	Symptom interpretation
1. Thermal → cold → Heat	Ethyl chloride, ice, air, blast hot water, heated gutta percha	- Lingering pain - irreversible pulpitis - Hypersensitivity - Subsiding pain - reversible pulpitis

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2 Electric Instrument Such as odontometer

- higher current required (more than vital tooth)
- low sensitivity (acute pulpitis)
- unreliable in children
- multi rooted teeth

3 Percussion Vertical
Lateral

Apical periodontitis
lateral periodontitis
Space inflammatory

4 Radiograph lopA

- furcation involvement
- Thickening of PDL
- Space indicate pus infection

Newer Methods

→ Laser Doppler flocumetry.

- It is a new method of evaluating pulp vitality by measuring the velocity of RBC in Capillaries

- First described by Gazelius et al with a
- A near infrared wavelength of 632.8 nm is produced by 1mw helium neon laser within the flowmeter and this is transmitted along a flexible fiber optical conductor inside a specially designed round probe with diameter 2mm.
- This electro-optical technique ~~has~~ uses a laser source that is aimed at pulp and the laser light travels to the pulp using dentinal tubules as guides.
- 2-3mm from the gingival margin is the ideal position for the probe tip as this creates a balance between minimising noise and having a recognisable signal volume.

Disadvantage

- Technique sensitive
- Reading affected by movement of patient
- False -ve results - endodontically treated teeth
- gingival blood flow is measured

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pulse oximetry

This is an oxygen saturation monitoring device widely used in medical practice for recording blood oxygen saturation level during administration of intravenous anaesthesia

- Invented by Aoyagi
- It is an entirely objective test requiring no subjective response from the patient.
- pulse oximeter must consist of a LED, one to transmit red light (640nm) and the other to transmit infrared light (940nm) and photoelectric on the opposite side of Vascular bed
- The LED transmits light through a Vascular bed oxygenated Hb and deoxygenated Hb absorb different amount of red / infrared light.
- The pulsatile change in the blood volume causes periodic changes in the amount of red/infrared light absorbed by Vascular bed before reaching the photodetector

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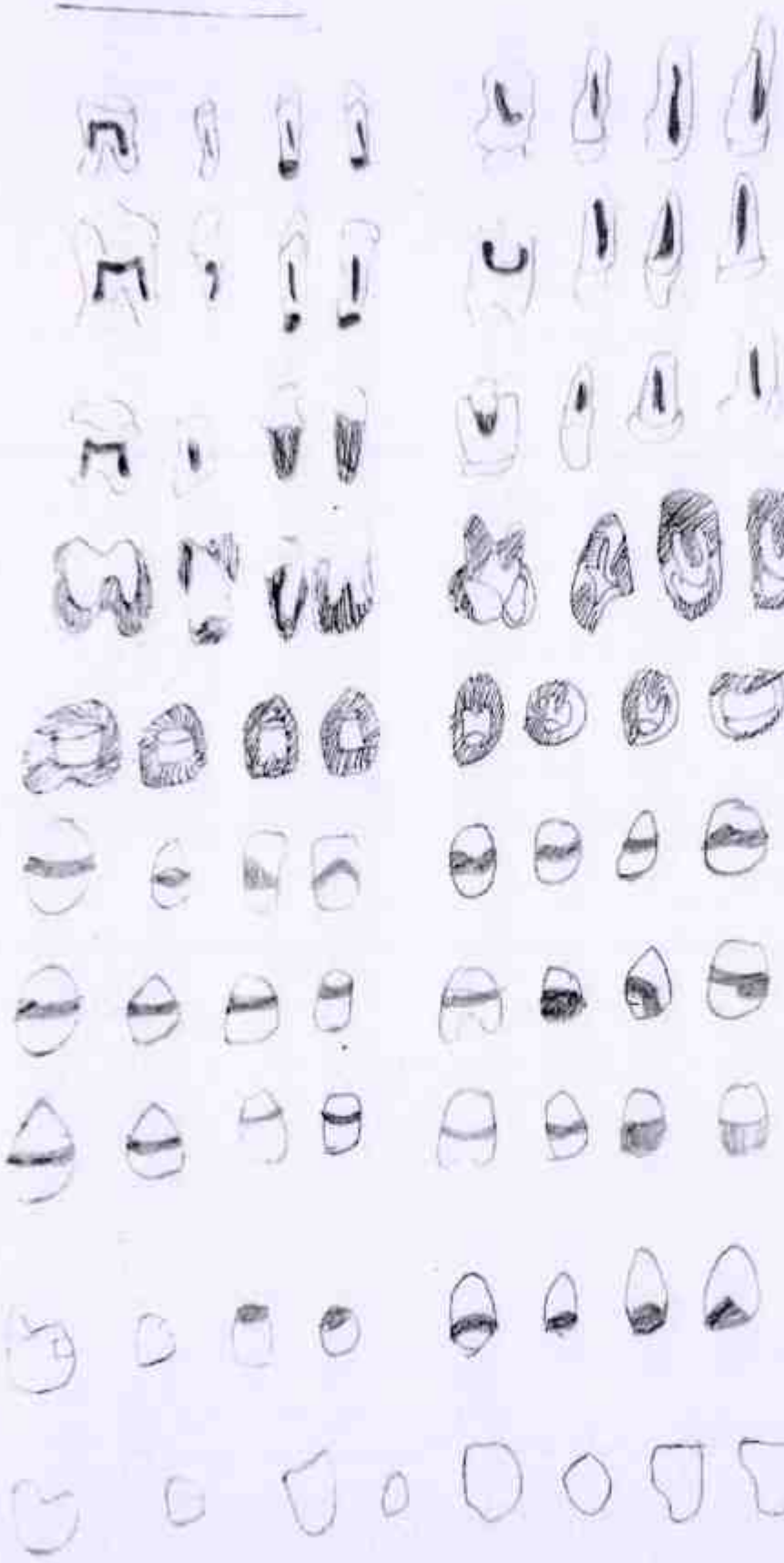
The relationship between the pulsatile change in absorption of red light and the infrared light is analysed by pulse oximeter to determine the Saturation of arterial blood

Other methods

Dual wavelength Spectrometry
Transmitted light photoplethysmography
Crown Surface temperature
Electric thermometer
Infrared electronic thermography

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Nolla's method



10. Apical foramen closed
9. Root completed open apex
8. 2/3rd root complete
7. 1/3rd root complete
6. Crown completed
5. Crown almost completed
4. 2/2 Crown completed
3. 1/3rd crown completed
2. Initial calcification
1. Presence of bud
0. Absence of bud

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Recommendations for use of fluoride toothpaste

Child age	Recommendation		Dosing
Eruption of 1st tooth	Smear or rice grain size equivalent	1000 ppm twice daily	Dosing after brushing should be kept to bare minimum
2-6 years	pea size equivalent	1000 ppm twice daily	
6-12 years	atleast pea size equivalent	atleast 1000 ppm twice daily	
13 and above	atleast pea size equivalent	atleast 1000 ppm twice daily	

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Commercially available pediatric dentifrice

Name of the toothpaste	Components
Kodadent	1. Sodium monofluoro phosphate - 0.381 w/w 2. Xylitol 3. Fluoride Content - 500ppm
Checkup	1. Sodium monofluoro phosphate - 0.85 1. w/w 2. Fluoride Content - 400 ppm
Bubble	1. Sodium monofluoro phosphate 0.85 - 1. w/w 2. fluoride content - 500ppm
Incisate	1. Sodium monofluoro phosphate - 0.38 1. w/w 2. Xylitol 3. Fluoride Content - 500ppm

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Nolla's stages

Nolla established a developmental stages of permanent teeth in 10 stages:

Stage 0 : Absence of crypt

Stage 1 : presence of crypt

Stage 2 : 1/3rd Initial Calcification

Stage 3 : 1/3rd Crown Completed

Stage 4 : 2/3 Crown Completed

Stage 5 : Crown almost Completed

Stage 6 : Crown Completed

Stage 7 : 1/3 of the root completed

Stage 8 : 2/3 of the root Completed

Stage 9 : Root Completed, Apex open

Stage 10 : Apical foramen closed

Sum total of scores added and Compared

Advantages

- Male and female are dealt Separately
- Third molars are not included in the Studies

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DEPARTMENT OF PEDIATRIC AND PREVENTIVE DENTISTRY

ASSESSMENT OF STUDENT: SHILPA P

RUBRICS CRITERIA

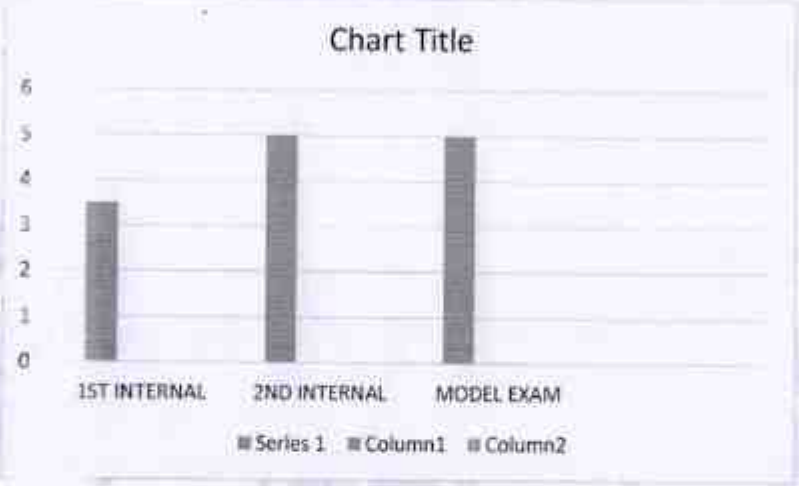
SL.NO	CRITERIA	POINTS
1	INTERNAL MARKS	1
2	PRACTICAL/CLINICAL SKILLS AND VIVA VOCE	1
3	ATTENDANCE	2
4	SEMINAR PRESENTATION FOR ASSESSING THE KNOWLEDGE ON SUBJECT	1
5	PROFESSIONALISM AND COMMUNICATION SKILLS	1
6	TOTAL SCORE	6

Inference- Slow Performer

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STUDENT'S PERFORMANCE REVIEW- SHILPA P

Sl No	Student Name	Theory(10 Marks)		
		1st Internal	2nd Internal	Model Exam
1.	SHILPA P	3.5	5	5



Student's performance review:

Academic Performance: Slow Performer to Moderate Performer

Attendance Performer: Slow Performer to Moderate Performer

Shilpa was a slow performer initially who had difficulty to cope up with the lessons and his performance was below average. We implemented various programs inorder to improve his academic performance. This includes regular assignments, quizes, discussions, viva voce, class tests etc. Later own she has worked hard and demonstrated excellent progress and changed to a moderate learner.

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MILESTONES OF DEVELOPMENT

Age	Milestones of development	Physical parameters
0-1 yr	· At birth starts making jerky quivering arm thrust and by 1st year children sit without assistance, crawl forward on belly, creep on hands and feets. · Hearing is fully mature · Recognizes the smell of his own mother's breast milk · Pays increasing attention to speech. · Cries when mother or father leaves.	· Expected hight 50-75 cm · Expected weight 4.15-9.75 kg · Expected head circumference 35-45 cm
1-3 yr	· Walks alone, wake up and down stairs holding on to support · Recognize name of familiar people like 'dada' and 'mama', objects and body parts. · Imitates behavior of others especially adults and older children · By 3 year runs easily, can say name, age	· Expected hight 75-95 cm · Expected weight 10-14 kg · Expected head circumference 45-49 cm
3-5 yrs	· Hops, some steadily, kicks ball forward · Speaks fluently for strangers to understand · Tells stories, dresses and undresses, want to be like her friends	· Expected hight 95-101 cm · Expected weight 14-18 kg · Expected Head circumference 49-50.3 cm

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Reference

Textbook of Pedodontics : SHOBA TANDON

Page No 900

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IMMUNIZATION SCHEDULE

Age	Vaccine
Birth	BCG, OPV, HBV
6 weeks	CPV, DPT, HBV, Hib
10 weeks	OPV_2, DPT_2, Hib
14 weeks	DPT_3, OPV_2, HBV, Hib
9 months	Measles vaccine
15-18 months	MMR, OPV, DPT, Hib
2 years	Typhoid
5 years	OPV, DPT
10 years	Tetanus toxoid
16 years	TT
Pregnant women	2 doses of TT

NEWER VACCINE

Varicella - above 1 year

Hepatitis A - above 1 year

* OPV - Oral Polio Vaccine
* BCG - Bacilla Calmette Guerin
* DPT - Diphtheria, Pertussis, Tetanus
* HBV - Hepatitis B vaccine
* TT - tetanus toxoid

Referance

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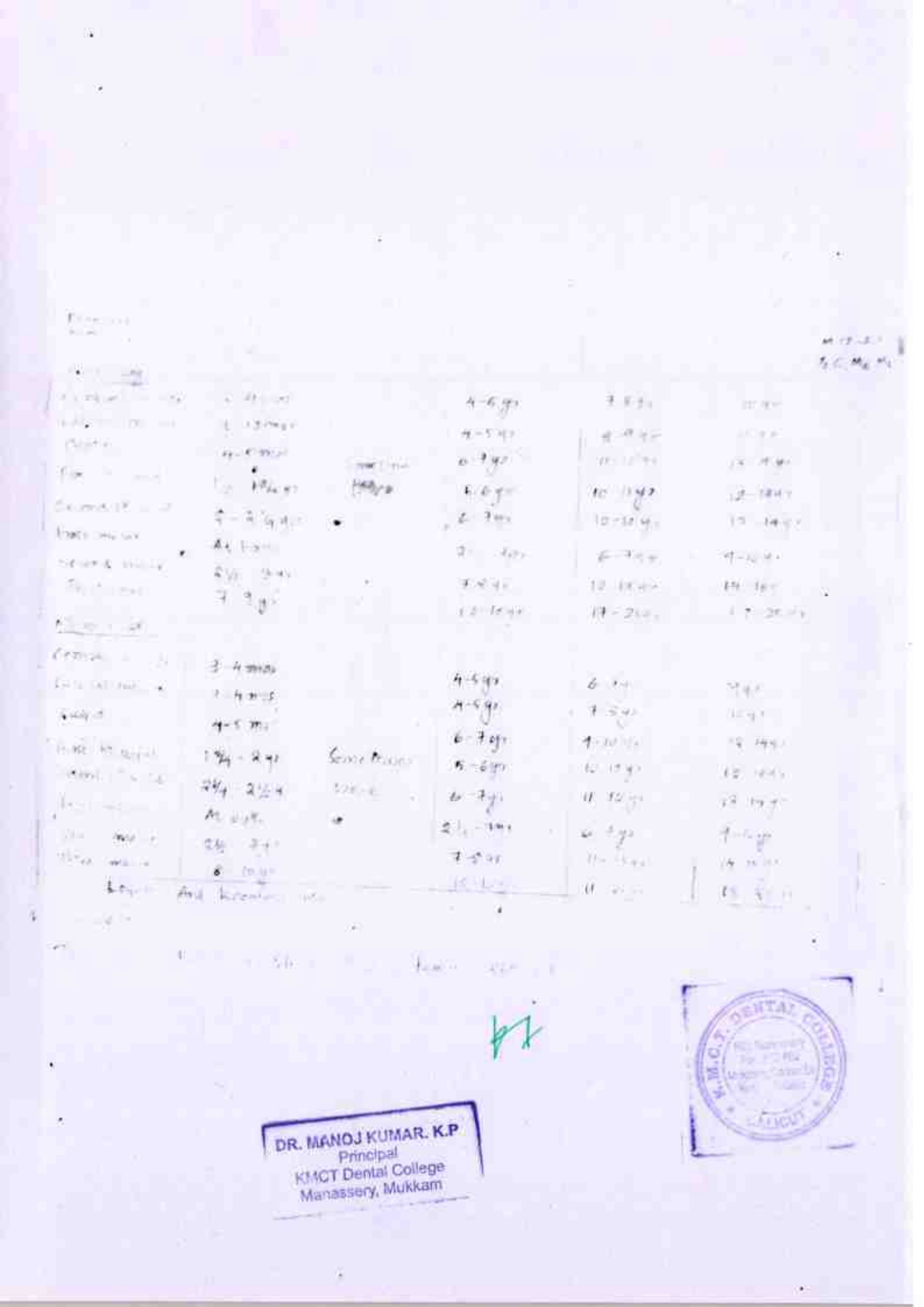
Textbook of Pediatric dentistry : SHOBA TANDON (Page No. 366)

CHRONOLOGY OF PERMANENT AND DECIDUOUS DENTITION

Tooth	Hard tissue formation	Amount of enamel formed at birth	Enamel completed	Eruption	Root completed
Deciduous formation					
Maxillary					
Central incisor	4 mo in utero	five sixth	1½ mos	7½ months	1½ years
Lateral incisor	4½ mo in utero	two third	2½ mos	9 months	2 years
Cuspid	5 mo in utero	one third	9 mos	18 months	3 yrs
First molar	5 mo in utero	cusps united	6 mos	14 months	2½ yrs
Second molar	6 mo in utero	cusp tips still united	11 mos	24 months	3 yrs
Mandibular					
Central incisor	4½ mo in utero		4½ mos	6 months	1½ yrs
Lateral incisor	4½ mo in utero		4 mos	7 months	1½ yrs
Canine	5 mo in utero		9 mos	16 months	3 yrs
First molar	5 mo in utero	cusps united	5½ mos	12 months	2½ yrs
Second molar	5 mo in utero	cusp tips still united	10 mos	20 months	3 yrs

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TOOTH NUMBERING SYSTEM

- Tooth numbering provides the dentists with an essential shortcut in clinical record keeping
- Tooth numbering systems are used like shortcuts they are easier and saves time
- The three most common systems

  FDI, World Dental Federation notation
  Universal numbering system
  Zsigmondy - Palmer notation

ZSIGMONDY PALMER NOTATION

- This system was developed by Zsigmondy and modified by Palmer so called as Zsigmondy Palmer Notation
- In this system the dentition is divided into quadrants and symbols (brackets) are used to designate in which quadrant the tooth is found.

Permanent numbers are numbered 1-8 with lowest digit assigned to the teeth closer to the midline.

- The deciduous are indicated by a letter A to E.

⌋ - Upper right quadrant
⌊ - Upper left quadrant
⌉ - Lower right quadrant
⌈ - Lower left quadrant

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Deciduous Dentition

E	D	C	B	A	A	B	C	D	E
E	D	C	B	A	A	B	C	D	E

A| - Upper right central incisor

B| - Upper right lateral incisor

C| - Upper right canine

D| - Upper right first molar

E| - Upper right second molar

|A - Upper left central incisor

|B - Upper left lateral incisor

|C - Upper left canine

|D - Upper left first molar

|E - Upper left second molar

|A - Lower left central incisor

|B - Lower left lateral incisor

|C - Lower left canine

|D - Lower left first molar

|E - Lower left

A| - Lower right central incisor

B| - Lower right lateral incisor

c| - Lower right canine

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D] - Lower right first molar

E] - Lower right second molar

Permanent Dentition

8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

1] - Upper right central incisor

2] - Upper right lateral incisor

3] - Upper right canine

4] - Upper right first premolar

5] - Upper right second premolar

6] - Upper right first molar

7] - Upper right second molar

8] - Upper right third molar

|1 - Upper left central incisor

|2 - Upper left lateral incisor

|3 - Upper left canine

|4 - Upper left first premolar

|5 - Upper left second premolar

|6 - Upper left first molar

|7 - Upper left second molar

|8 - Upper left third molar

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1	- lower right central incisor
2	- lower right lateral incisor
3	- lower right canine
4	- lower right first premolar
5	- lower right second premolar
6	- lower right first molar
7	- lower right second molar
8	- lower right third molar
1	- lower left central incisor
2	- lower left lateral incisor
3	- lower left canine
4	- lower left first premolar
5	- lower left second premolar
6	- lower left first molar
7	- lower left second molar
8	- lower left third molar

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[illegible] SYSTEM [illegible]

This system was suggested by Fdi in 1968 and uses numbers 1 to 32 for permanent teeth and upper case letters A to T for primary teeth. The numbering starts from the upper right third molar and ends on the lower right third molar in clockwise direction.

Deciduous dentition

A	B	C	D	E	F	G	H	I	J
T	S	R	Q	P	O	N	M	L	K

Permanent dentition

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Deciduous dentition

A - Upper right second molar
B - Upper right first molar
C - Upper right canine
D - Upper right lateral incisor
E - Upper right central incisor
F - Upper left central incisor
G - Upper left lateral incisor
H - Upper left canine
I - Upper left first molar
J - Upper left second molar

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K - lower left second molar
L - lower left first molar
M - lower left canine
N - lower left lateral incisor
O - lower left central incisor
P - lower right central incisor
Q - lower right lateral incisor
R - lower right canine
S - lower right first molar
T - lower right second molar

Permanent dentition

1 - upper right third molar
2 - upper right second molar
3 - upper right ~~sec~~first molar
4 - upper right second premolar
5 - upper right first premolar
6 - upper right canine
7 - upper right lateral incisor
8 - upper right central incisor
9 - upper left central incisor
10 - upper left lateral incisor
11 - upper left canine
12 - upper left first premolar
13 - upper left ~~second~~ premolar
14 - upper left first molar
15 - upper left second molar
16 - upper left third molar

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17 - Lower left third molar
18 - Lower left second molar
19 - Lower left first molar
20 - Lower left second premolar
21 - Lower left first premolar
22 - Lower left canine
23 - Lower left lateral incisor
24 - Lower left central incisor
25 - Lower right central incisor
26 - Lower right lateral incisor
27 - Lower right canine
28 - Lower right first premolar
29 - Lower right second premolar
30 - Lower right first molar
31 - Lower right second molar
32 - Lower right third molar.

FDI - WORLD DENTAL FEDERATION NOTATION

- FDI two digit notation, also known as ISO-3950 notation
- Each tooth deciduous and permanent is given a two digit number.
- First digit indicates dentition, arch and quadrant. In permanent the dentition is divided into quadrants which are numbered from 1 to 4 in a clockwise direction starting from upper right quadrant.

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Similarly, the deciduous dentition is divided into quadrants which are numbered from 5-8 in a clockwise direction starting from upper right quadrant.

Deciduous dentition

[illegible]	[illegible]	[illegible]	52	51	61	62	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	82	81	71	72	[illegible]	[illegible]	[illegible]

Permanent dentition

[illegible]	[illegible]	16	15	14	[illegible]	12	11	21	22	[illegible]	24	25	26	[illegible]	[illegible]
[illegible]	[illegible]	46	45	[illegible]	[illegible]	42	41	31	32	33	34	35	36	[illegible]	[illegible]

Deciduous dentition

51 - upper right central incisor
52 - upper right lateral incisor
53 - upper right canine
54 - upper right first molar
55 - upper right second molar
61 - upper left central incisor
62 - upper left lateral incisor
63 - upper left canine
64 - upper left first molar
65 - upper left second molar
71 - lower left central incisor
72 - lower left lateral incisor
73 - lower left canine
74 - lower left first molar
75 - lower left second molar

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41 Lower right central incisor
42 Lower right lateral incisor
43 Lower right canine
44 lower right first molar
45 Lower right second molar

Permanent dentition

11 - upper right central incisor
12 - upper right lateral incisor
13 - upper right canine
14 - upper right first premolar
15 - upper right second premolar
16 - upper right first molar
17 - upper right second molar
18 - upper right third molar.
21 - upper left central incisor
22 - upper left lateral incisor
23 - upper left canine
24 - upper left first premolar
25 - upper left second premolar
26 - upper left first molar
27 - upper left second molar
28 - upper left third molar
31 - Lower left central incisor
32 - Lower left lateral incisor
33 - Lower left canine
34 - Lower left first premolar
35 - Lower left second premolar
36 - Lower left first molar
37 - Lower left second molar

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38 Lower left third molar

41 Lower right central incisor

42 Lower right lateral incisor

43 Lower right canine

44 Lower right first premolar

45 Lower right second premolar

46 - Lower right first molar

47 - Lower right second molar

48 - Lower right third molar

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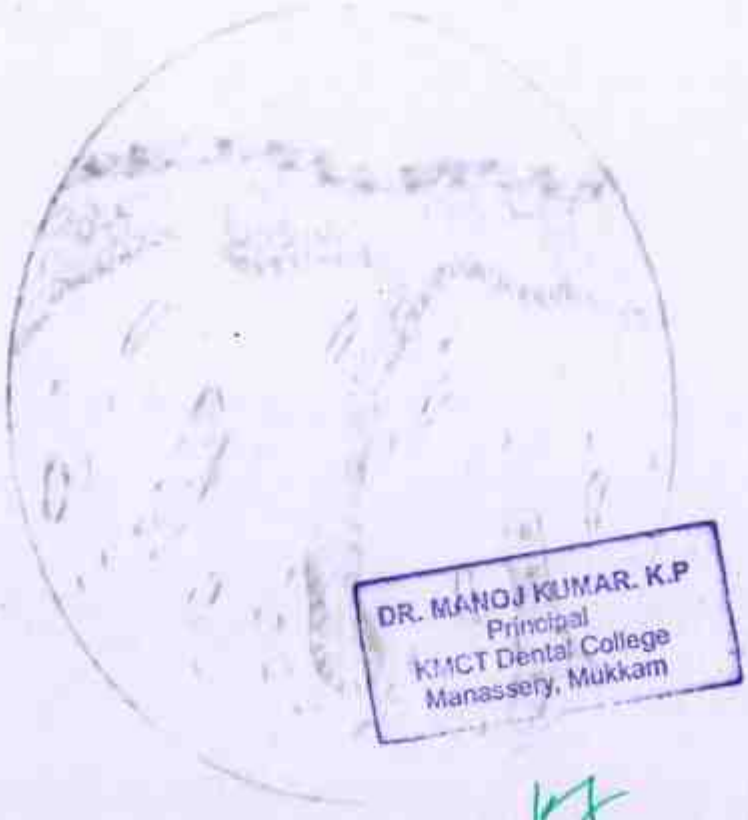
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TOOTH DEVELOPMENT

Morphological stages
- Bud stage
- Cap stage
- Bell stage
  - Early bell stage
  - Advanced bell stage

Physiological Stages
1. Initiation
2. Proliferation
3. Morphodifferentiation
4. Histodifferentiation
5. Appositional Apposition

1. BUD STAGE



- Enamel organ is round or ovoid resembling a bud hence the stage is referred as bud stage

Enamel organ is separated from the surrounding connective tissue by a distinct membrane.

- Histologically two types of cells are seen
  cells lining the periphery of bud - cuboidal
  central cells are polyhedral
- Cuboidal cells are continuous with the basal layer of oral epithelium
- Ectomesenchymal condensation adjacent to enamel organ forms dental papilla
- Ectomesenchymal condensation of ectomesenchymal cells enclosing dental papilla and enamel organ - dental follicle

2 CAP STAGE



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- enamel organ increases in size and alters the shape of it
- [illegible] invagination of the deep portion of the bud
- the resulting change in shape is that these organ is called as
  - cap stage
  - bell stage
- cap shaped enamel organ
- 3 layers in enamel organ
  1. outer enamel epithelium
  2. stellate reticulum
  3. inner enamel epithelium
- dental papilla with condensation of ectomesenchymal buds forming capillaries.
- Dense fibrous dental follicle

BELL STAGE



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- Enamel organ increases in size and attains the shape of a cap by invagination of deep portion of the bud
- Cells lining the convexity / periphery of cap - outer enamel epithelium cuboidal shape
- Cells lining the concave / invaginated portion change to columnar epithelium.
- Central polyhedral cells - network of star shaped cells
- Enamel organ having bell shape
- Four layers in enamel organ - inner enamel epithelium, intermedium. Stellate reticulum, outer enamel epithelium
- Dental papilla with peripheral cells differentiating to odontoblasts
- Distinct dental follicle.

ADVANCED BELL STAGE

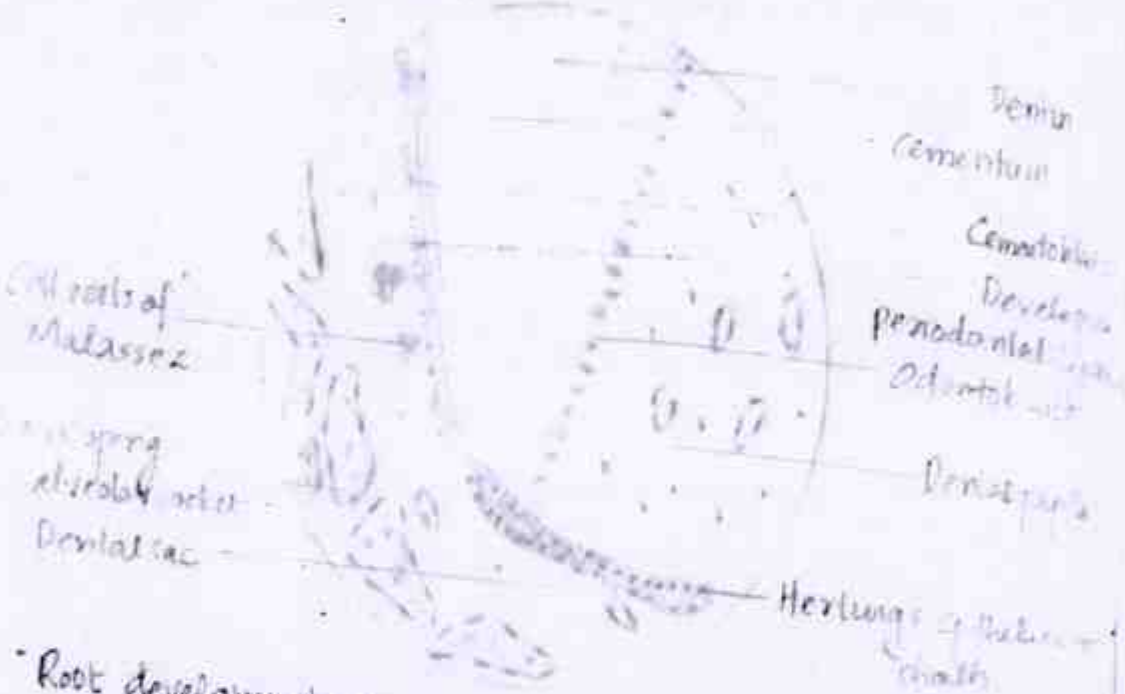


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- Enamel organ shows 4 distinct layers: Inner enamel epithelium, stratum intermedium, stellate reticulum, outer enamel epithelium
- Histological difference from early bell stage are
  - Hard tissue formation
  - Collapsed stellate reticulum and folding of outer enamel epithelium bringing capillaries of dental follicle nearer to ameloblasts

DEVELOPMENT OF ROOT



- Root development occurs in advanced bell stage after the enamel and dentin formation reaches the cervical region
- The inner enamel epithelium and outer enamel epithelium in cervical loop, proliferate to form Hertwig's epithelial root sheath which determines the size and shape, no. of roots of the tooth
  - formation of radicular dentin
  - Degeneration of HERS
  - Formation of radicular cementum
  - Orientation of periodontal ligament fibers

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ERUPTION SEQUENCE

Given by Nayes and Schou

Stage 1 : Preparatory stage
Stage 2 : Migration of tooth to the oral epithelium
Stage 3 : Emergence of crown tip to oral cavity
Stage 4 : First occlusal contact
Stage 5 : Full occlusal contact
Stage 6 : Continuous eruption

	Tooth	Eruption
Deciduous dentition		
Maxillary	Central incisor	7½ months
	Lateral incisor	8 months
	Canine	16 – 20 months
	First molar	12 – 16 months
	Second molar	20 – 30 months
Mandibular	Central incisor	6 ½ months
	Lateral incisor	7 months
	Canine	16 – 20 months
	First molar	12 – 16 months
	Second molar	20 – 30 months
Permanent dentition		
Maxillary	Central incisor	7 – 8 y'
	Lateral incisor	8 – 9 y'
	Canine	11 – 12 y'
	First premolar	10 – 11 y'
	Second premolar	10 – 12 y'
	First molar	6 – 7 y'
	Second molar	12 – 13 y'
		17 – 21 y'

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Mandibular	Central incisor	6-7 yr
	Lateral incisor	7-8 yr
	Canine	9-10 yr
	First premolar	10-12 yr
	Second premolar	11-12 yr
	First molar	11-13 yr
	Second molar	
	Third molar	17-21 yr

Nolla's stage of tooth development

10 - Apical end of root completed
9 - Root almost completed, open apex
8 - 2/3rd of root completed
7 - 1/3rd of root completed
6 - crown completed
5 - crown almost completed
4 - 2/3rd of crown completed
3 - 1/3rd of crown completed
2 - Initial calcification
1 - Presence of crypts
0 - Absence of crypts

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EARLY AND DELAYED ERUPTION

Early Eruption

- For the temporary teeth, it will more often occur when the tooth is superficially positioned under the gingiva
- It is also observed in case of hyperthyroidism and early puberty
- Early eruption of a single teeth is most frequent and is carried by local etiological and premature loss of temporary teeth which is itself most often caused by dental decay
- The cause of early eruption and late eruption can be related to

Genetic origin
Malformation
Systemic problems
Endocrine disorders
Infections
Metabolic disorders

Delayed Eruption

- Late eruption are less frequent in permanent dentition ~~than~~ than deciduous dentition and next date eruption do have significant clinical effect
- Eruption is considered to be late when it occur more than 6 month, beyond the average age limit of the eruption of temporary teeth and more than one year for permanent teeth.

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- Factors Factors causing delayed eruption.
  - Hypothyroidism
  - Cleidocranial dysplasia
  - Chondro ectodermal dysplasia
  - Gardner syndrome
  - Gaucher syndrome
  - De Lange syndrome

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STERILISATION IN DENTAL OFFICE

STERILISATION

It is the process by which an inert surface/medium is made of all micro organisms either in vegetative form

AGENTS OF STERILISATION

- Physical Agents
  - Sunlight - spontaneous sterilization under nature
  - Drying - unreliable, is of theoretical interest
  - Dry heat - flaming, incineration, hot air
  - Moist heat - pasteurization, boiling, steam under pressure
  - Radiation - α, γ, cosmic, UV radiation
- Chemical Agents
  - Alcohol - Ethyl, Isopropyl, Trichlorobutanol
  - Aldehyde - Formaldehyde, Glutaraldehyde
  - Halogens - Iodophores, Hypochlorites
  - Phenols - Hexachlorophene, Chlorhexidine
  - Surface active agents - Cetrimide, Cetavalon
  - Gases - Ethyl or Ethylene oxide, Beta propiolactone

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K.M.C.T. DENTAL COLLEGE
CALICUT

1. Sterilization & Disinfection in Dental Office

I. HEAT STERILIZATION

- Examination forceps and elevators
- Hand scalers
- Filling instruments
- Spoon and burnisher
- Mouth mirrors and probe
- Impression trays
- ART instruments

AUTOCLAVE

- Handpiece
- Ultrasonic
- Towels
- Suctions
- Cotton gauze, gloves

CHEMICAL SOLUTION

- Surgical burs
- Diamond burs
- Light cure tips
- Plastic shank retractor
- Acrylic obturators
- Splints

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AUTOCLAVE

Temperature — 121°c (250 F)
Pressure — 115 kPa
Exposure time — 13 - 30 min
3.5 - 12 min

Advantages
- Good penetration
- Non toxic
- Time efficient

Precautions
- Non stainless steel items corrode
- May damage rubber and plastics
- Do not use close containers
- Unwrapped items quickly contaminated after cycle.

DRY HEAT (Oven type)

Temperature — 134°c
Pressure — 216 kPa
Exposure time — 60 - 120 min

Advantages
- No corrosion
- Non toxic
- Items are dry after cycle
- Can use closed container

Precautions
- Long cycle time
- May damage rubber and plastics
- Door can be opened during cycle
- Unwrapped items quickly contaminated after cycle

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1) HEAT

Temperature - 191°c

Exposure time - 12 min wrapped
6 min unwrapped

Advantages - No corrosion
Non toxic
Items are dry after cycle

Precautions - May damage rubber and plastics
Door can be opened during cycle
Unwrapped items quickly contaminated

UNSATURATED CHEMICAL

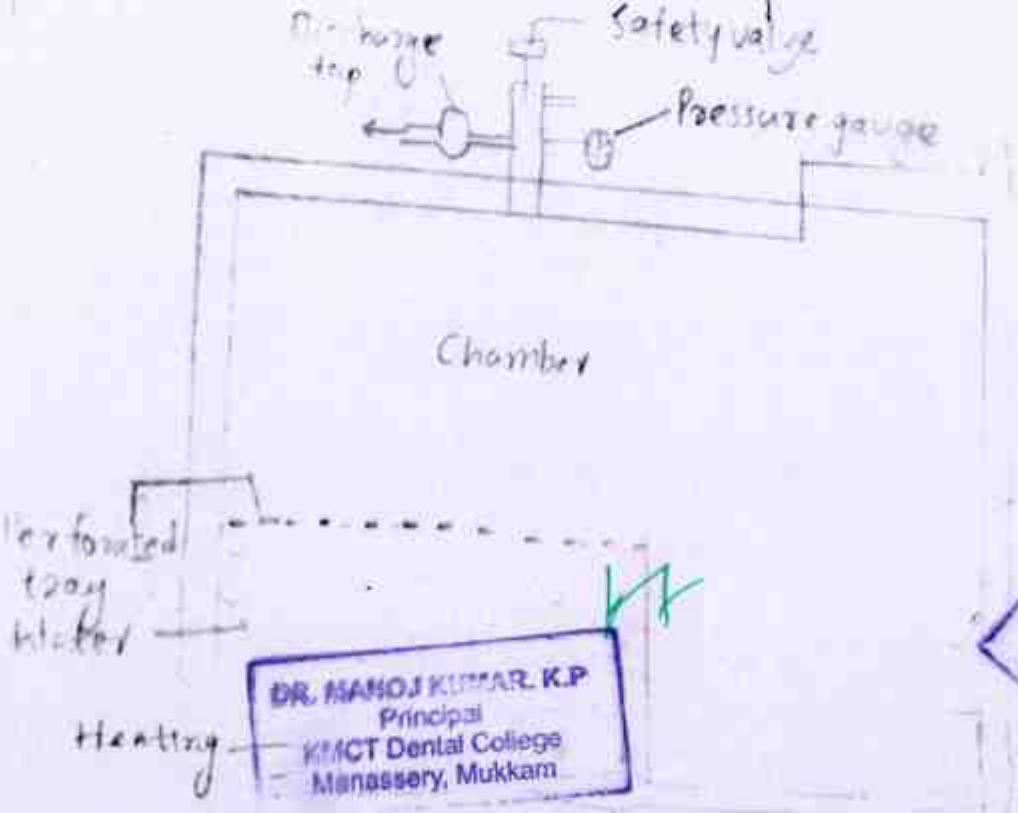
Temperature -134°c

Pressure - 216 kPa

Exposure time - 20 min.

Advantages - No corrosion
Time efficient

Precautions - Do not use closed
Must use special solution



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7. ENCOURAGING READING BOOKS WITH SIMPLE LANGUAGE



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KMCT DENTAL COLLEGE

DEPARTMENT OF PUBLIC HEALTH DENTISTRY

TEACHING MATERIAL FOR LEARNING

TOPIC : PIT AND FISSURE SEALANTS

CONTENTS

Definition
Morphology
Classification
Materials used
Indications and contraindications
Which tooth to be sealed
Technique of application
Factors affecting sealant retension
Conclusion
Reference

DEFINITION

A fissure sealant is a material that is placed in the pits and fissures of teeth in order to prevent or arrest the development of dental caries - European Academy of Paediatric Dentistry (EAPD)

MORPHOLOGY

Pits and fissures are enamel faults

1. Pits are small pin point depressions located at the junction of developmental grooves or at terminals of those grooves
2. Fissures are long clefts between cusps or ridges

TYPES

1. V type and U type- Shallow and wide and tend to be self cleansing and somewhat caries resistant.Here non invasive technique is recommended
2. I type - It is deep,narrow and quite constricted,resembling a bottle neck.These are caries susceltible.It requires invasive technique.
3. Combination type

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CLASSIFICATION OF PIT AND FISSURE SEALANTS

BASED ON CURING LIGHT

First generation - Polymerized with uv light of 350nm wave length

Second generation - Self cured or chemically cured.

Third generation - Visible light cured of 430_ 490nm wavelength

Fourth generation- Addition of fluoride for added benefit.

BASED ON PRESENCE OF FILLER

1. Unfilled- Better flow
2. Semifilled-Strong and resistent to wear

BASED ON COLOR

1. Tinted - For easy identification
2. Clear - Difficult to detect
3. Opaque - For easy identification
4. Pink - Better fluoride release

MATERIALS USED AS SEALANTS

1. RESINS

Resin based fissure sealants are bonded to the underlying enamel by the use of the acid etch technique.The resin sealant may be either pure resin,composites.

2. GLASS IONOMER CEMENTS

One of the main clinical advantage of GIC is their ability to bond chemically to dentin and enamel without the use of acid etch technique

3. COMPOMERS
4. FLUORIDE CONTAINING SEALANTS

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PROCEDURE OF SEALANT APPLICATION

1. Time to seal
2. Polish the tooth surface
3. Isolate and dry the tooth surface.
4. Acid etching
5. Rinse the tooth
6. Isolate and dry the tooth
7. Material application
8. Evaluate the sealant
9. Check occlusion
10. Retention and periodic maintenance.

INDICATIONS AND CONTRAINDICATIONS

INDICATIONS

1. Sound pit and fissuresseperated by transverse ridge
2. Deep narrow pit and fissures
3. Fully erupted teeth
4. All permanent molars withoutcaries

CONTRAINDICATIONS

1. Various pit and fissures
2. Broad well coalesced pit andfissures
3. Partially erupted tooth
4. Teeth with cavitation

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FACTORS AFFECTINGSEALANT RETENSION

1. Type of sealant - Studies shown that 2nd generation sealants providesuperior retention and caries protection than first generation sealants.
2. Position of teeth in the mouth - More for the anterior and in mandible than maxillary arch.
3. Age of the child - Retention is compromised in younger children and depending on the eruption status of teeth.
4. Clinical skill of the operator

PIT QND FISSURE SEALANTS REQUIRE

1. Good moisture control when being placed
2. Clean surfaces
3. Appropriate etching and drying time
4. Appropriate coverage of the surfaces
5. Checking occlusion for interferences
6. Regular monitoring and maintenance after placement

PIT AND SEALANT PRODUCTS

1. Alpha- Dent Light Cure Pit and Fissure Sealant
2. Baritone L3
3. Concise Light Cure White Sealant
4. Helioseal F
5. Helioseal

6.Prisma Shield Compule Tips Tinted Pit and Fissure Sealant

7. Seal Rite

8.Seal Rite Low Viscosity

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CONCLUSION

The cariostatic properties of sealants are attributed to the physical obstruction of the pits and fissures.This prevents the penetration of the fermentable carbohydrates and so the remaining bacteria cannot produce acid in cariogenic concentration.

Educating parents and patients on the importance of dental sealantsis critical.

PREVIOUS QUESTIONS

1. Define and classify pit and fissure sealants.wride in detail aboutthe steps in pits and fissure application.
2. Different generations in pit and fissure sealants.
3. Indications and contraindications of pit and fissure sealants.

REFERENCE

Peter S. Essentials of Public health dentistry.Arya Publishing House: 2022.

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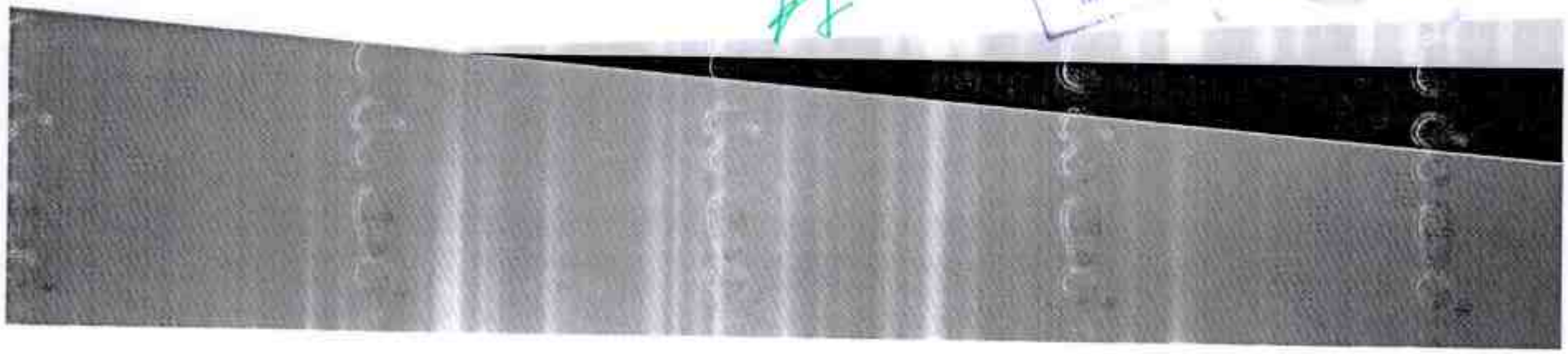
8. PROVISION OF SPECIAL NOTES

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INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTRE

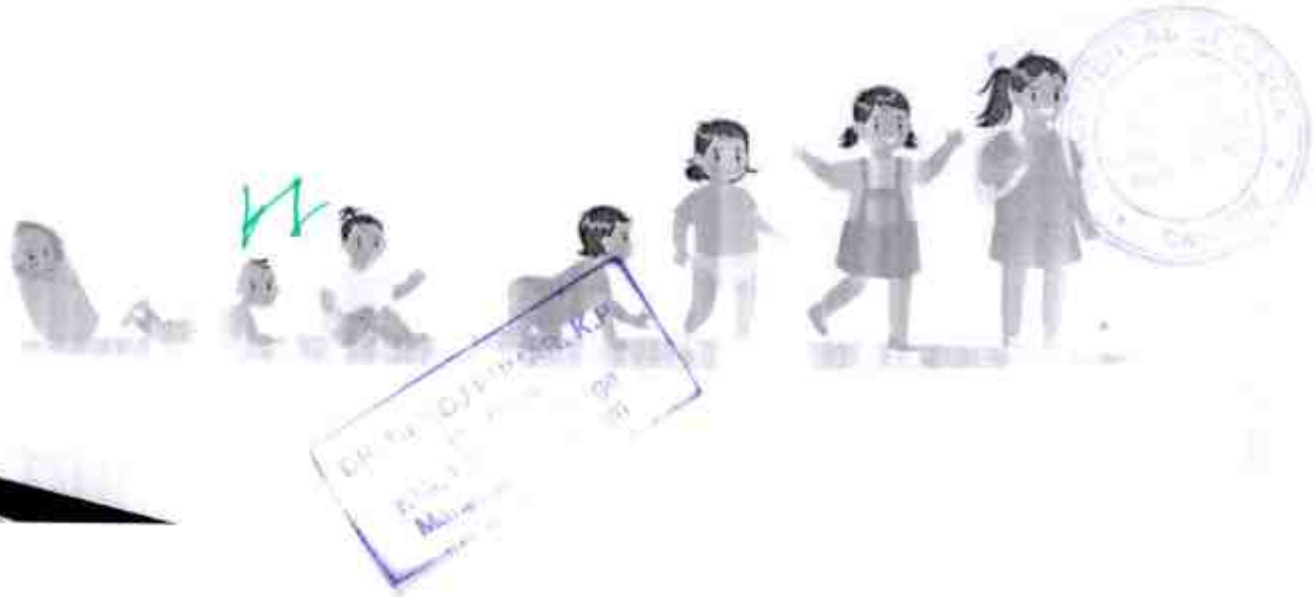
SKELETAL MATURITY INDICATORS

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INTRODUCTION

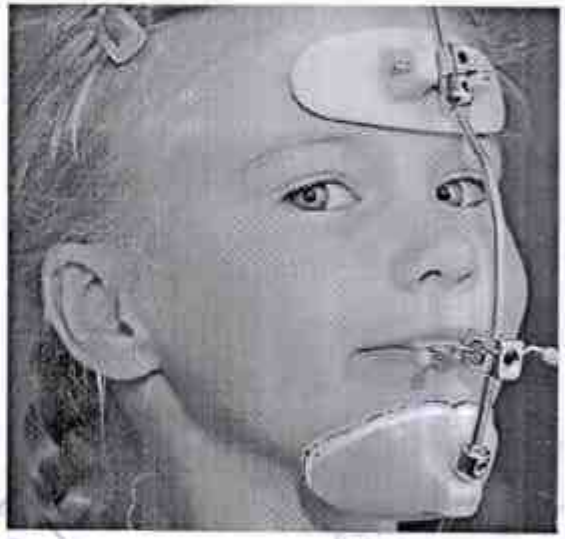
- Every individual matures according to his or her own biological clock.
- Indicators of maturity - height , weight, chronological age, sexual maturation, frontal sinus, biological age or physiological age; hand-wrist maturity, cervical vertebrae, dental eruption; dental calcification and recently introduced biomarkers.



- Maturational status can have considerable influence on diagnosis, treatment goals, treatment planning, and the eventual outcome of orthodontic treatment.
- Clinical decisions regarding the use of extra oral traction forces, functional appliances or orthognathic surgeries are, at least partially based on growth considerations.



- Growth modulation procedures, which bring about changes in the skeletal base such as the use of extra oral orthopedic forces or functional appliances, are suggested to be initiated during active growth periods.



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- Methods to assess skeletal maturity of an individuai :

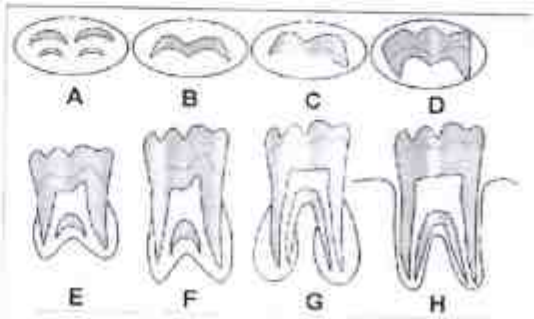
Hand wrist radiographs



Cervical vertebrae



Stages of tooth development

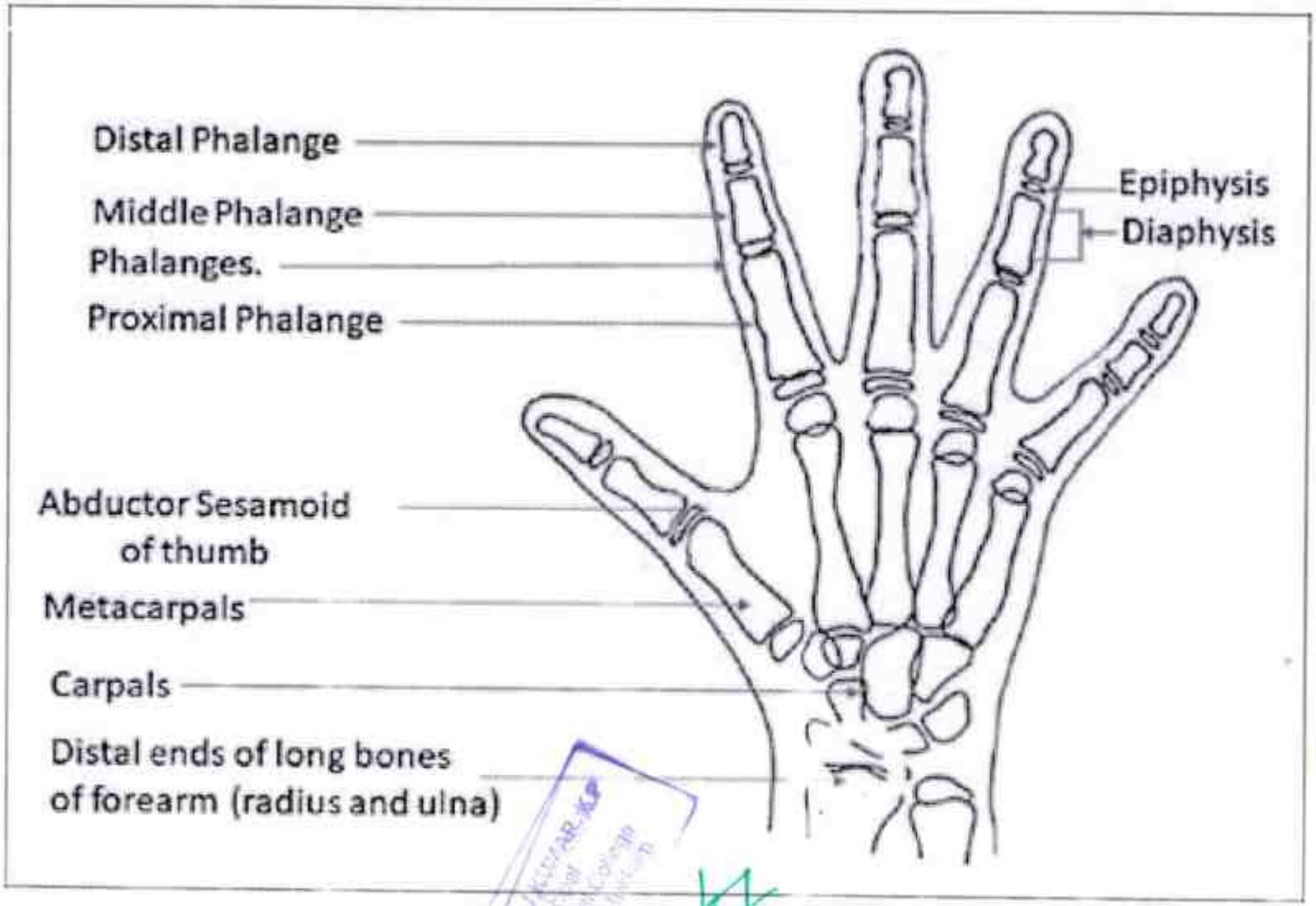


HAND WRIST RADIOGRAPHS

- Comparing the patient's hand wrist radiograph with standard radiographs of different skeletal ages - skeletal maturation status of the individual is determined.
- Commonly used methods :
  - Fishman's skeletal maturity indicators
  - Atlas method by Greulich and Pyle
  - Bjork, Grave and Brown method
  - Hagg and Taranger method

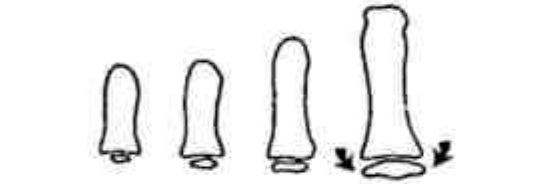




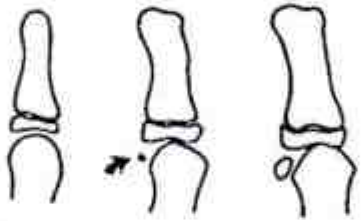

Distal Phalange
Middle Phalange
Phalanges.
Proximal Phalange
Epiphysis
Diaphysis
Abductor Sesamoid of thumb
Metacarpals
Carpals
Distal ends of long bones of forearm (radius and ulna)

FISHMAN'S SKELETAL MATURITY INDICATORS

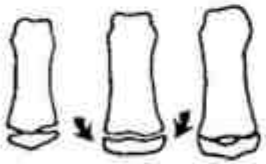
- Leonard S Fishman – 1982
- Uses 4 stages of bone maturation.



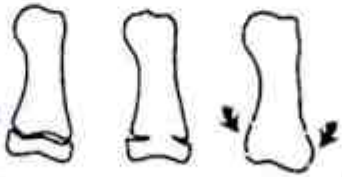
EQUAL WIDTH OF EPIPHYSIS AND DIAPHYSIS



APPEARANCE OF ADDUCTOR SESAMOID OF THUMB



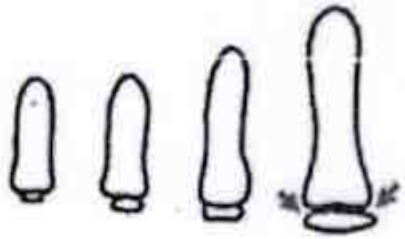
CAPPING OF EPIPHYSIS



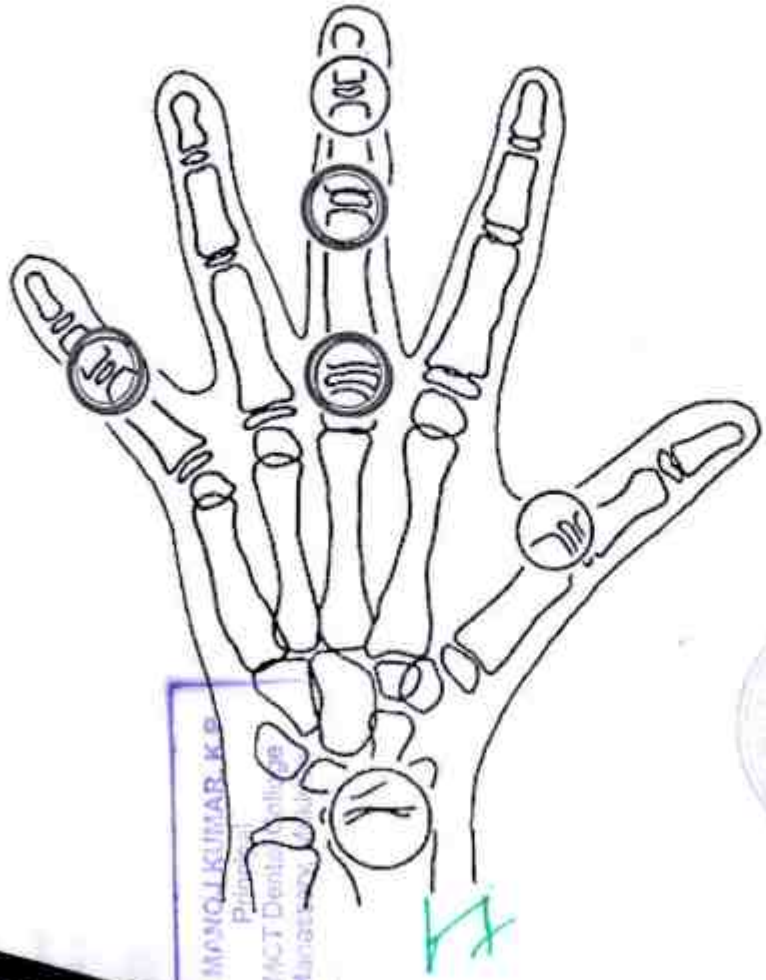
FUSION OF EPIPHYSIS

Width of epiphysis as wide as diaphysis

1. Third finger–proximal phalanx
2. Third finger–middle phalanx
3. Fifth finger–middle phalanx



WIDTH OF EPIPHYSIS



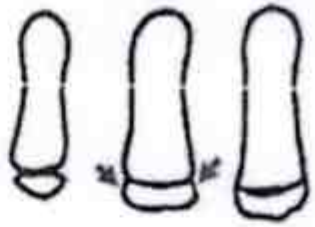
Ossification

4. Adductor sesamoid of thumb

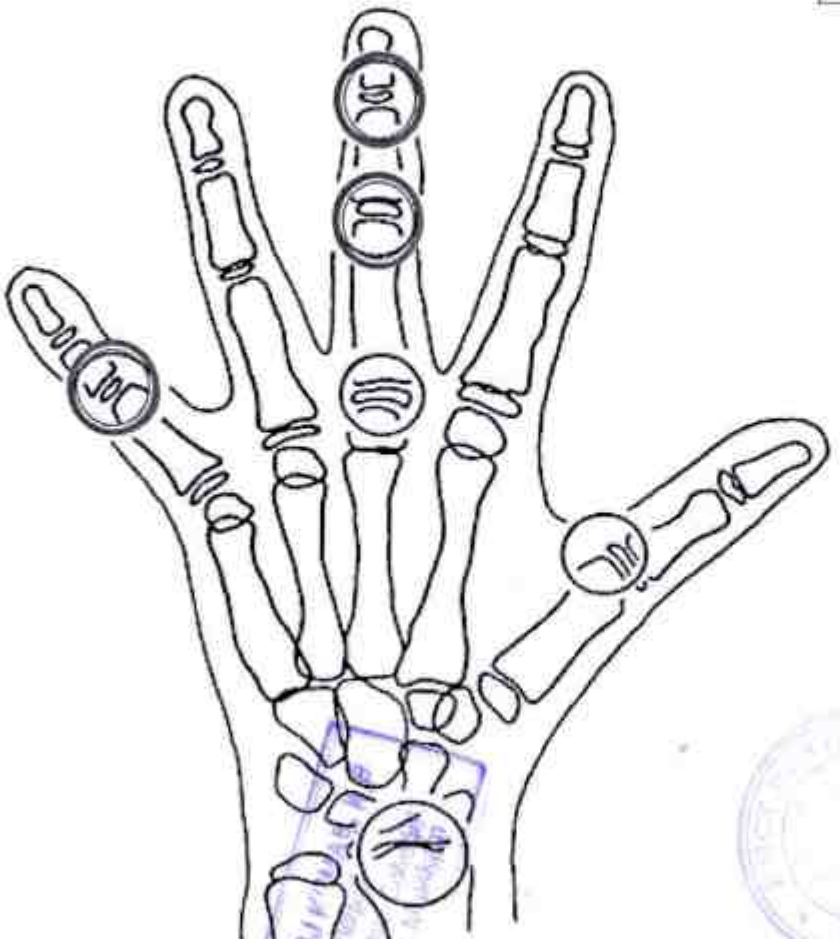


Capping of epiphysis

5. Third finger—distal phalanx
6. Third finger—middle phalanx
7. Fifth finger—middle phalanx

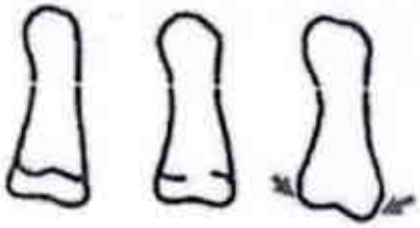


CAPPING OF EPIPHYSIS

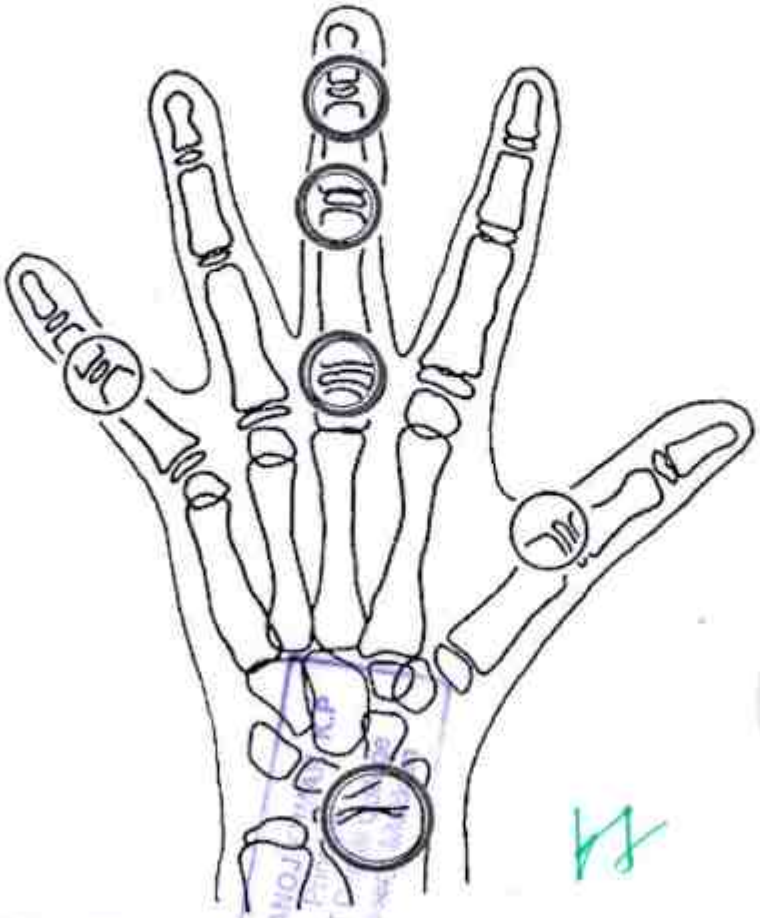


Fusion of epiphysis and diaphysis

8. Third finger—distal phalanx
9. Third finger—proximal phalanx
10. Third finger—middle phalanx
11. Radius



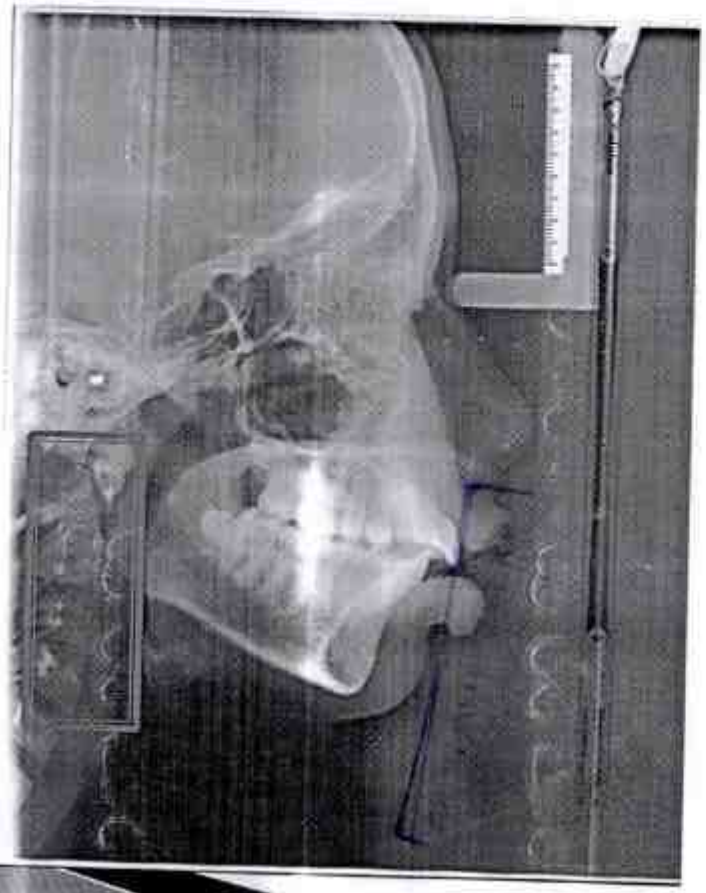
FUSION

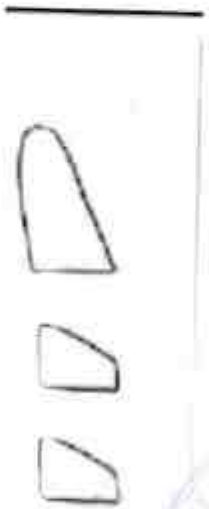


CERVICAL VERTEBRAE MATURATION INDICATOR

Stage 1 / Category 1

- All inferior borders of the bodies of C2, C3 and C4 are flat.
- The Superior borders are strongly tapered posterior to anterior region.
- Very significant amount of adolescent growth expected.

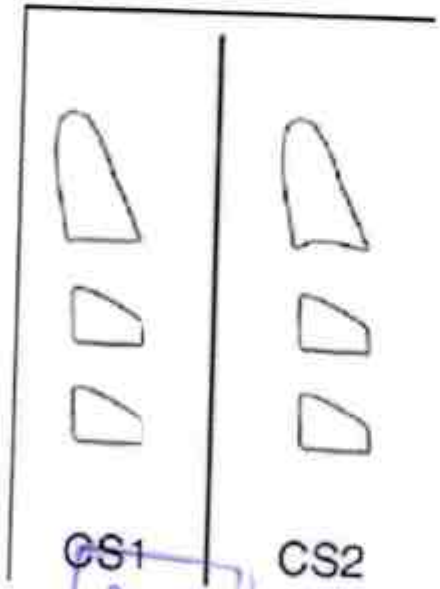




CS1

Stage 2 / Category 2

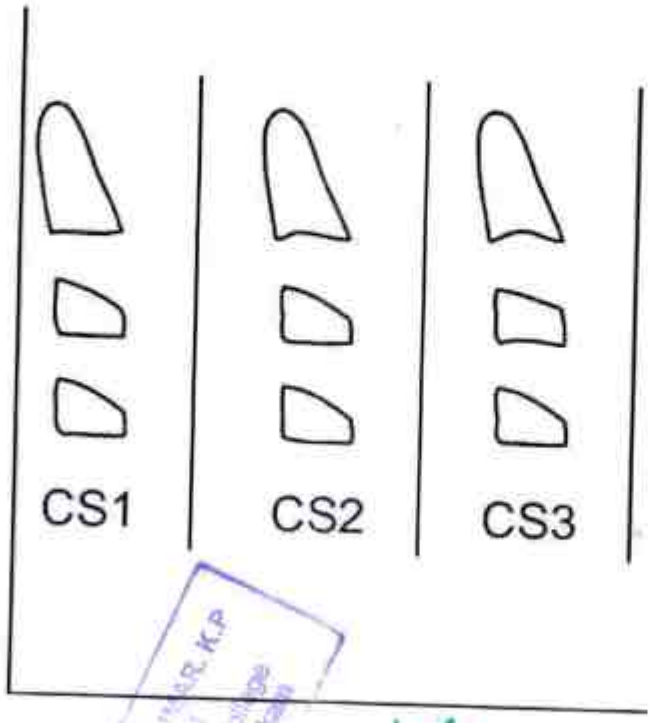
- A concavity has developed in the inferior borders of C2 and C3.
- The anterior vertical height of the bodies has increased.
- C3 and C4 are more rectangular in shape.
- Significant amount of adolescent growth expected.



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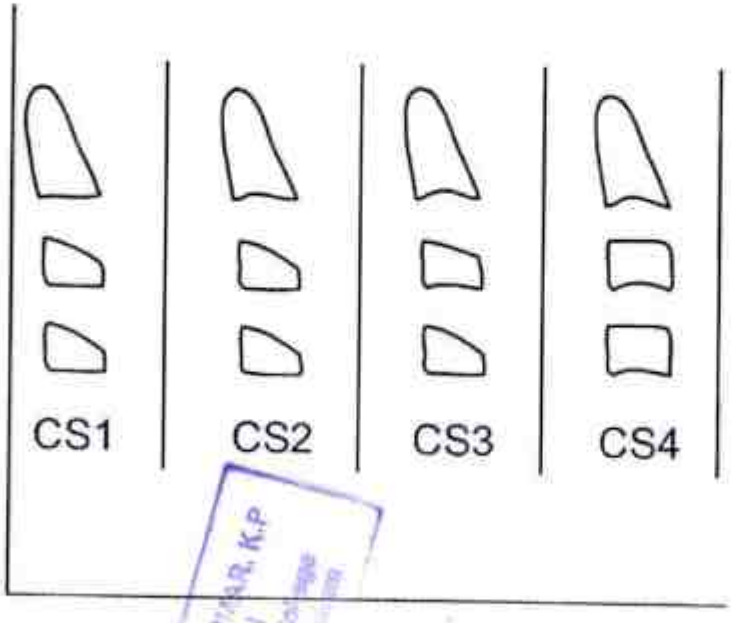
Stage 3 / Category 3

- Distinct concavities have developed in the inferior border of the C2 and C3.
- C4 starts developing concavity in lower border of body.
- Moderate amount of growth expected.



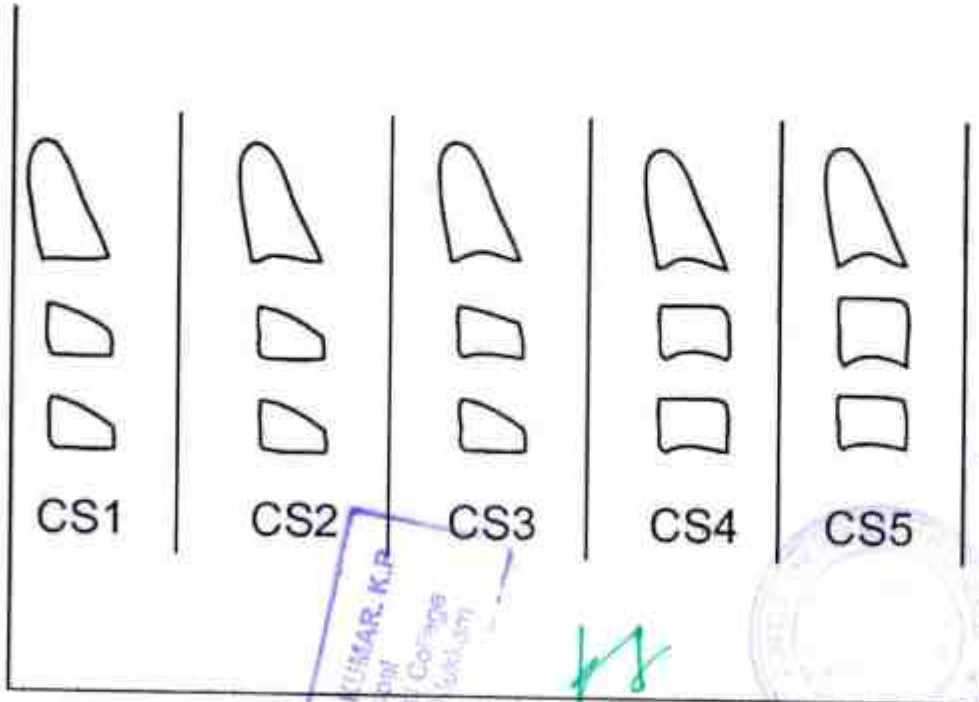
Stage 4/Category 4

- C3 and C4 are nearly square in shape.
- Distinct concavities in lower borders of C2, C3 and C4.
- Small amount of growth expected.



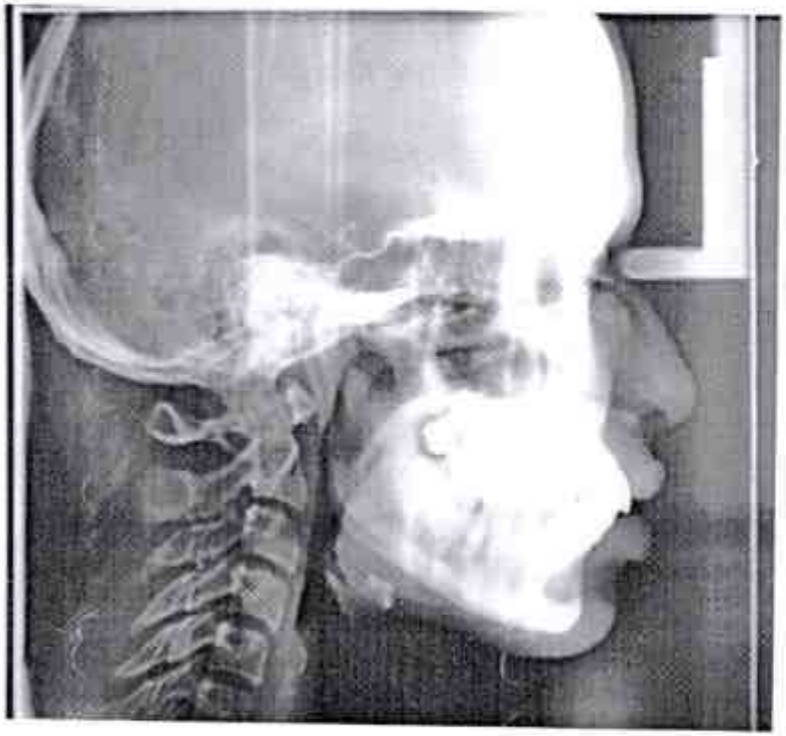
Stage 5 / Category 5

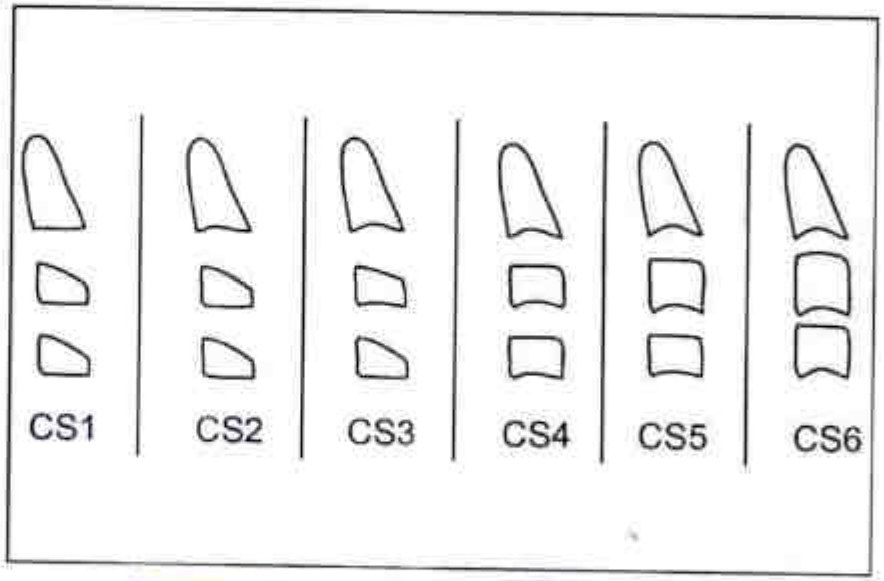
- C3 and C4 are square in shape.
- Accentuated concavities are formed in C2, C3 and C4
- Insignificant amount of growth expected.



Stage 6 / Category 6

- C3 and C4 are increased in Vertical height and are higher than they are wide.
- All concavities have deepened.
- Adolescent growth is completed.









Stage 1

- Initiation
- 80 – 100% adolescent growth expected

Stage 2

- Acceleration
- 65-85% adolescent growth expected



Stage 3

- Transition - acceleration of growth towards peak height velocity
- 25-65% adolescent growth expected

Stage 4

- Deceleration
- 10-25% adolescent growth expected

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Stage 5

- Maturation
- 5-10% adolescent growth expected

Stage 6

- Completion
- Little or no adolescent growth expected



LINO 10/M

HAND WRIST RADIOGRAPH



SMI SATGE 2

S.M.I. 1 : The third finger proximal phalanx shows equal width of epiphysis and diaphysis.

S.M.I. 2 : Width of epiphysis equal to that of diaphysis in the middle phalanx of third finger.

S.M.I. 3 : Width of epiphysis equal to that of diaphysis in the middle phalanx of fifth finger.

S.M.I. 4 : Appearance of adductor sesmoid of the thumb.

S.M.I. 5 : Capping of epiphysis seen in distal phalanx of third finger.

S.M.I. 6 : Capping of epiphysis seen in middle phalanx of third finger.

S.M.I. 7 : Capping of epiphysis seen in middle phalanx of fifth finger.

S.M.I. 8 : Fusion of epiphysis and diaphysis in the distal phalanx of third finger.

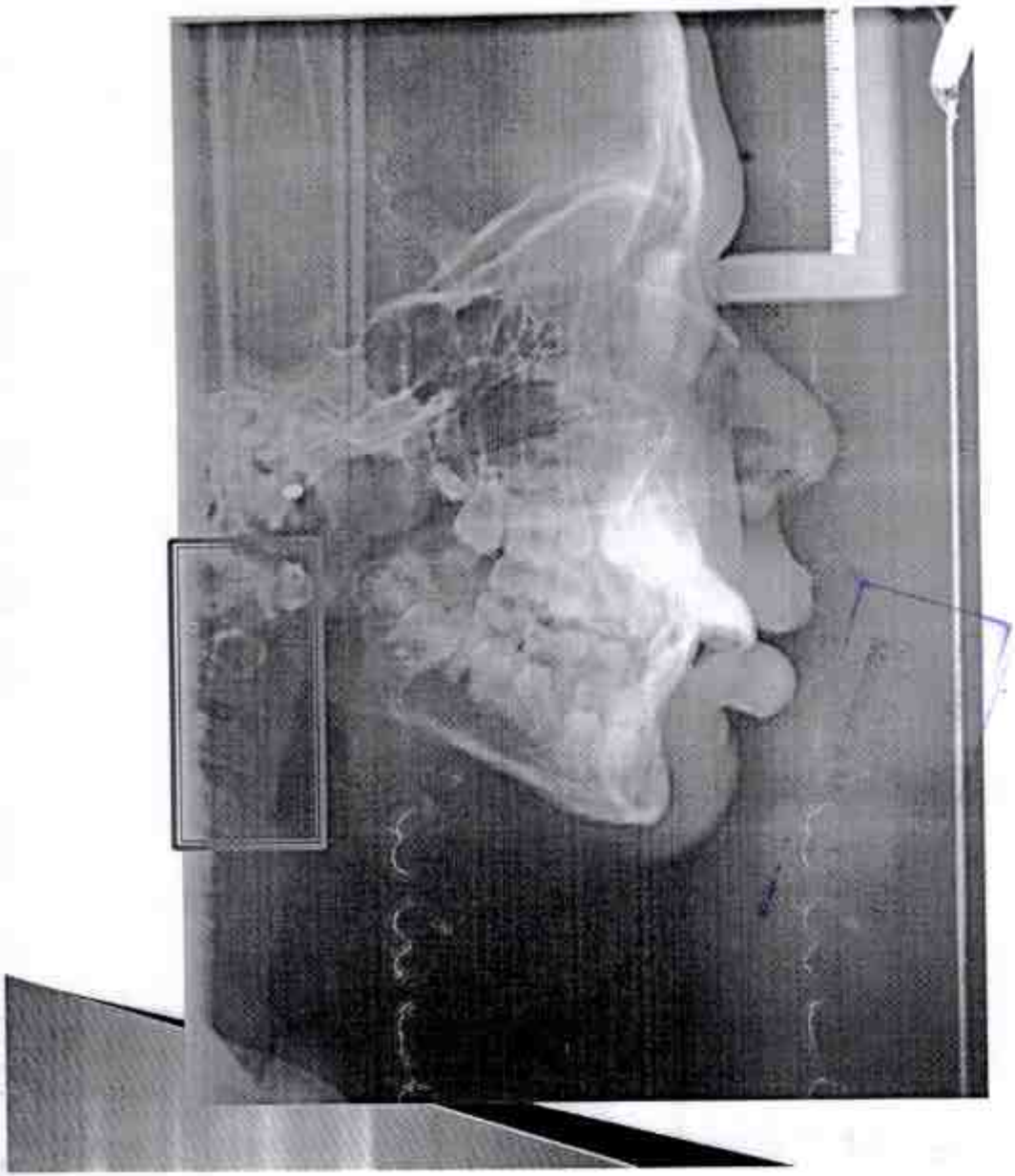
S.M.I. 9 : Fusion of epiphysis and diaphysis in proximal phalanx of third finger.

S.M.I. 10 : Fusion of epiphysis and diaphysis in the middle phalanx of third finger.

S.M.I. 11 : Fusion of epiphysis and diaphysis seen in the radius.

87.8% adolescent growth remaining
83.3% maxillary growth remaining
85.3% mandibular growth remaining

CVMI



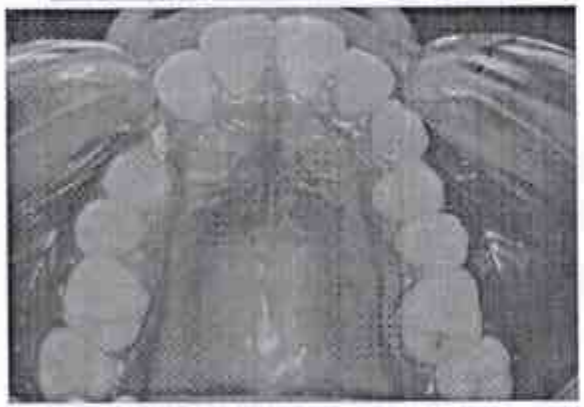
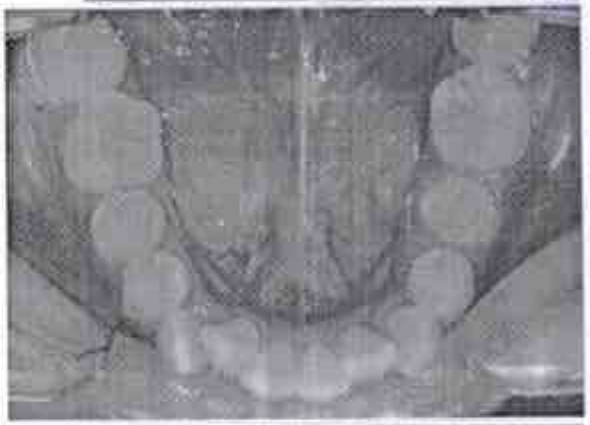
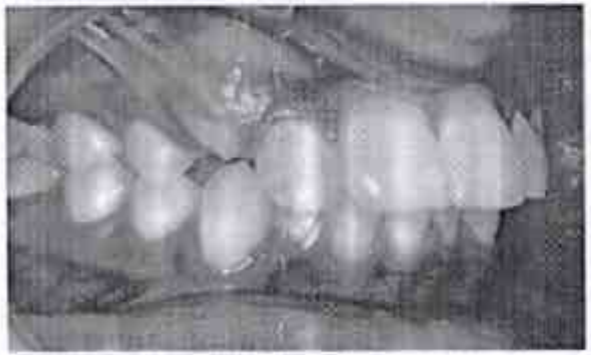
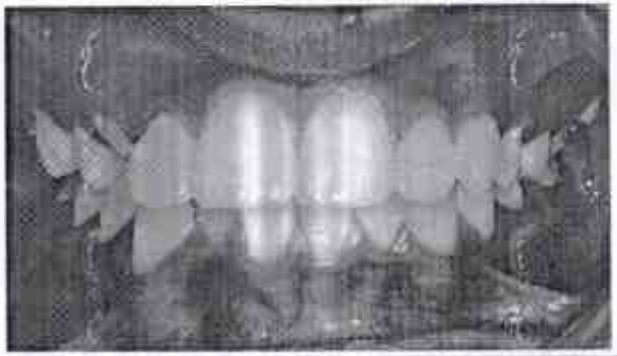
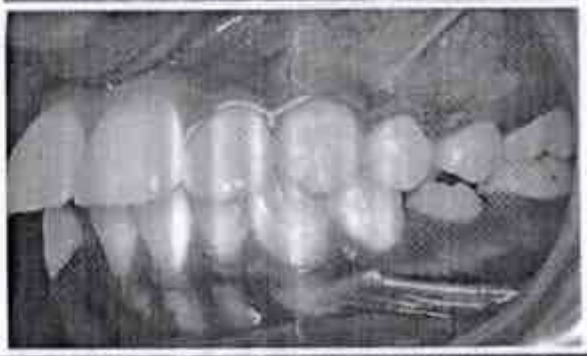
CVMI STAGE 1
80 – 100% of growth
expected

LINO 10/M





GAZZALA 12/F

HAND WRIST RADIOGRAPH



SMI SATGE 10

S.M.I. 1 : The third finger proximal phalanx shows equal width of epiphysis and diaphysis.

S.M.I. 2 : Width of epiphysis equal to that of diaphysis in the middle phalanx of third finger.

S.M.I. 3 : Width of epiphysis equal to that of diaphysis in the middle phalanx of fifth finger.

S.M.I. 4 : Appearance of adductor sesmoid of the thumb.

S.M.I. 5 : Capping of epiphysis seen in distal phalanx of third finger.

S.M.I. 6 : Capping of epiphysis seen in middle phalanx of third finger.

S.M.I. 7 : Capping of epiphysis seen in middle phalanx of fifth finger.

S.M.I. 8 : Fusion of epiphysis and diaphysis in the distal phalanx of third finger.

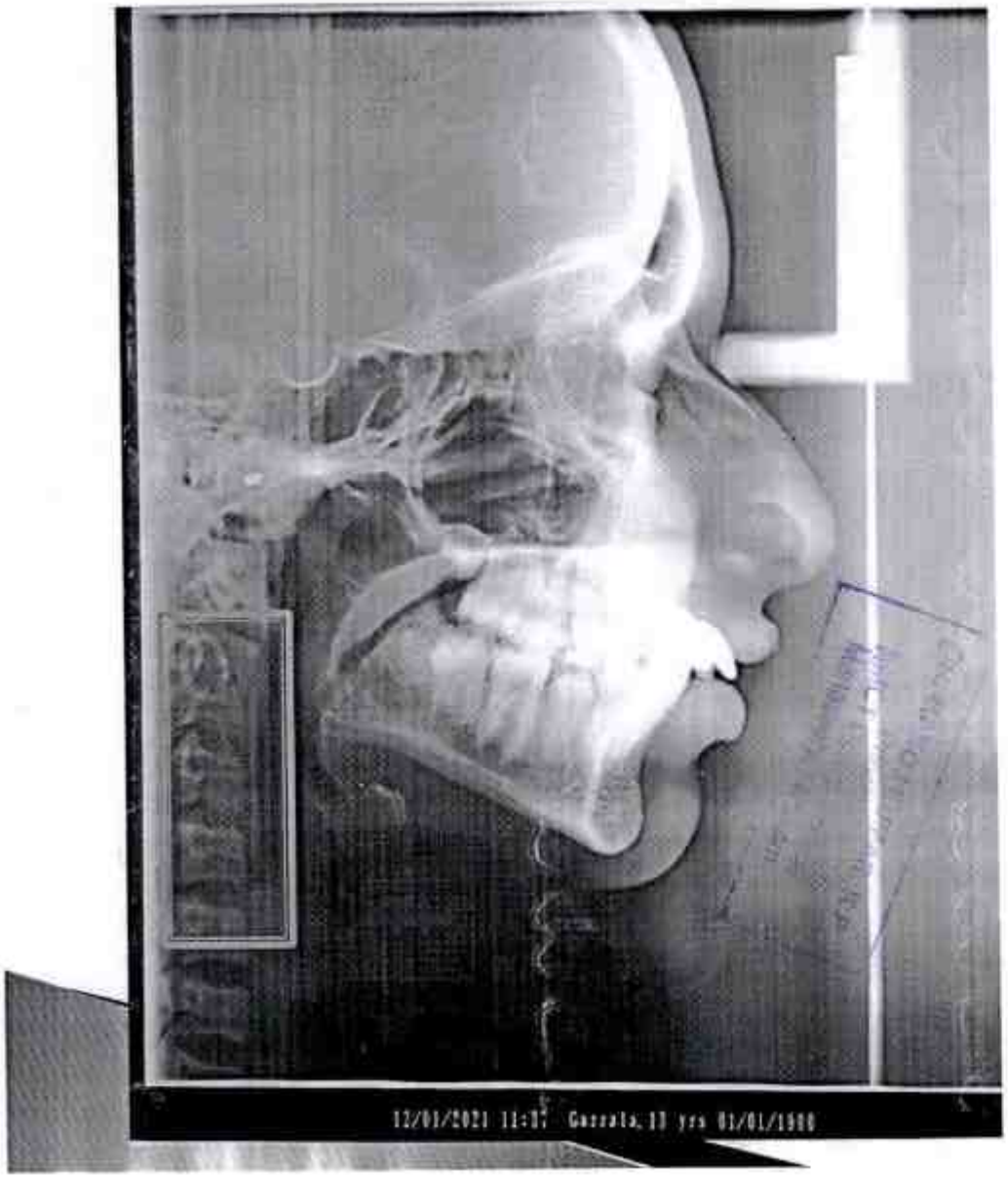
S.M.I. 9 : Fusion of epiphysis and diaphysis in proximal phalanx of third finger.

S.M.I. 10 : Fusion of epiphysis and diaphysis in the middle phalanx of third finger.

S.M.I. 11 : Fusion of epiphysis and diaphysis seen in the radius.

3.9% adolescent growth remaining
7.3% maxillary growth remaining
10% mandibular growth remaining

CVMI



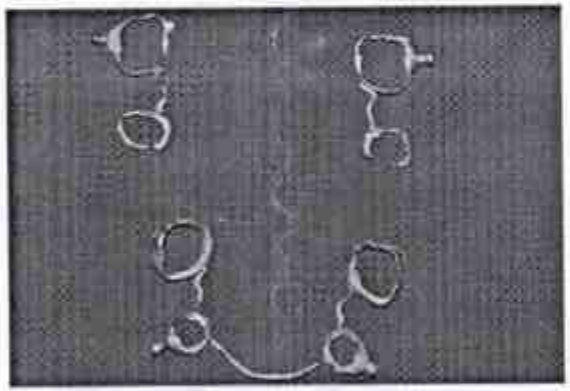
CVMI STAGE 5
5 – 10 % of growth expected

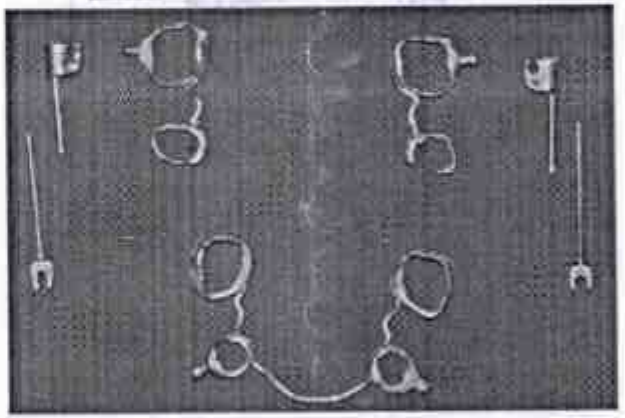


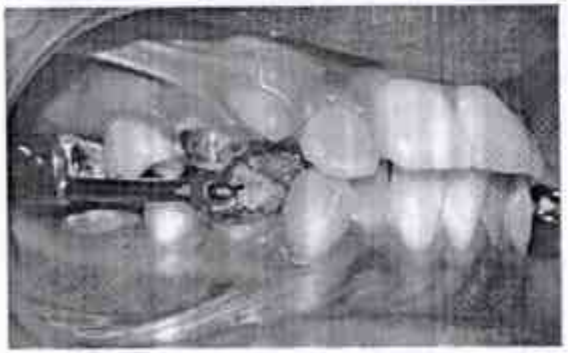


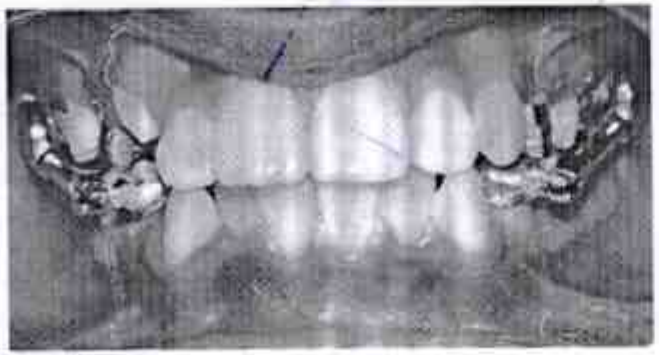


GAZZALA 12/F











CONCLUSION

- Precise evaluation of maturational stage should be an integral part of both diagnosis and treatment.
- Different authors had reported different methods in an attempt to determine the best indicator of maturity.
- Every method has its own advantages, disadvantages and limitation over the other method. But still researches are being done to explore best method to assess the maturity of an individual.

① MILESTONES OF DEVELOPMENT

Age	Milestones of development	Physical parameters
3-1 years	• At birth starts making jerky aquiveering arm thrusts and by 1st year child can sit without assistance crawl forward on belly, creep on hands and feets • Hearing is fully mature. • Recognises the smell of his own mothers breast milk • pays increasing attention to speech. • cries when mother / father leaves.	• expected height 50-75 cm. Expected weight 4.15-9.75 kg expected head circumference 35-45 cm.
1-3 yr	• walks alone, walk up and down stairs holding on to support • Recognizes names of familiar people like 'dada' and 'mama' objects and body parts. Imitates behaviour of others especially adults and older children. • By three year runs easily, can say name age	expected height: 75-95 cm Expected weight 10-14 kg expected head circumference 45-49 cm.
3-5 yrs	Hops, somersaults, kicks ball forward • Speaks clearly for strangers to understand. • Tells stories, dresses and want to be like her	expected Height 95-107 cm expected weight 14-18 kg expected head circumference 49-50.36 cm

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Reference
Text book of pedodontics: SHOBA TANDON
page No: 900

(2) IMMUNISATION SCHEDULE

AGE	VACCINE
Birth	BCG, OPV, HBV
6 week	OPV, DPT, HBV, Hib
10 weeks	OPV_2, DPT_2 Hib
14 week	DPT_3, OPV_2, HBV, Hib
9 months	measels vaccine.
15 - 16 months	MMR, OPPV, DPT, Hib
2 years	Typhoid
5 years	OPV, DPT
10 years	Tetanus toxoid
16 years	TT
pregnant women	2 doses of TT

NEWER VACCINE

Varicella - above 1 year.
Hepatitis A - above 1 year.

* OPV - oral polio vaccine
* BCG - Bacilla calmett Gue
* DPT - Diphtheria pertussis tet
* HBV - Hepatitis B Vacc
* TT - Tetanus toxoid

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(3) CHRONOLOGY OF PERMANENT AND DECIDUOUS DENTITION.

TOOTH	HARD TISSUE FORMATION.	AMOUNT OF ENAMEL FORMED AT BIRTH	ENAMEL COMPLETED	ERUPTION	ROOT COMPLETED
DECIDUOUS DENTITION					
Maxillary					
Central incisor	4 mo in utero	five sixth	1½ mos	7½ months	1½ year
lateral incisor	4½ mo in utero.	two third	2½ mos	9 month	2 year
Canine	5 mos in utero	one third.	9 mos	18 month	3 year
First molar.	5 mo in utero	Cusps are coiled	6 mos	14 month	2½ year
Second molar	6 mo in utero	Cusps tip, still isolated.	11 mos.	24 month.	3 year.
Mandibular					
Central incisor	4½ mo in utero		4½ mos	6 month	1½ years
lateral incisor	4½ mo in utero.		4 mos	7 month	1½ years.
Canine	5 mo in utero		9 mos	16 month	3 years.
First molar	5 mo in utero.	cusps united	5½ mos	12 month	2½ years.
Second molar	5 mo in utero.	Cusps tip till isolated.	10 mos	20 months	3 years.

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	Formation	Formed at birth	Completed	Eruption	Root completed.
PERMANENT DENTITION					
Maxillary					
Central incisors	3-4 mos		4-5 yr	7-8 yr.	10 yr.
Lateral incisor	10-12 mos		4-5 yrs.	8-9 yr	11 yr.
Cuspids	4-5 mos	Sometimes trace.	6-7 yr	11-12 yr	13-15 yr
First bicuspid	1½-1¾ yr		5-6 yr	10-11 yr	12-13 yr.
Second bicuspid	2-2¼ yr		6-7 yr.	10-12 yr	12-14 yr
First molar	At birth.		2½-3 yrs	6-7 yr	9-10 yr
Second molar	2½-3 yrs.		7-8 yr	12-13 yrs.	14-16 yr
third molar	7-9 yr		12-16 yr.	17-21 yrs	18-25 yr.
Mandibular					
Central incisor	3-4 mos		4-5 yrs	6-7 yr	9 yr
Lateral incisor	3-4 mos.		4-5 yr.	7-8 yrs	10 yr.
cuspid	[illegible]		6-7 yr	9-10 yr	12-14 yrs,
First bicuspid	1¾-2 yr		5-6 yr.	10-12 yr	12-14 3 yr.
2nd bicuspid	2¼-2½ yr.		6-7 yr	11-12 yr	13-14 yr
First molar	At birth.		2½-3 yr	6-7 yr	9-10 yr
Second molar.	2½-3 yrs.		7-8 yr	11-13 yr	14-15 yr
third molar	8-10 yr		12-16 yr.	11-21 yr.	18-25 yr

Hogan and Kronfeld 1933

Reference.
Textbook of pedodontics, Shobha Tandon page No: 880 - 881

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14/1/23

Prosthodontics

Steffi - Pr 17

1) Classify denture base resins. Write the composition of heat cure acrylic resin.

2) Physical stages of polymerization.

Answers.

1) Classification - Denture base resins.

I) Based on materials:

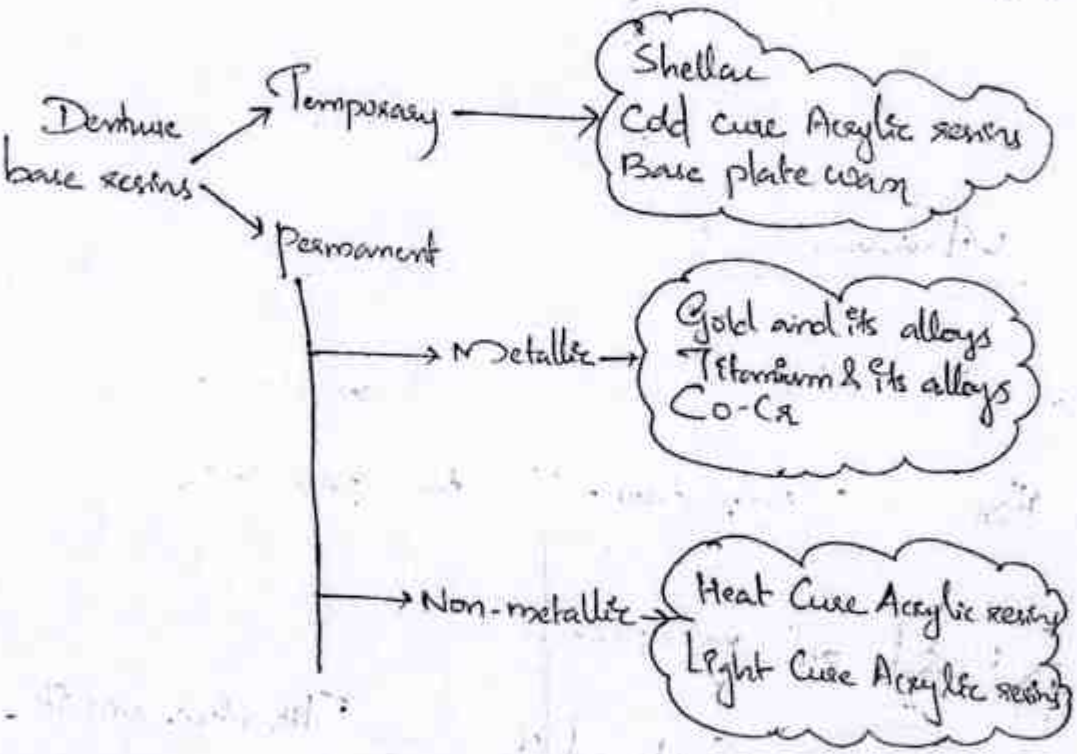
1) Metallic: Gold and its alloys, Titanium and its alloys, Co-Cr alloys.

2) Non-metallic: Shellac, Base plate wax, Vinyl resins.

II) Based on durability:

1) Temporary - Shellac, Cold-cure Acrylic resins, Base plate wax

2) Permanent - Heat cure acrylic resins, light cure acrylic resins, Polymerization.



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III) ISO Classification of denture base resins.

Resin	Features
1) Heat Cure Acrylic resins -	Polymerization takes place at a temperature greater than 65°C.
2) Self ~~cured~~ Cure Acrylic resins -	Polymerization at a temperature below 65°C, based on the chemical reaction taking place.
3) Thermoplastic resins -	~~Soluble thermoplastic~~ Polymerization takes place.
4) Light Cure acrylic resins -	Polymerization takes place, usually in Visible light or ultra-violet ~~rays~~ radiation.
5) Soluble thermoplastic	

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1) Classify denture base, composition of heat cure acrylic resin

2) Charges of polymerization

Nandakishore P
2nd yr addl
Roll no: 9

Classification of denture base

i) Based on materials
→ a) metallic
→ b) non metallic
a) Metalic
→ Gold and its alloy
→ Titanium
→ aluminium
→ Cr-Co
b) Non metallic
→ baseplate wax
→ Cold cure acrylic resin

ii) based on durability
→ Permanent
→ temporary

iii) ISO classification
→ Light cure ery acrylic resin
→ Self cure acrylic resin
→ Thermoplastic
→ Heat cure acrylic resin
→

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Ajay Krishnan. N
Roll no: 1

Bhuvanadas CP
Roll no: 5
IInd Year additional.

1) Classification of denture base materials.
Composition of heat cure acrylic resin.

1) classification of denture base resin by HC. composition of heat cure = acrylic resin.

2) ~~curing~~ ~~poly~~ ~~composition~~ of Physical Physical Properties of Polymerization.

3) classification of denture base resin.

~~Based~~ as Based on material.

metalic : ~~stellite~~ cr-co alloy, Ni, co-cr alloy.

Non metalic : shellac, Base Plate wax, ~~as~~ acrylic.

Based on durability

temporary : shellac, Base Plate wax

Permanent : cr-co alloy, co-cr alloy.

Iso classification (based on mode of activation)

Ajay Krishnan
Roll no :

1) Classification of denture base materials
Composition of heat cure acrylic resin.
2) Composition of soft and Physical stages of polymerisation.

Answers

1) Classification of denture base materials

I) Based on materials.
(i) Metallic :- Gold
(ii) Non metallic :- Shellac, base plate wax.

II) Based on durability
(i) Temporary :- shellac, base plate wax
(ii) Permanent :-

III) Based on ISO classification (International organization for standardization).

(i) Heat cure polymer.
(ii) Self cure polymer.
(iii) Microwave cure polymer.
(iv)

Prosthodontics

Srivasankar B
Roll no: 19

1) Compression moulding technique
2) Composition of heat cure acrylic resin
3) Tissue conditioners
4) Bone Porosities in denture bearing areas
5) Compression Moulding

- Compression moulding technique is a technique ~~for the use~~ use for making molding different prosthetic appliances for example for compression moulding of heat cure acrylic denture it requires a flask and clamp for the process
- At first the heat cure acrylic resin (monomer & polymer) is mixed in a porcelain jar using the blunt end of mixing spatula, ~~as~~ within the monomer-polymer ratio is appropriate.
- Before acting up the acrylic resin, the mould ~~should~~ ~~duction to be~~ be properly applied coated with separating medium avoiding the tooth to be occluded
- Now the heat cure resin is poured into the flask and closed with the lid containing the fixed cast.
- The lid is hammered at the edges before curing the clamp. It should be done swiftly before the pot resin gets hardened
- ~~It is then~~ The flask is then placed onto the clamp, when it is compressed maximum and kept for the polymerization to complete.

Prosthodontics (4) Phuvaneshwari et al Skill P-179

1) Compression Molding Technique (3M)
2) Composition of Heat Cure Acrylic Resin (3M)
3) Tissue Conditioners (3M)
4) Properties of denture Base (3M)

6 M
20

Answer

1) Compression Molding Technique.

The manipulation of heat cure acrylic resin is usually done by two methods.

1) Compression molding Technique.
2) Injection molding Technique.

Compression molding Technique is most commonly used method of manipulation of heat cure acrylic resins. It includes the following stages.

1) Creation of mold space.
2) Application of separating medium.
3) Manipulation of resin
4) Polymerization

(12)

Prosthodontics

Steffi P. 174

The Calcium in Gypsum product reacts with the alginate to form Calcium Alginate to form an impermeable layer to prevent exiting of water / monomer from each component to each other.

(3) Manipulation of resin.

Polymer - Monomer ratio (P:M ratio)

For manipulating resin, the polymer powder is incorporated into the monomer liquid, usually taken in a Porcelain jar inorder to premix the dough-like mass of resin getting stacked in the jar.

The usual P:M ratio is 3-3.5:1 (by Volume)

= 2.5:1 by weight.

The working time is usually in the 5 minutes as it is the time in between ending of sand stage and initiation of Rubber stage i.e the period of dough stage.

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Polymerization of resin material takes place by the following stages:-

1. Wet stage / Sand stage.
2. Stringy stage / Setting stage.
3. Dough stage
4. Rubber stage
5. Solid mass stage.

4. Packing of resin.

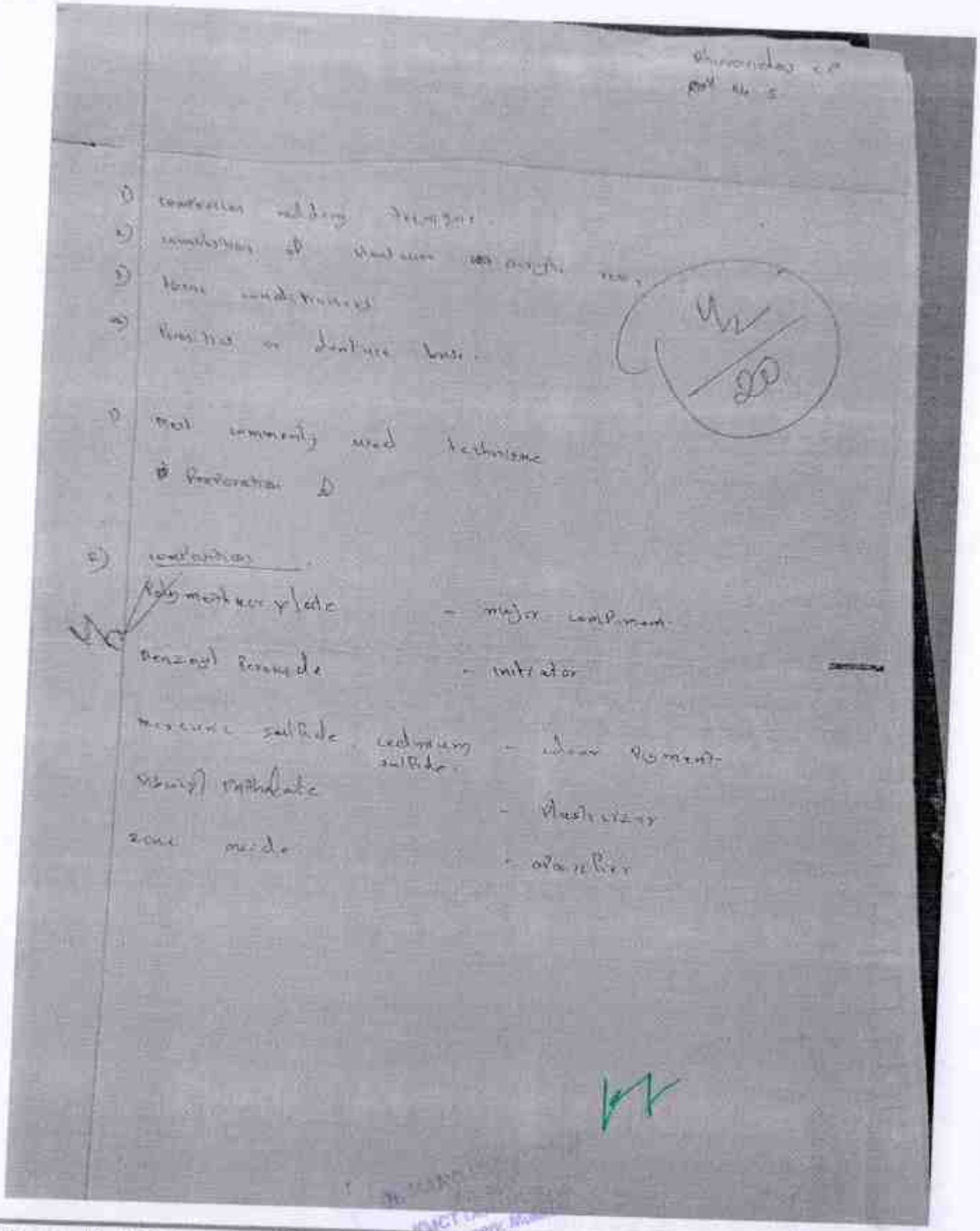
In this stage after manipulating resin into the mold space it is packed by covering with Gypsum product and is placed in a heating unit or Microwave.

5. Curing

Curing of heat activated resin is usually by 2 stages: 1. Bench curing.
2. Heat curing.

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KMCT DENTAL COLLEGE

PROSTHO

Swarangini K S
Roll No: 16

1) classify Denture base resin beside composition of Heat cure acrylic resin

2) ~~Curing cycle composition~~ Physical stage of polymerisation

ANSWERS

1) CLASSIFICATION

a) BASED ON MATERIAL

- METALLIC
  - Gold
  - Aluminium & its alloy
  - Cr-Co alloy
- NON METALLIC
  - acrylic resin

b) BASED ON DURABILITY

- TEMPERORY
  - cold cure acrylic resin
- PERMANENT
  - NONMETALLIC
    - light cure acrylic resin
    - Heat cure acrylic resin
  - METALLIC
    - Gold
    - Al & Alloy
    - Cr-Co Alloy.

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① Compression molding technique
② Composition of heat cure acrylic resin
③ Tissue conditioners
④ Porosities in denture base

Nondatestamp : 5
2nd yr addl
Rollno: 9



1) ~~Compression molding technique~~
composition of heat cure acrylic resin

→ fillers
→ modifiers
→ colouring agent
→ ~~initiator~~ Initiator - activator complex

4) Porosities in denture base
→ porosities can happen due to ~~the~~
(i) ~~compr.~~ crazing
(ii) ~~compressional~~ not using enough monomer while making a denture base
(iii) Inadequate polymer, ~~both a~~
(iv) compressional stress
(v) Overuse of polymer ie uneven polymer monomer proportions.

~~5) tissue conditioners are substances used to provide relief~~

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2) Composition of Heat Cure Acrylic Resin

Polymer powder	Component	Monomer/liquid
· High molecular weighted Prepolymerized spheres/beads of Polymethylmethacrylate (PMMA)	Major component	MMA (Methylmethacrylate)
Benzoyl peroxide	Initiator	Benzoyl peroxide
Zinc Sulphide, Cadmium Sulphide	Colouring pigments	—
Dimethyl phthalate	Plasticizer	Dimethyl phthalate
Zinc Oxide, Tin Oxide	Opacifiers	—
	Inhibitor	Hydroquinone

C

ISO CLASSIFICATION

Heat cure acrylic resin
Self cure acrylic resin
Light cure acrylic resin
Thermoplastic resin
Microwave resin

HEAT CURE ACRYLIC RESIN

- High molecular weight prepolymerised polymethyl methacrylate — main composition
- zinc oxide, titanium oxide.
- Dibutyl phthalate
- Benzoyl peroxide

liquid

- methacrylate

2)

sandy stage

shrinky stage

Dough stage

set stage

> sandy stage — Powder does not incorporate with liquid ~~appear as~~ give rise to sandy appearance

> shrinky stage — polymerisation shrinkage occure

> Dough stage — Polymer mix with monomer properly.
This stage is reversible

> set stage — Irreversible stage.

Swasankar B

Prosthodontics

Date
Page

1) Classification of Denture base resin. Composition of Self cure acrylic.
2) Stages of

Answers

Classification of Dental base;

① Based on material

Metallic - Gold & its alloy, Aluminium, Cr & Co
Non-metallic - Shellac, cold cure acrylic resin, base plate wax

② Based on durability

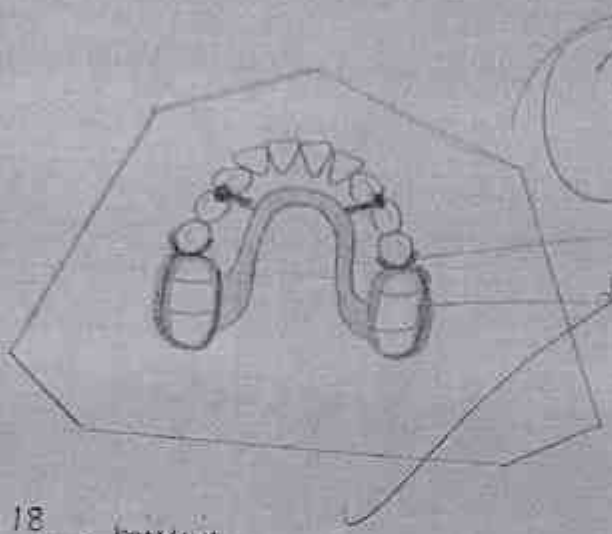
Temporary;
Permanent;

(1)

Ajay Krishnan N
Roll no: 1

5) RPD designing for a condition in which 16, 17, 18, 26, 27, 28 are missing.

Kennedy's class - I Maxillary arch - Edentulous.



16, 17, 18 - missing
26, 27, 28

circumferential clasp on 15 and 25

Connector on 13 and 14
23 and 24.

Type of major connector?

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(2) Steffi p-17

Prosthodontics

④ Packing of resin

⑤ Curing

① Creation of mold space.

Final denture is fabricated on the master cast obtained from impression technique, above which the occlusion rim is made and teeth is arranged. The maxillomandibular relation of the patient after recording is transfered to the articulator and then final denture is used for acrylisation to obtain the final denture.

This final denture is ~~the~~ invested in the flask using a gypsum product which is finally kept in a dewaxing unit to obtain mold space for application of resin. ~~to~~

② Application of Separating Medium

A separating medium ~~usually~~ on a tin foil is ~~used to~~ applied over the gypsum product and the final denture except ~~the~~ ~~teeth~~ over the teeth inside ~~to~~ to prevent the entry of water from gypsum product entering the denture and monomer from entering the gypsum product.

Usually, Sodium Alginate is used as the Separating medium.

2) Stages of Polymerisation.

1) wet sandy
2) sticky stage
3) dough stage
4) stiff stage

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(4) TOOTH NUMBERING SYSTEM.

Tooth numbering provides the dentists with an essential shortcut on clinical record keeping
Tooth numbering systems are used like shortcuts they are easier and saves time
. The three most common systems.

* FDI, world Dental federation notation.
* universal numbering System.
* Zsigmondy palmer notation.

ZSIGMONDY PALMER NOTATION

→ this system was developed by Zsigmondy and modified by Palmer. So called as zsigmondy palmer notation
→ in this system, the dentition is divided into quadrants and Symbols (brackets) are used to designate in which quadrant the tooth is found.
- permanent numbers are numbered 1-8 with lowest digit assigned to the teeth closes to midline.

The deciduous are indicated by a letter A to E

⌋ - upper right quadrant
⌊ - upper left quadrant
⌉ - lower left quadrant
⌈ - lower right quadrant.

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Deciduous Dentition

E D C B A	A B C D E
E D C B A	A B C D E

Permanent Dentition.

8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8

UNIVERSAL NUMBERING SYSTEM.

This system was suggested by in 1882 and uses numbers 1–32 for permanent teeth and upper case letters A To T for primary teeth. The numbering starts from the upper right third molar and ends in the lower right third molar in clockwise direction.

Deciduous Dentition.

A B C D E	F G H I J
T S R Q P	O N M L K

PERMANENT DENTITION.

1 2 3 4 5 6 7 8 9 10 11	12 13 14 15 16
32 31 30 29 28 27 26 25 24 23	22 21 20 19 18 17

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FDI WORLD DENTAL FEDERATION NOTATION

FDI two digit notation also known as ISO-3950 notation

Each tooth deciduous & permanent is given a two digit number.

- First digit indicates dentition, arch and quadrant In permanent the dentition is divided into quadrants which are numbered from 1 to 4 in a clockwise direction starting from upper right quadrant.

Similarly the deciduous dentition is divided into quadrants which are numbered from 5-8 in a clockwise direction starting from upper right quadrant.

Deciduous Dentition:

55	54	53	52	51	61	62	63	64	65
85	84	83	82	81	71	72	73	74	75

PERMANENT DENTITION

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

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CALICUT

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⑤ STAGES OF TOOTH DEVELOPMENT

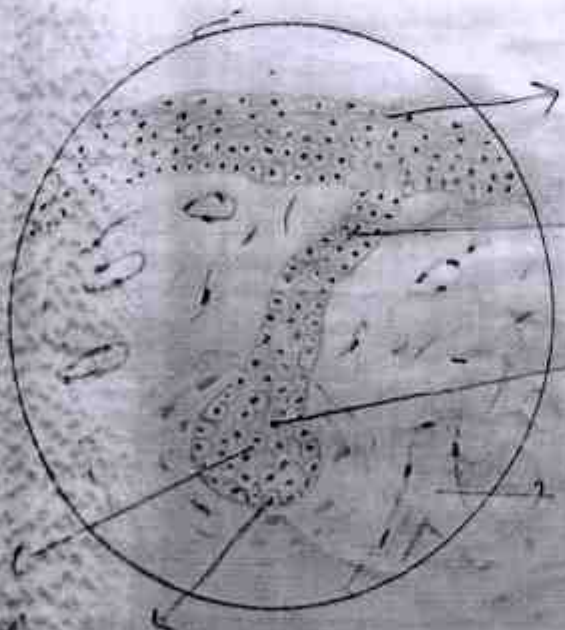
MORPHOLOGICAL STAGES.

① Bud stage
② Cap stage
③ Bell stage.
   - early bell stage
   - Advanced Bell stage.

Physiological stages.

① initiation
② proliferation
③ morphodifferentiation.
④ Histodifferentiation.
⑤ Apposition.

① BUD STAGE



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: enamel organ is round or ovoid resembling a bud. hence the d stage is reflected as bud stage.

- Enamel organ is separated from the surrounding connective tissue by a distinct membrane.

Histologically two types of cells are seen.

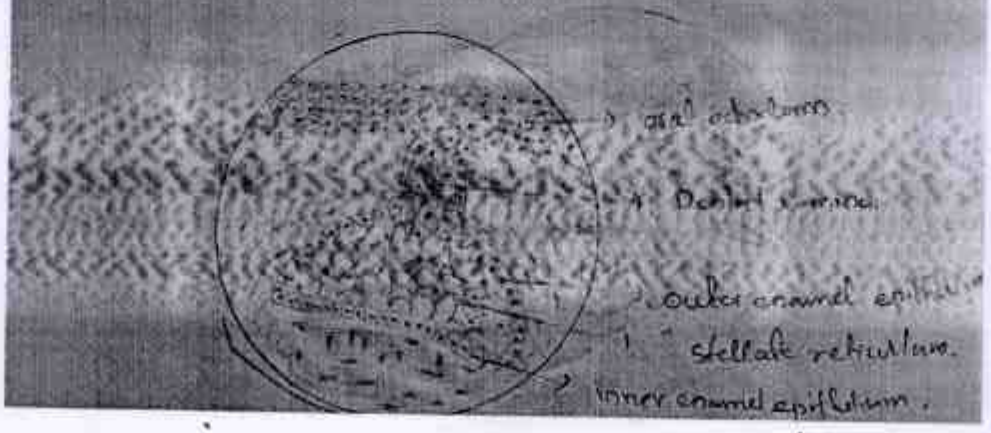
- cells lining the periphery of bud – cuboidal
- central cells are polyhedral.

cuboidal cells are continuous with the basal layer of oral epithelium.

Ectomesenchymal condensation adjacent to enamel organ forms dental papilla.

Marginal condensation of ectomesenchymal cells enclosing dental papilla & enamel organ – dental follicle.

CAP STAGE



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→ enamel organ is increases in size and attains the shape of a cap by invagination of the deep portion of the bud.

- Cells undergo change in shape so that these separate cell groups can be identified.

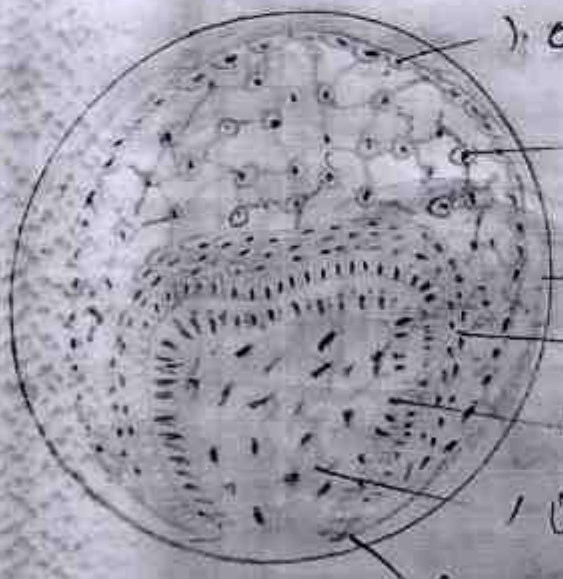
- cap shaped enamel organ.

→ 3 layers in Enamel organ.

① inner enamel epithelium.
② stellate reticulum.
③ outer enamel epithelium.

Dental papilla with condensation of ectomesenchymal budding capillaries
Dense fibrous Dental follicle.

Bell stage



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CALICUT

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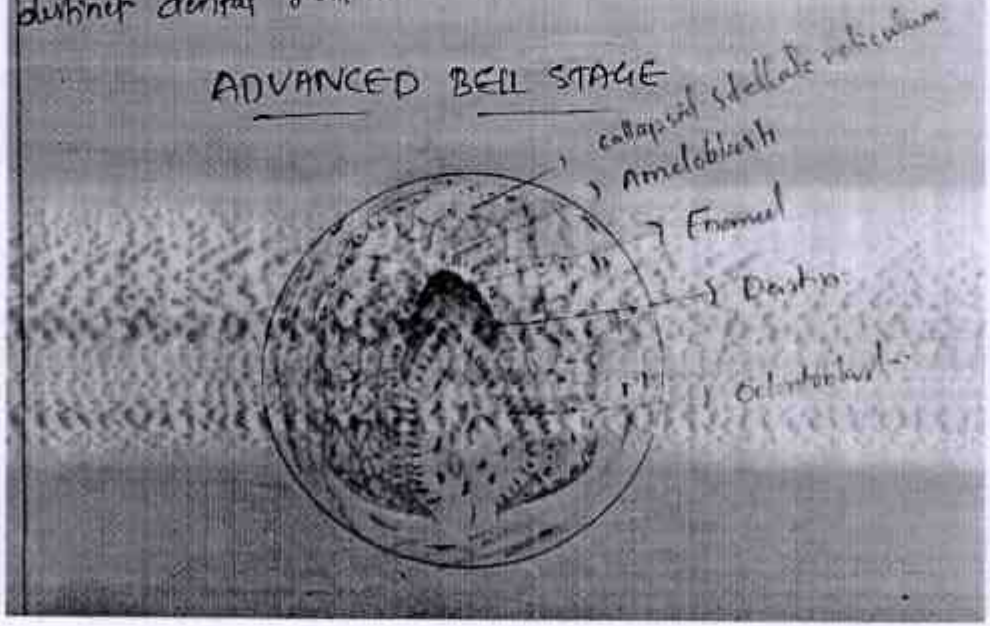
→ enamel organ increases in size and attain the shape of bell by invagination of deep portion of the bud.
- cells lining the convexity / periphery of cap
  → outer enamel epithelium.
    → cuboidal shape.
- cells lining the concave / invaginated portion change to columnar epithelium.
- central polyhedral cells - network of star shaped cells

→ enamel organ having bell stage.

four layers in enamel organ.
— inner enamel epithelium., later stratum intermedium, stellate reticulum, outer enamel epithelium.

Dental papilla with peripheral cells differentiating to odontoblast distinct dental follicle.

ADVANCED BELL STAGE



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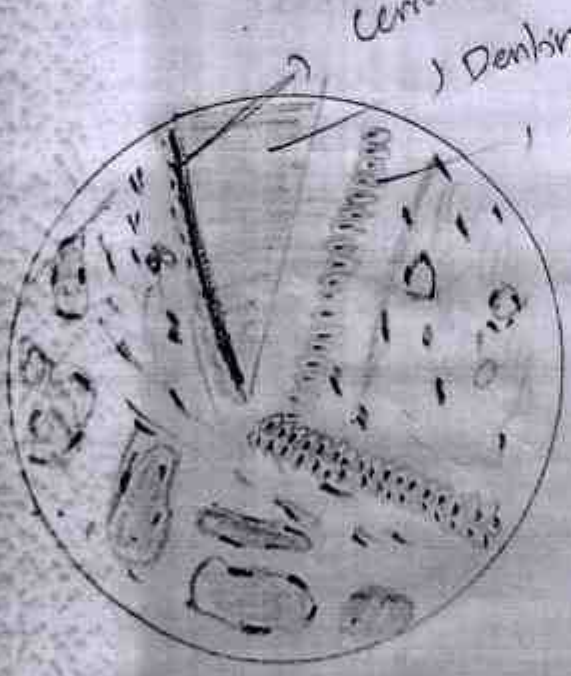
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- enamel organ shows four distinct layers.
  - → inner enamel epithelium
  - → Stratum intermedium
  - → Stellate reticulum.
  - → outer enamel epithelium.

Histological difference from early bell stage are.

- Hard tissue formation.
- Collapsed stellate reticulum and folding of outer enamel epithelium bringing capillaries of Dental pulp nearer to ameloblasts.

DEVELOPMENT OF ROOT.



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- Root development occurs in advanced bell stage after the enamel and dentin formation reaches the cervical region
- The inner enamel epithelium and outer enamel epithelium in cervical loop, proliferate to form Hertwig's epithelium root sheath which determines the size and shape, and root to be formed
  - Formation of radicular dentin
  - Degeneration of HERS
  - Formation of radicular Cementum.
  - orientation of periodontal ligament fibres.

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⑥ ERUPTION SEQUENCE

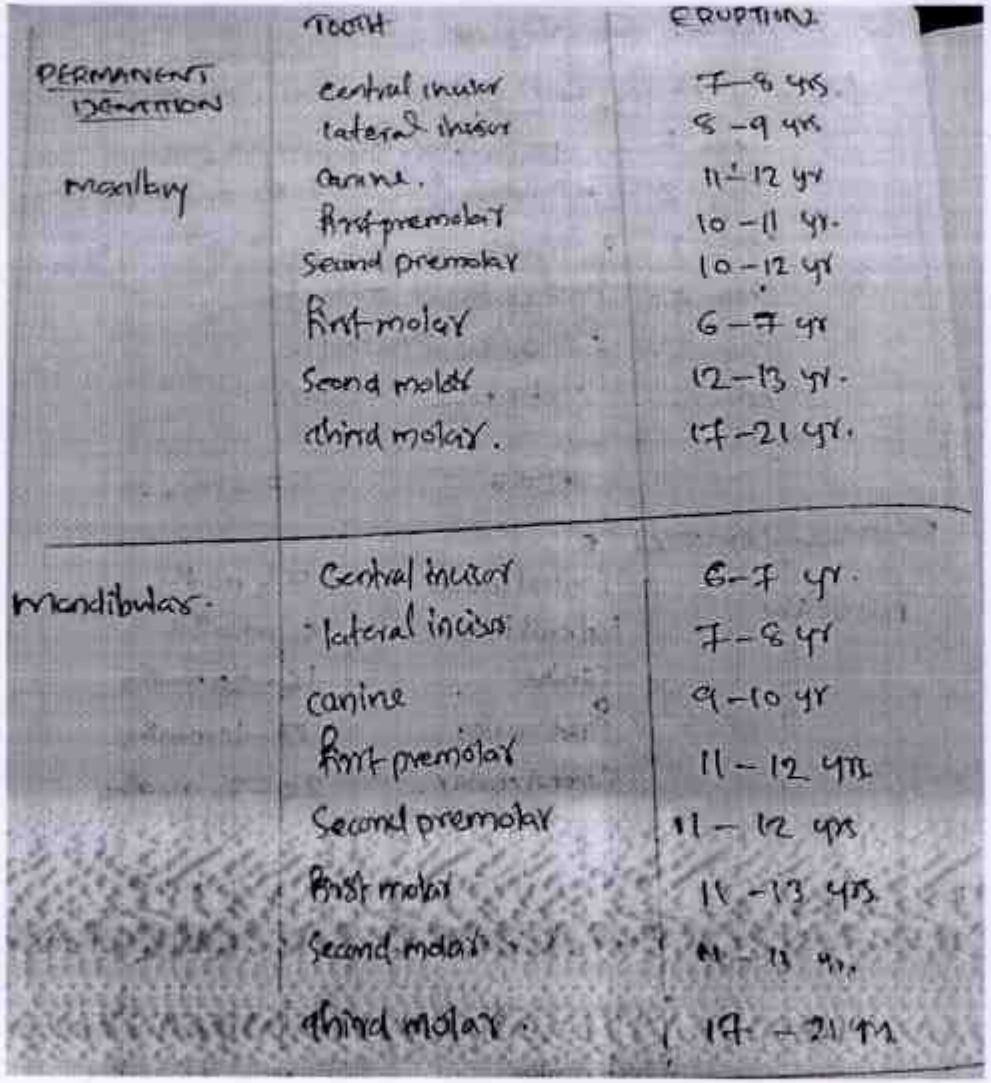
Given by Noyer and Schoer.

Stage 1 – preparatory Stage.
Stage 2 – migration of tooth to the oral epithelium.
Stage 3 – emergence of crown tip to oral cavity
Stage 4 – first occlusal contact.
Stage 5 – full occlusal contact.
Stage 6 – continuous eruption.

	TOOTH	ERUPTION.
DECIDUOUS DENTITION		
maxillary	Central incisor	7½ months.
	lateral incisor	8 months
	canine	16–20 months.
	First molar	12–16 months.
	Second molar.	20–30 months.
mandibular	Central incisor.	6½ months.
	lateral incisor	7 months.
	canine	16–20 months
	first molar	12–16 months
	Second molar.	20–30 months.

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	TOOTH	ERUPTION
PERMANENT DENTITION		
maxillary	central incisor	7–8 yrs.
	lateral incisor	8–9 yrs
	canine.	11–12 yr
	First premolar	10–11 yr.
	Second premolar	10–12 yr
	First molar	6–7 yr
	Second molar	12–13 yr.
	third molar.	17–21 yr.
mandibular.	Central incisor	6–7 yr.
	lateral incisor	7–8 yr
	canine	9–10 yr
	First premolar	11–12 yrs
	Second premolar	11–12 yrs
	First molar	11–13 yrs
	Second molar	11–13 yr.
	third molar.	17–21 yrs

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Nalla's Stages of tooth development.

10 – Apical end of root completed
9 – Root almost completed open apex
8 – 2/3 of root completed
7 – 1/3 of root completed
6 – Crown completed
5 – Crown almost completed
4 – 2/3 of crown completed
3 – one third of crown completed.
2 – initial calcification
1 – presence of crypts.
0 – Absence of crypts

(7) EARLY AND DELAYED ERUPTION.

EARLY ERUPTION

- For the temporary teeth it will more often occur, when the tooth is superficially positioned under the gingiva
- It is also observed in case of hyperthyroidism and early puberty.
- Early eruption of a single teeth is most frequent and is caused by local etiological and premature loss of temporary teeth which is itself most often. Caused by dental decay.

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The cause of early eruption and late eruption can be related to

- genetic origin.
- Malformation.
- Systemic problems.
- endocrine disorders
- infections
- metabolic disorders

DELAYED ERUPTION

late eruption are less frequent in permanent dentition than deciduous dentition and most late eruption do have significant clinical effect.

eruption is considered to be late when it occur more than 6 month, beyond the average age limit of the eruption. for temporary teeth and more than one year for permanent teeth

Factors causing delayed eruption.

* Hypothyroidism
* Fibromatous gingiva.
* Chondo ectodermal dysplasia.
* Gardner Syndrome
* Goltz Syndrome
* De Royne Syndrome.

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(8) STERILISATION IN DENTAL OFFICE

Sterilisation

It is the process by which an article, surface / medium is made free of all microorganisms either in vegetative form.

AGENTS OF STERILISATION.

PHYSICAL AGENTS

- Sunlight - Spontaneous Sterilization under nature care.
- Drying -
- Dry heat - Flaming, incineration, hot air.
- Moist heat - pasteurization, boiling, steam, under pressure
- Radiation - α, β, cosmic, UV radiation.

CHEMICAL AGENTS

Alcohol - ethyl, isopropyl, trichlorobutanol
Aldehyde - formaldehyde, Glutaraldehyde.
Halogens - Hypochlorites.
phenols - Hexachlorophene.
Gases - ethyl oxide,

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Sterilization and Infection in Dental office.

DRY HEAT OVEN

- extraction forceps and elevator.
- Hand scalers
- filling instrumant
- Trays and
- mouth mirror and probe.
- impression trays
- RCT material.

AUTOCLAVE

- Hand pieces
- Ultrasonic
- towels.
- Sutures.
- cotton, Gauze, Gloves

fig

CHEMICAL SOLUTION

Surgical burs
Diamond burs
light cure tips
plastic Cheek retractor
acrylic obturators
splints.

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AUTOCLAVE

Temperature – 121°c (250F)

pressure – 115 KPa

exposure time – 13–30 min
3·5–12 min.

Advantages – Good penetration
Non toxic
time efficient.

Precautions – Non stainless steel items corroded
may damage rubber & plastics.

DRY HEAT

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DRY HEAT

Temperature – 191°c.

exposure time – 12 min wrapped
6 min unwrapped.

advantages – No corrosion.
Non toxic
Items are dry after cycle.
Can use closed container

precautions – long cycle time
may damage rubber & plastic
Door can be opened during cycles
unwrapped items quickly contaminate after cycle.

precaution

UNSATURATED CHEMICAL

Temperature : 134°c
pressure : 216° KPa.
exposure time : 20 min

Advantages : No corrosion
time efficient

precaution – Do not use closed
must use special solution,
Use hazadous chemical

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post operative instructions for various clinical procedures.

* After extraction.

avoid vigorous mouth washing, violent excessive stimulation or very hot food / drunk for rest of the days to prevent hemorrhage.

- the wound should be cleared by rinsing the mouth with warm saline immediately before going to bed of on the day of operation.
- use hot saline mouthwash frequently.
- patient should be warned, biting lip, lips, tongue as they remain numb for 2-3 hrs.
- → Sutures should be left for 7 days.
- → analgesic should be given if pain exist

After amalgam Restoration.

- Regular tooth brushing after meals and before food
- avoid vigorous flossing
- If the margin is fractured try to brush that tooth well and consult dentist.

For tooth coloured Restoration.

. Hard brush bristles, tooth picks, hard food and restorations which are opposite to composite and will affect the potential wear of tooth restoration.

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For orthodontic appliance insertion.

- Instructed on the number of hours to wear.
- Appliance and tooth should be cleaned after every meal and sleep
- Detergent solution should be used for cleaning
- patient and parent should be given clear instructions to activate the appliance.
- patient should not leave the appliance of mouth for long time

AMALGAM

CLASSIFICATION

① according to content-

- copper amalgam.
- Silver amalgam
- preamalgamated alloys
- Amalgam with noble metals

② According to number of alloy metals

- Binary
- ternary
- Quaternary

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admixed alloy

- admixed alloy
- single compositional alloy

(8) According to the shape of powder particle.

- Spherical shape
- lathecut
- combination of spherical and lathecut.

COMPOSITION

low copper amalgam.

Silver - 63-70%
Tin - 26-28%
copper - 2-5%
Zinc - 2%

High copper amalgam. (admixed)

Silver - 69%
Copper - 13%
Tin - 17%
zinc - 1%

Single Compositional

Silver - 60%
copper - 15%
Tin - 25%
Indium - 4%

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High copper single compositional alloy.

Ag-Sn-Cu alloy particle + Hg → Ag_2Hg_3 + Cu_6Sn_5
+ unconsumed alloy particles.

GLASS IONOMER CEMENT

Types

Type I – luting and bonding cements.
Type II – Restorative cements.
Type III – liners and bases
Type IV – pit and fissure sealants.
Type V – orthodontic cement –
Type VI – core build up material.
Type VII – fluoride release.
Type VIII – Traumatic restorative material.
Type IX – Pediatric GIC.

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Composition

Powder

Ingredient	percentage	functions
Silica (SiO_2)	35.2 – 41.9	glass matrix former, increase translucency
Alumina (Al_2O_3)	20.1 – 28.6	Basic filler, increases reactivity with liquid, increases opacity
Aluminum fluoride (AlF_3)	1.6 – 2.4	Act as flux
Calcium fluoride (CaF_2)	15.7 – 20.1	Act as flux
Sodium fluoride (NaF)	3.6 – 9.3	Act as flux
Aluminium phosphate ($AlPO_4$)	3.8 – 1.2	glass modifier, improves properties
Zirconium oxides (ZrO_2)	Trace amount	Increases final strength.
Lathanum Strontium Barium and zinc oxides	Minute amount	Imparts radiopacity.

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Liquid

47.5 %. solution of 2:1 polyacrylic acid / itaconic acid copolymer in water.

Setting Reaction

Leaching - the acid attacks glass particles when mixed

Calcium cross linking - Ca ions cross linked with polyacrylic acid and forms a solid mass

Aluminium cross links - Al also cross links with acrylic acid chain

Sodium and fluoride ion - Sodium replaces hydrogen ions and rest combine with flouride to form Sodium fluoride

Hydration - water serve as a medium later it slowly hydrate the matrix adding strength.

Silica gel sheath

- Unreacted glass particle in silica gel
- It formed by leaching of ion from outer portion of glass particle.

Reference -

pediatric dentistry - SHOBHA TANDON.

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Difference in conventional cavity preparation for primary and permanent Teeth.

	Primary teeth.	permanent teeth.
depth of cavity occlusal table	0.5mm into dentin occlusal table is narrow as the buccolingual width of the tooth is less.	0.2mm into dentin. occlusal table is wider than primary teeth.
contact area/point	Because of the presence of contact area buccal and lingual margins of interproximal box must be extend far enough towards the embrasure at the gingival margin to make them accessible for cleaning	Because of the presence of contact point the buccal and lingual margins of the interproximal box don't have to extend too far into the embrassure.
marked Cervical constriction	Because of the marked cervical constriction the floor of the cavity can become too narrow if placed more gingivally.	the cervical constriction is not able to that marked therefore sufficient width of the floor of interproximal box can be maintained
isthmus of the cavity.	isthmus is narrow because the buccolingual width of tooth is less. Cavities with wide isthmus can lead to fracture of the tooth.	isthmus is wider compared to primary teeth.
Bevel in cavosurface margin of gingival seat	Bevel is not given in cavosurface margin of gingival seat as the direction of enamel rods in the cervical region is horizontal.	Bevel is given in the gingival seat as the direction of enamel rods in cervical area is gingivally inclined.

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Gingival Seat placement-	Buccal and lingual limits of the gingival seat are also placed clear of the contact with the adjacent tooth, so that the margins of the restorations can be cleaned thus the gingival aspect of box is very wide.	Gingival aspect of the box is not so wide.
Occlusal aspect of proximal box	The occlusal aspect of the proximal box must be kept narrow to prevent weakening of the cusps.	Occlusal aspect of the proximal box is not kept narrow.
Buccal lingual walls of interproximal Box	Because of wider contact area the buccal and lingual walls of the interproximal diverge buccally and lingually to clear the contact area.	Because of the presence of contact point the buccal and lingual walls of the interproximal need not be diverged towards the embrasure
MOD Cavity	Usually the MOD cavities should not be restored with amalgams alone because it can lead to	MOD cavities may be restored with amalgam

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DENTAL AGE ASSESSMENT METHODS

Dental age has been used for centuries as the parameter for expressing biological maturity. It is of particular interest to pedodontists & orthodontics in planning of different types of malocclusion in relation to craniofacial growth. It also play a very great role in forensic odontology and pediatric endocrinopathies

Dental age is estimated by accompanying the dental development status in a person of unknown age with published dental developmental survey's

Dental age assessment

- The determination of age plays a significant role in Forensic Science, not only in identification of bodies but also in connection with crimes & accident
- age determination can be considered in two periods the developmental period which begins at intera and ends when dentition has reached maturity. post developmental period which extends from the of dental maturation to termination of life.

In children, the determination of age is easier during the first developmental period from the utero till the dentition mature. methods that used can be applied to two separate timings o human dentition is of two types

Methods applicable during first stage.

First stage of development is when eruption o primary dentition begins as early as 3 months utero & is completed during the 4th year w teeth are usually

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Gustafson's method

He introduced a multifactorial histological approach to determination of the age & advised scale of points. many other have sugeested to the secondary dentin formation temporary in root formation from apex appear to be directly related to the chronological agent affected by environmental factors this method is based on morphological & histological changes of teeth.

The ~~associated~~ assessed agepressive changes such as

(a) amount of occlusal attrition (A)
(b) coronal secondary dentin deposition (S)
(c) loss of pdl attachment (P)
(d) root apex resorption at apex (R)
(e) dentin translucency. (T)
(f) cementum apposition at root apex (C)

Different scores are assigned as

Stage 0 – incicate no change.
Stage 1 – beginning of change
Stage 2 – obvious change.
Stage 3 – maximum change.

age = (11.43 + 4.56 x x) yrs.

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Nolla's method

Nolla evaluated the mineralization of permanent tooth

10 stages:

10. apical end of root - completed.
9. Root - almost completed - open apex
8. two third of root - completed
7. one third of root - completed.
6 - Crown completed
5 - Crown almost completed
4 - two third of crown completed.
3. one third of crown completed.
2. initial calcification
1 presence of crypt -
0 absence of crypt -

Sum total of scores added & compared

Advantages:

male & female are dealt separately with third molar not included in the study.

Gaon

Commonly used method
involves scoring of 10 permanent teeth according to crown and root formation using standard dental film

Teeth scored - max & mandi incisor mandibular canine premolar & molar

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scores are plotted on a chart- composed of horizontal segment- for each tooth with demarcation for developmental stages. and vertical in years of age for each tooth appropriate stage is checked & vertical line drawn through corresponding checks yield dental age.

Visual & Radiographic method.

Visual examination provides the information regarding the no of teeth that are present in the dental arch of the dentition to which they belong.

the short coming depend solely on the visual observation & that the entire primary dentition is usually functional by the beginning of the 3rd yr. no significant change can be seen in the dental arches until the 7 years when the 7th permanent molar emerges there visual examination of the co dentition could only provide information that would enable the professional state, the age blw 2 & 6 yrs radiograph would reveal the resorption of root of primary teeth.

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TOPICAL FLUORIDES

- These are directly applied to the erupted tooth
- fluorides ions in such agents do not preside penetrate deeply into enamel.

Indications

→ caries active children
→ In children shortly after periods of tooth eruption
→ In pt with reduced salivary flow due to medication
→ For those receiving radiation for head & Neck.
→ For pt with fixed or removable appliance.
→ After placement or replacement of restoration and before cementation of stainless steel crowns
→ patient with kidney disorders.
→ Disabled or alternatively abled children

Topical fluorides can be divided into

① Professionally applied fluorides

1) Neutral NaF
2) Stannous Fluoride
3) APF
4) Amine fluoride
5) Fluoride Varnish
6) Fluoride gels

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② Self applied fluorides.

→ Tooth brushing dentifrices.
→ Mouth rinses
→ Tooth brushing solutions
→ Tooth brushing prophylaxis pastes

Sodium Fluoride.

Knutson & Fieldman (1948) recommended a technique of four applications of 2% NaF at weekly intervals in a year at 3, 7, 11 & 13 years

Methods of preparation.

About 20% of NaF solution can be prepared by dissolving 2 g of NaF powder in 1L of distilled water in a plastic bottle

- It is essential to store fluoride in plastic bottle because if stored in glass containers, the fluoride ion of the solution can react with silica of glass forming SiF_2. Thus reducing the availability of free active fluoride for anticaries action.

Method of application.

Cleaning & polishing of teeth

Quadrants are isolated with cotton rolls & teeth dried thoroughly

NaF is applied with cotton applicators on one quadrant ↓ permitted to dry on the teeth for about 4 minutes.

The procedure repeated for the remaining quadrants.

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patient- is instructed to avoid eating, drinking or rinsing for 30 minutes so as to prolong the availability of fluoride ion to react with the tooth surfaces

↓

Second, third, & fourth applications are given at weekly intervals at age 3, 7, 11 and 13 yrs.

Mechanism of action.

When NaF is applied topically, it reacts with hydroxyapatite crystals to CaF_2, which is the dominant product of rxn.

↓

Choking off effect — this occurs because once a thick layer of CaF_2 gets formed it interferes with the further diffusion of fluoride ion from the topical fluoride solution to react with hydroxyapatite (It is because of this reason that NaF is once applied and is left to dry for 4 minutes.)

↓

CaF_2 react with hydroxyapatite to form fluoridated hydroxyapatite which increases the concentration of surface fluorides.

Making the tooth structure more stable

Less susceptible to dissolution by acids.

Interferes with plaque metabolism through antienzymatic action.

Helps in remineralization of the initial decalcified areas

$$Ca(PO_4)_6(OH)_2 + 2OF \longrightarrow 10\,CaF_2 + 6PO_4 + 2OH$$

$$CaF_2 + 2\,Ca_2(PO_4)_3OH \rightarrow 2\,Ca_5(PO_4)_3F + Ca(OH)_2$$

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Advantage:
→ chemically stable
→ acceptable taste
→ Non irritating to gingival tissues.
→ Does not discolor the teeth.
→ Cheap and unexpensive.

Disadvantage.
→ continuous application for 4 minutes.
→ Patient - has to make 4 visits in a short time
→ Followup is difficult

STANNOUS FLOURIDE

SnF_2 was found to be three times more effective than NaF Dudeling and Muhler in 1957 tried single annual application of 8% SnF_2 and reported 32% caries reduction

Methods of preparation.

SnF_2 solution ~~is~~ has to be freshly prepared before use & each time as it has no shelf life.

For conventional preparation number "0" gelation capsules are poicrly filled with 0.8 g powder SnF_2 & stored in air tight plastic container, just before application, the content of one capsule is dissolved in 10ml of distilled water in Plastic Container and solution, these prepared shaken briefly Solution then applied immediately.

Method of application. (Muhler's Technique)

Recommended procedure for application of stannous fluoride SnF_2 begins with thorough prophylaxis followed by isolation with cotton rolls and drying with compressed air

→ either quadrant or half of mouth treated at a time freshly prepared 8% solution of SnF_2 applied continuously to teeth with cotton applicator and reapplication of solution

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to particular teeth done every 15-30 sec so that teeth kept wet for 4 minute.
Recommended frequency of application once 1 year.

Mechanism of action:

SnF_2 reacts with hydroxyapatite in addition to fluoride and forms a new crystalline product → Stannous trifluorophosphate



Disadvantages.

→ Should prepare freshly
→ Low pH
→ metallic taste due to stannous hydroxyl phosphate
→ Cause gingival irritation
→ produce discoloration of teeth.
→ Cause staining on margins of restorations.

ACIDULATED PHOSPHATE FLOURIDE

Brudevold et al did systemic investigation to find out that optimal F and solution which could provide maximal fluoride deposition, while causing minimal demineralisation

Semiannual application of 1.25% APF for 4 min is helpful in reducing caries by 28%.

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Method of preparation

prepared by dissolving 2g NaF in 1L of 0.1 M phosphoric acid to that 50% hydrofluoric acid added to adjust pH at 3.0 and F^- conc at 1.23%.

For preparation of APF gel, a gelling agent like methyl cellulose or hydroxyethyl cellulose is to be added to the solution and pH is to be adjusted blw 4 and 5

Method of application - (Brudevold's technique)

After thorough prophylaxis teeth isolated with cotton rolls on both lingual and buccal sides.

↓

For applicating of gel position patient - upright - and provide saliva ejector.

↓

place enough gel to fill 1/3rd of through area of tray so that it is sufficient to cover dental arches

↓

~~place enough gel to fill~~

place loaded tray over arch and squeeze buccal and lingual surfaces forming gel between them and allow tray to remain in mouth for 4 minute

↓

Instruct patient to expectorate immediately and avoid drinking and eating for next 30 minute

↓

Recommended frequency of APF for topical application is semiannual

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Mechanism of action:

When APF is applied on teeth. It initially lead to dehydration and shrunken shrinkage ~~have~~ in volume of HA crystals.

↓

Hydrolysis and formation of intermediate product.

↓

Dicalcium phosphate dehydrate (DCPD)

↓

DCPD highly reactive with fluoride. Leading to formation of fluoroapatite crystals. The amount and depth of fluoride deposited as fluoroapatite would be dependent on amount and depth at which DCPD formed.

Since conversion of whole DCPD so formed into fluoroapatite deeper penetration and continuous supply of fluoride is required, so APF has to applied every 30 seconds and the teeth kept wet for 4 minutes.

Advantages

→ Has acceptable taste
→ No staining
→ No gingival irritation
→ Stable with long shelf life
→ cheap.

Disadvantages.

→ Teeth have to be kept wet for 4 minutes.
→ Solution is acidic.

Newer topical fluorides.

→ Amine fluoride
→ Stannous Hexafluorozirconate

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Age	MILESTONES OF DEVELOPMENT	PHYSICAL PARAMETERS
3-1yr	At birth starts making jerky quivering arm thrusts and by 1st year children sit without assistance, crawl forward on belly, creep on hands and feet. Hearing is fully mature · Recognises the smell of his own mother breast milk. · pays increasing attention to Speech · Cries when mother / father leaves	· Expected height : 50 - 75 cm · Expected weight : 4.15 - 9.75 kg · Expected head circumference : 35-45 cm
1-3yr	Walks alone, walk up and down Stairs holding on to Support · Recognises names of familiar people like 'dada' and 'mama' objects and body parts · Imitates behaviour of the others especially adult and older children · By three years runs easily, Can say name age	Expected height : 75 - 95cm Expected weight 10 - 14Kg Expected head circumference 45 - 49cm

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3-5 yr

Hops, Somersaults, Kicks ball forward

- Speaks clearly by for strangers to understand

Tells stories, dresses up undresses

Want to be like her friends

Expected height
95-107 cms

- Expected weight
14-18 kg
- Expected head circumference
49-50.3 cms

REFERENCE Textbook of pedodontics : SHOBA TANDON
Page no. 900

⇒ IMMUNISATION SCHEDULE

AGE	VACCINE
Birth	BCG, OPV, HBV
6 week	OPV, DPT, HBV, Hib
10 week	OPV_2, DPT_2, Hib
14 week	DPT 3, OPV 2, HBV, Hib
9 months	Measles Vaccine
15-18 months	MMR, DPPV, DPT, Hib
2 years	Typhoid

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5years	OPV, DPT
10years	Tetanus Toxoid
16years	TT
pregnant women	2 doses of TT

NEWER VACCINE

Varicella - above 1yr

Hepatitis A - above 1yr

OPV - oral polio vaccine

BCG - Bacilla Calmette

DPT - Diphtheria pertusis tetanus

HBV - Hepatitis B vaccine

TT - tetanus toxoid.

CHRONOLOGY OF PERMANENT AND DECIDUOS DENTITION

Tooth	Hard tissue formation	Amount of enamel formed at Birth	Enamel Completed	Eruption	Root Completed
DECIDUOUS Dentition					
Maxillary					
Central incisor	4month in utero	3/6	1-½ Mos	7½month	1½ year
Lateral incisor	4½mo in utero	2/3	2½Mos	9month	2years
Cuspid	5mos in utero	1/3	9mos	18month	3years
Firstmolar	5mon in utero	Cusp : united	6Mos	14month	2½years
secondmolar	6mon in utero	Cusp tip still isolated	11mos	24 month	3years

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Mandibular

Central incisors	4½ mon in utero		4½ mos	6 month	1½ years
lateral incisors	4½ mo in utero		4 mos	7 month	1½ year
Canine	5 mon in utero		9 mos	16 month	3 years
first molar	5 mo in utero	Cusps united	5½ mos	12 month	2½ years
Second molar	5 mo in utero	Cusp tip still isolated	10 mos	20 month	3 years

PERMANENT DENTITION

Maxillary

Central incisors	3-4 mos		4-5 yrs	7-8 yrs	10 yrs
Lateral incisors	~~10-4 mos~~ 10-12 mos		4-5 yrs	8-9 yrs ~~7-8 yrs~~	11 yrs
Cuspids	4-5 mos ~~6-12 mos~~		6-7 yrs	11-12 yrs ~~9-10 yrs~~	13-15 yrs
first bicuspid	1½-1¾ yrs ~~4-5 mos~~	Sometimes trace	5-6 yrs	10-11 yrs ~~11-12 yrs~~	12-13 yrs
second bicuspid	2-2¼ yrs 1½-1¾ yrs		6-7 yrs	10-12 yrs ~~10-11 yrs~~	12-14 yrs
first molars	2-2½ yrs At birth		2½-3 yrs	6-7 yrs ~~10-12 yrs~~	9-10 yrs
second molars	2½-3 yrs		7-8 yrs	12-13 yrs	14-16 yrs
third molars	7-9 yrs		12-16 yrs	17-12 yrs	18-25 yrs

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Mandibular

Central incisor	3-4mos	~~4-5yr~~	4-5yr	6-7yr	9yr
Lateral incisor	3-4mos	~~4-5yr~~	4-5yr	7-8yr	10 yr
Cuspid	4-5mos		6-7yr	9-10yr	12-14yr
first bicuspid	1 3/4-2yr	Sometimes	5-6yr	10-12yr	12-13yr ~~13-14yr~~
2nd bicuspid	2 1/4-2 1/2yr	to are	6-7yr	11-12yr	13-14yr ~~9-10yr~~
first molar	At birth		2 1/2-3yr	6-7yr	9-10 yr ~~14-15yr~~
Second molar	2 1/2-3yr		7-8yr	11-12yr	14-15yr
third molar	8-10yr		12-16yr	11-21yr	15-25yr

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TOOTH NUMBERING SYSTEM

- Tooth numbering provides the dentists with an essential short cut in clinical record keeping
- Tooth numbering systems are used like shorthands, they are easier and saves time
- The three most common systems
  - * FDI, world dental federation notation
  - * Universal numbering system
  - * Zsigmondy palmer notation.

ZSIGMONDY PALMER NOTATION

- * This system was developed by Zsigmondy and modified by Palmer, so called as Zsigmondy palmer notation.
- * In this system, the dentition is divided into quadrants and symbols are used to designate in which quadrant the tooth is found.
- * permanent numbers are numbered 1-8 with lowest digit assigned to the teeth Close to midline
- * The deciduous are indicated by Letter A to E

  ⌋ - upper right

  ⌊ - upper left

  ⌉ - lower left

  ⌈ - lower right

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E D C B A	A B C D E
E D C B A	A B C D E

Permanent Dentition

8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8

DECIDUOUS DENTITION

A] - upper right central incisor

B] - upper right lateral incisor

C] - upper right canine

D] - upper right first molar

E] - upper right second molar

[A - upper left central incisor

[B - upper left lateral

[C - upper left canine

[D - upper left first molar

[E - upper left second molar.

]A - lower left central incisor

]B - lower left lateral incisor

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Tc - lower left canine

Tb - lower left 1st molar

Ta - lower left second molar

A] - lower right central incisor

B] - lower right lateral

C] - lower right canine

D] - lower right 1st molar

E] - lower right 2nd molar

PERMANENT DENTITION

1] - upper right CI

2] - upper right lateral

3] - upper right canine

4] - upper right 1st premolar

5] - upper right 2nd premolar

6] - upper right 1st molar

7] - upper right 2nd molar

8] - upper right 3rd molar

L1 - upper left CI

L2 - upper left lateral

L3 - upper left canine

L4 - upper left 1st premolar

L5 - upper left 2nd premolar

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16 - upper left 1st molar

17 - upper left 2nd molar

18 - upper left 3rd molar

⌝1⌜ - lower right c1

2⌜ - lower right lateral

3⌜ - lower canine

4⌜ - lower right first premolar

5⌜ - lower right 2nd premolar

6⌜ - lower right 1st premolar

7⌜ - lower right 2nd molar

8⌜ - lower right 3rd molar

⌞1⌟ - lower left c1

⌞2⌟ - lower left lateral

⌞3⌟ - lower canine.

⌞4⌟ - lower left 1st premolar

⌞5⌟ - lower left 2nd premolar

⌞6⌟ - lower left 1st molar

⌞7⌟ - lower left 2nd molar

⌞8⌟ - lower left 3rd molar.

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UNIVERSAL NUMBERING SYSTEM

. This System was suggested by parent in the 1850. and uses numbers 1-32 for the permanent teeth and upper case letters A to T for primary teeth. The numbering start from the upper right third molar and ends in the lower right third molar in clockwise direction.

DECIDUOUS DENTITION

A B C D E F G H I J

T S R Q P O N M L K

PERMANENT DENTITION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17

A - 29

⇒ FDI- World DENTAL FEDERATION NOTATION

· FDI, two digit notation, also known as ISO-3950 notation

. Each tooth deciduous or permanent is given a two digit number

. first digit indicates dentition each and Quadrant : In permanent, the dentition is divided into Quadrants which are numbered from 1 to 4 in a clockwise direction

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Starting from upper right quadrant.

- Similarly, the deciduous dentition is divided into quadrants which are numbered from 5-8 in a clockwise direction starting from upper right quadrant.

DECIDUOUS

55	54	53	52	51	61	62	63	64	65
85	84	83	82	81	71	72	73	74	75

PERMANENT

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

⇒ STAGES OF TOOTH DEVELOPMENT

MORPHOLOGICAL STAGES

1. Bud stage
2. Cap stage
3. Bell stage - Early Bell stage
   - Advanced Bell stage

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PHYSIOLOGICAL STAGES

1) Initiation
2) proliferation
3) Morpho differentiation
4) Histo differentiation
5) Apposition.

1) Bud stage



Oral ectoderm

> Dental lamina

> Developing bone

> central polyhedral cell

> peripheral Cuboidal cel

> Enamel organ

> Condensation of ectomesenchyme

- Enamel organ is round or ovoid resembling a bud hence the stage is referred as bud stage
- Enamel organ is seperated from the surrounding Connective tissue by a distinct membrane
- Histologically two types of cells are seen
  - Cells lining the periphery of bud - Cuboidal
  - Central cells are polyhedral

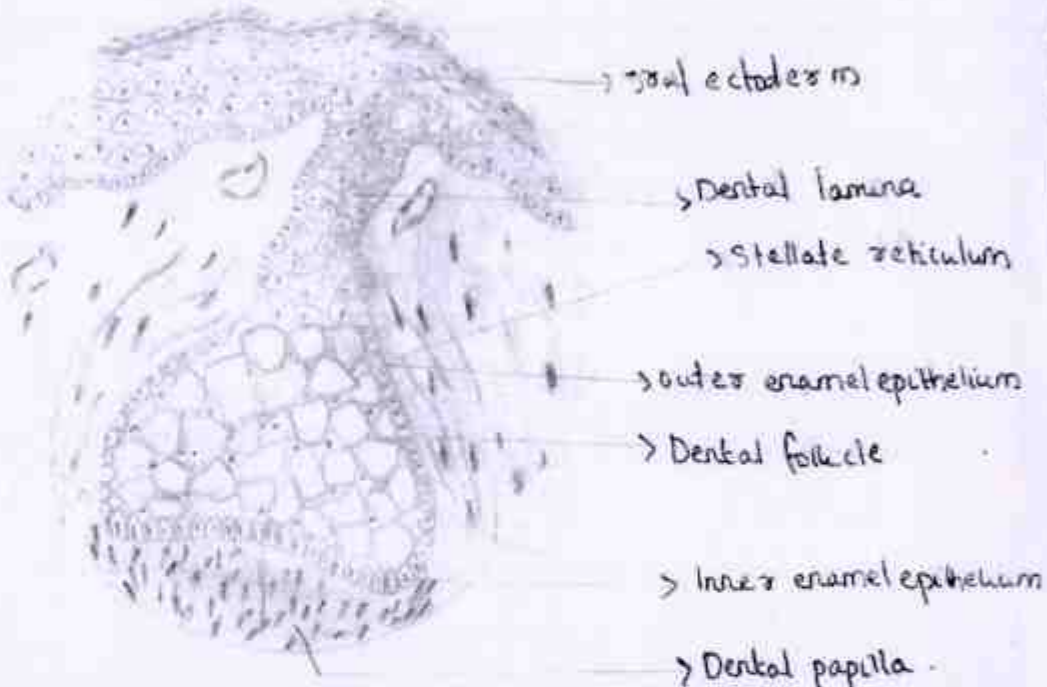
Cuboidal cells are Continous with the basal layer of Oral epithelium

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- Ectomesenchymal Condensation adjacent to enamel organ form dental papilla
- Marginal Condensation of ectomesenchymal cells enclosing dental papilla by enamal organ - Dental follicle

CAP STAGE



- Enamel organ increases in size and attain the shape of a cap by invagination of the deep portion of the bud
- Cell undergo change in shape so that thus seperate cell groups can be identified
- Cap shaped Enamel organ
- 3 layer in Enamel organ
  1) Inner enamel epithelium
  2) Stellate reticulum
  3) Outer enamel epithelium

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- Dental papilla with condensation of ectomesenchymal buddies
Capillaries
- Dense fibrous Dental follicle

BELL STAGE



- Enamel organ increases in size and attain the shape of a cap by invagination of deep portion of the bud
- cells lining the peripheral - outer enamel epithelium
- Cuboidal shape
- cells lining the concave/invaginated portion changes to columnar epithelium
- Central polyhedral cells - network of star shaped cells
Enamel organ having bell shape
few layers in Enamel organ - Inner enamel epithelium

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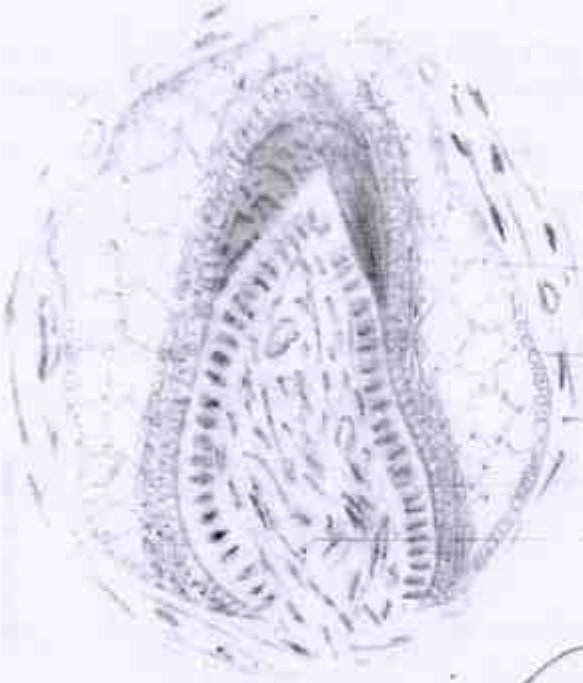
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Intermedium, stellate reticulum, outer enamel epithelium

. Dental papilla with peripheral cells differentiating to odontoblasts

.. Distinct Dental follicle

ADVANCED BELL STAGE



. Collapsed Stellate reticulum

> Ameloblasts
> Enamel
> Dentin
> Outer enamel epithelium
> Dental sac
> odontoblasts
> Developing pulp

Enamel organ shows four distinct layer

Inner enamel epithelium, stratum intermedium, stellate reticulum, Outer enamel epithelium

. Histological differences from early bell stages are

- Hard tissue formation
- Collapsed stellate reticulum and folding of outer enamel epithelium bringing capillaries of dental follicle nearer to ameloblasts

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Development of Root



- Dentin
  - > Cementum
  - > Developing post odontoblasts
  - > Developing PDL
    - > Cell rest of Malassez
    - > Cementoblasts
  - > HERS
  - > Dental sac
  - > Developing Alveolar bone

- Root development occur in advanced bell stage after the enamel and dentin formation reaches the cervical region
- The inner enamel epithelium and outer enamel epithelium in cervical loop, proliferate to form HERS which determines the size & shape and no: of root to be formed
- formation of radicular dentin
- Degeneration of radicular Cementum
- Orientation of periodontal ligament fibres

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ERUPTION SEQUENCE

Given by Noyes up schoen

Stage 1 - preparatory stage
Stage 2 - Migration of tooth to the oral epithelium
Stage 3 - Emergence of crown tip to oral cavity
Stage 4 - first occlusal contact
Stage 5 - full occlusal contact
Stage 6 - Continous eruption.

DECIDUOUS DENTITION

TOOTH	ERUPTION
Maxillary	
Central incisor	7½ months
lateral incisor	8 months
Canine	16 - 20 months
first molar	12-16 months
second molar	20 - 30 months
Mandibular	
Central incisor	6½ month
lateral incisor	7 month
Canine	16 - 20 month
first molar	12-16 months
Second molar	20 - 30 months.

PERMANENT DENTITION

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Maxillary	Central incisor	7-8 yrs
	lateral incisor	8-9 yrs
	Canine	11-12 yrs
	1st premolar	10-11 yrs
	2nd premolar	10-12 yrs
	1st molar	6-7 yrs
	2nd molar	12-13 yrs
	3rd molar	17-21 yrs
Mandibular	Central incisor	6-7 yrs
	lateral incisor	7-8 yrs
	Canine	9-10 yrs
	1st premolar	11-12 yrs
	2nd premolar	11-12 yrs
	1st molar	? 6-7 yrs
	2nd molar	11-13 yrs
	3rd molar	17-21 yrs

⇒ Nolla's Stages of tooth development.

10 - Apical end of root completed

9 - Root Almost Completed

8 - 2/3 of root Completed

7 - 1/3 of root Completed

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6 - Crown Completed

5 - Crown almost Completed

4 - 2/3 of crown Completed

3 - One third of crown Completed.

2 - Initial Calcification

1 - presence of crypts

0 - Absence of crypts

EARLY AND DELAYED ERUPTION

Early Eruption

- for the temporary teeth it will more often occur when the tooth is superficially positioned under the gingiva
- It is also observed in case of hyperthyroidism and early puberty
- Early eruption of a single tooth is most frequent and is caused by total etiological and premature loss of temporary teeth which is itself most often caused by dental decay.
- The cause of early eruption and late eruption can be
  - genetic origin
  - Malformation
  - Systemic problems
  - Endocrine disorders

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- Endocrine disorders
- Injections
- Metabolic disorders

⇒ DELAYED ERUPTION

- late eruption are less frequent in permanent dentition than deciduous dentition and most late eruption do have significant clinical effect.

. Eruption is considered to be late when it occurs more than 12 month, beyond the average age limit of the eruption for temporary teeth and more than one year for permanent teeth.

Factors

. hypothyroidism
. fibromatous gingiva
. chondro ectodermal dysplasia
. Gardner syndrome
. Goltz syndrome
. De - Royne syndrome

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STERILIZATION IN DENTAL OFFICE

STERILISATION

It is the process by which an article, surface / medium is made of all microorganisms either in vegetative forms / spore form

AGENTS OF STERILISATION

PHYSICAL AGENTS

Sunlight - Spontaneous sterilisation under nature

Drying - unreliable, is of theoretical interest

Dry heat - flaming, incineration, hot air

Moist heat - pasteurisation, boiling, steam, under pressure.

Radiation - α, γ, cosmic, UV radiation.

CHEMICAL AGENTS

- Alcohol - Ethyl, Isopropyl, trichloro butanol
- Aldehyde - formaldehyde, Glutaraldehyde
- phenols - Hexachlorophane, Chlorhexidine
- Surface active agents - Cetavlon
- Gases - Ethylene oxide, Beta propiolactone

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Disinfection In Dental office

Dry heat oven — Temperature

Extraction forceps and elevator

- Hand scalers
- Filling instruments
- Tray and tumbler
- Mouth mirror and probe
- Impression trays
- RCT Material

AUTOCLAVE

- Hand pieces
- Ultrasonic
- towels
- Sutures
- Cotton, Gauze, Gloves

Temperature - 121°C (250F)

pressure - 115kPa

Exposure time - 13-30min

3.5-12min

Advantages : Good penetration

Non toxic

Time - 20 min

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precautions: Non stainless steel items tarnish

May damage rubber and plastics

Direct use close containers

Unwrapped items quickly contaminate.

- Chemical solutions

Surgical burs

- Diamond burs
- light cure tips
- plastic check retractors
- Acrylic obturator
- Splints

Dryheat (oven type)

Temp : 134°C

pressure: 216 kpa

Exposure time: 60-120min

Advantage: No corrosion

Non toxic

Items are dry after cycle

Can use closed containers

precautions: For long cycle time

- May damage rubber and plastics

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Doors can be opened during cycles
unwrapped items get contaminated

UNSATURATED CHEMICAL

Temperature : 134°c

pressure 216 Kpa

Exposure time 20 min

Advantages : No corrosion

time efficient

precautions : Donot use closed

: Must use special solution

: use hazardous chemical

POST OPERATIVE INSTRUCTIONS FOR VARIOUS CLINICAL PROCEDURES

* After extraction

Avoid vigorous mouth washing, violent, excessive stimulation or very hot food/ drinks for rest of the days to prevent haemorrhage

The wound should be cleaned by rinsing the mouth with warm saline immediately

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before going to bed of on the day of operation

- use hot Saline mouthwash
- patient should be warned, biting lips, tongue as they remain numb for 2-3 hrs
- sutures should be left for 7 days
- Analgesic should be given if pain exist

AFTER AMALGAM RESTORATION

- Regular tooth brushing after meals and before food
- Avoid vigorous flossing
- If the margen is fractured try to brush that well and consult a doctor.

FOR TOOTH COLOURED RESTORATION

Hard brush bristles - tooth picks, hard food and restorations which are opposite to Composite and will affect the potential wear of tooth restoration.

FOR ORTHODONTIC APPLIANCE INSERTION

- Instructed on the number of hoves to wear
- Appliance and tooth should be cleaned after every meal and sleep
- Detergent solution should be used for cleaning
- patient should not leave the appliance for long time.

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AMALGAM

CLASSIFICATION

1) According to content
   - Copper Amalgam
   - Silver
   - preamalgamated
   - Amalgam with noble metals

2) According to number of alloy metals
   - Binary
   - ternary
   - Quaternary.

3) According to whether powder consist of unmixed / admixed alloy.
   - Admixed alloy
   - Single compositioned alloy

4) According to shape of powder particles
   - spherical shape
   - lathecut
   - Combination of spherical and lathecut

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Composition

Low copper Amalgam

Silver - 67 - 70 %

Tin 26 - 28 %

Cu 2 - 5 %

Zn 2 %

High copper Amalgam (Admixed)

Silver 69 %

Cu : 13 %

Tin : 17 %

Zn : 1 %

Single Composition

Silver : 60 %

Cu : 15 %

Tin : 25 %

Indium : 4 %

Setting reaction

How Conventional Amalgam Alloy.

When silver Alloy particles treated with mercury, Mercury diffuses into γ-phase of a alloy mainly Silver and tin

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- Hg has limited solubility for Ag than Sn
- unconsumed particles are present in the set amalgam

$Ag_3Sn + Hg \longrightarrow Ag_2Hg_3 + Sn_{7-8}Hg + Ag_3Sn$

(γ) ( ) (γ_1) (γ_2) (γ) unreacted

→ High Copper Admixed Alloy

$Ag_3Sn + Hg \longrightarrow Ag_2Hg_3 + Sn_{7-8}Hg + Ag_3Sn$

(γ) (γ_1) (γ_2) (γ)

Second step

$Sn_{7-8}Hg + Ag\text{-}Cu \longrightarrow Cu_6Sn_5 + Ag_2Hg_3 + Ag_3Sn$

(γ_2) (Eutectic) (η) (γ_1) (γ)

γ_2 phase is eliminated

→ High Copper Single Compositional Alloy

Ag-Sn-Cu alloy particles + Hg $\longrightarrow$ $Ag_2Hg_3 + Cu_6Sn_5$ +

unconsumed alloy particles

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Glass Ionomer Cement

Types

Type 1 : luting and bonding cements

Type 2 : Restorative cements

Type 3 : Liners and bases

Type 4 : Pit and fissure sealants

Type 5 : Orthodontic Cement

Type 6 : Core build up material

Type 7 : fluoride release

Type 8 : ATraumatic restoration material

Type 9 : Geriastric & paediatric GIC

COMPOSITION

Powder

Silica (SiO_2)	35.2 - 41.9 %	· glass matrix · Increases translucency
Alumina (Al_2O_3)	20.1 - 25.6	· Basic filler · Increases reactivity · Increases opacity
Aluminium fluoride (AlF_3)	1.6 - 2.4	· Act as flux

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Calcium fluoride	15-1 - 20-1	Act as flux
Sodium fluoride	3 6 9 3	Act as flux
Aluminium phosphate	3-8 - 1 2	glass modifier Improves properties
Zirconium oxide	Trace amount	Increases final strength.
Lanthanum Strontium Barium and Zinc oxide	minute amount	Imparts Radiopacity

LIQUID

47.5% solution of 2:1 polyacrylic acid / Itaconic acid copolymer in water

SETTING REACTION

- Leaching : The acid attack glass particles when mixed

- Calcium cross linking (Ca ions cross linked with poly acrylic acid and forms a solid mass.

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Aluminium cross links: Al also cross links with acrylic acid chain

Sodium and fluoride ion: Sodium replaces hydrogen ions and acid combines with fluorides to form Sodium fluoride

Hydration: water serve as a medium later it slowly hydrate the matrix adding strength

Silicagel sheath: unreacted glass particles in silica gel

It is formed by leaching of ion from outer portion of glass particle.

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Dental Age & Assessment Method

Type of age according to Knogman 1950

- Chemical age
- Biologic age
  - Morphologic age
  - Skeletal age
  - Dental age
  - Circumpubertal age
- Behavioral age
- Mental age
- Self concept age

Dental age

- It is estimated according to last tooth erupted in the oral cavity normal sequence
- Simplest but least accurate method
- It includes the teeth clinically present in the oral cavity, easily in comparison to dental eruption charts

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Disadvantages

- acide variation in time of eruption, influence of local oral environmental factors and the fact that no/several teeth may erupt during the same time interval
- Dental age is not correlated with the mental status of the child

⇒ ~~Nuskafgaard's Method~~ Goon & Moore's Method

- Commonly used method
- Involves scoring of 10 permanent teeth according to crown and root formation using standard dental films.
- Teeth scored - maxillary & mandibular incisors, mandibular canines, premolars & molar.
- Scores are plotted on chart comprised of horizontal segment for each tooth with demarcation for developmental stages & vertical segment marked in years of age.
- for each tooth appropriate stage checked & a vertical line drawn through corresponding check, yielding a mean dental age

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Demirjian's method

- Demirjian & Goldstein derived a new method for assessment development of dental age.
- All teeth are noted on a scale of A-H
- Each tooth having a stage was converted into a score using conversion table.
- The score of all teeth are then added to give the total maturity score. This score was then converted to dental age by a table by Demirjian in 1973.

Stage	Description
0	No signs of calcification
A	Beginning of Calcification seen at superior level of Crypt.
B	Fusion of Calcification point in Cuspal areas to form occlusal surfaces

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C

Enamel formation is complete with convergence towards cervical region

Beginning of dentinal deposit

Outline of pulp chamber has a curved shape at the occlusal border

D

Crown formation is completed till CEJ superior border of pulp chamber in uniradicular teeth

Curved CEJ in molar. It is in trapezoidal form.

- projection of pulp horn starts
- Beginning of root formation in form of spicules.

E

- In uniradicular teeth, pulp chamber forms straight line whose continuity is broken by pulp horns
- Initial formation of bifurcation is seen in molars.
- Root length is less than crown height.

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9. CUSTOMIZED LEARNING PLAN



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DEPARTMENT OF PERIODONTOLOGY

LESSON PLAN					
Lesson Title:	Classification of Periodontal Disease		**Lesson No.** 32	**Date:**21.03.2023	
Teacher	Dr. Anish Varkey	**Subject**	Periodontology	**Class**	IIIrd BDS Part I (R)

Goal : To make students aware of all common medical conditions and associated periodontitis through the classification system.

Learning outcome/ objectives: At the end of the class the student should be able to

1. Understand the common medical conditions by understanding the disease based on certain category
2. Understand the recent classification system
3. Answer the question in theory exam and viva

Prerequisite Concepts and Skills: The student is required to know basic manifestations in periodontal disease.

Materials and Resources:

Teacher	Students
• Custom prepared power point of the topic • Black board	Note book

Lesson Activities:

Teacher Activities	Student Activities	Time
• Introduction (anticipatory set): • Common medical conditions and periodontal manifestation of these conditions. • Body: Detailed description about individual medical conditions and their respective manifestation and their treatment procedures. • Closure: advantages of recent classification system (AAP 2017) • Students will be encouraged to answer the puzzles and clinical photographs to assess that learning objective is achieved and show published articles.	• Listen to the class • Make notes and write down important points • Answer the questions, recent articles and clinical photographs.	1 hour

Strategies: Students are made sit comfortably. All students should have a proper view of power point display and black board. Question and contributions will be encouraged from the students.

Assessment and evaluation: At the end of the class students will be asked to answer the questions and evaluate few clinical photographs.

Extensions: The students will be able to link this topic with number of systemic /medical conditions and sequences and their treatment approach.

Differential instruction: Differentially able and gifted students will be challenged with the relevant questions and clinical puzzles.

Reflections: Feedback from students will be obtained about the class.

Signature of HOD

Department of Periodontics