KMCT
DENTAL COLLEGE

Recognised Research Centre of Kerala University of Health Sciences
Recognised by Dental Council of India and Govt. of India
KMCT Medical College Campus, Mukkam, Kozhikode-673602
Phone: (0495)2292002, 2292004
E-mail: dental@kmct.edu.in, website: www.kmctdentalcollege.org

TO WHOM SO EVER IT MAY CONCERN

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

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Mukkam, Calicut Dt.
Kerala, S.India
CALICUT

Principal

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

YENEPOYA
(DEEMED TO BE UNIVERSITY)

YENEPOYA
(DEEMED TO BE UNIVERSITY)
MANGALURU

Recognised under Sec. 3 (A) of the UGC Act 1956 as per notification number F.9.11/2007U.3(A) dated 27-02-2008

FACULTY OF DENTISTRY

The Board of Management of Yenepoya (Deemed to be University) do hereby certify that



TIM PETER THERMADAM

has been awarded the

DEGREE OF

DOCTOR OF PHILOSOPHY

in recognition of having fulfilled the prescribed requirements for Ph.D on the topic

"CHEILOSCOPY AND DERMATOGLYPHICS FOR GENDER DETERMINATION AND PERSONAL IDENTIFICATION: A DESCRIPTIVE STUDY" on 13.08.2021

Given under the seal of the University

Date of Convocation: 11th December, 2021
Deralakatte
Mangaluru - 575018

YENEPOYA
(DEEMED TO BE UNIVERSITY)

VICE - CHANCELLOR

YENEPOYA
(DEEMED TO BE UNIVERSITY)

The Vice Chancellor, Members of the Board of Management
and the Academic Council
Solicit your presence on the occasion of the



11th Convocation

SATURDAY 11:00 AM | **11th** | **DECEMBER** 2021

Yenepoya (Deemed to be University) Campus
Deralakatte, Mangalore.

VIRTUAL MODE - Live streaming
from Yenepoya (Deemed to be University)
https://youtu.be/amwnR6fyNKQ

Mr. Yenepoya Abdulla Kunhi
Chancellor, Yenepoya (Deemed to be University)
will Preside

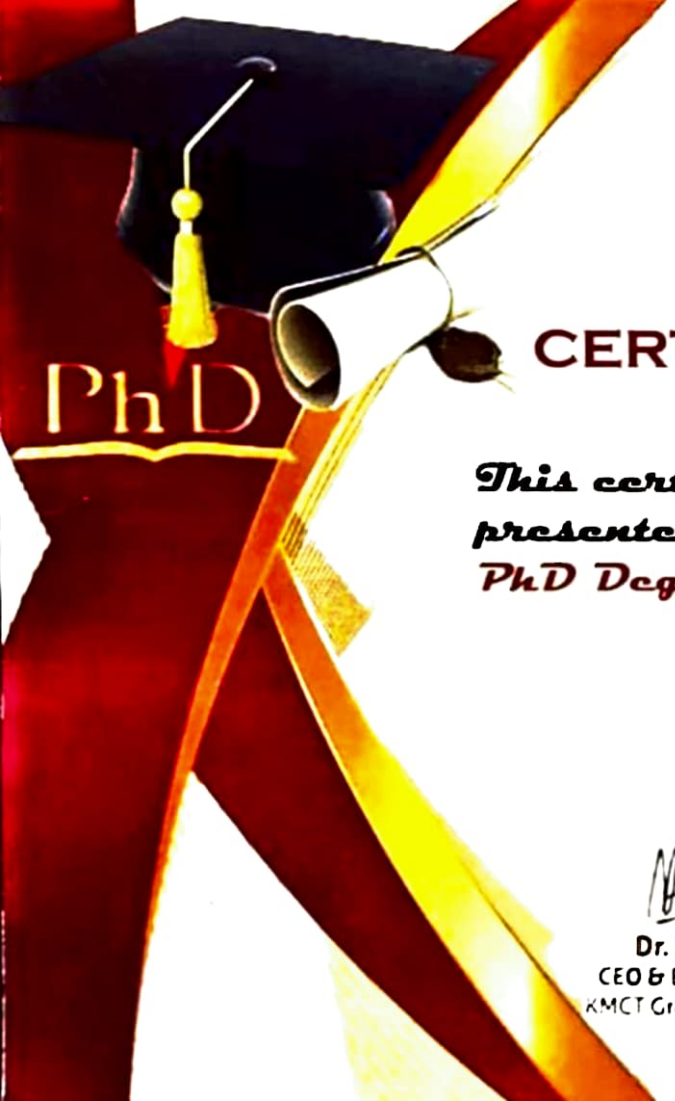
Dr. M.K. Ramesh
Vice Chancellor, RGUHS, Bangalore
President, Postgraduate Medical Education Board
National Medical Council, New Delhi
will deliver the Convocation Address

Shri Amitabh Kant
Chief Executive officer of NITI Aayog
will be the Guest of Honour

Prof. Dr. M. Vijayakumar
Vice Chancellor, Yenepoya (Deemed to be University)
will present the University Report

Dr. B.T. Nandish	Dr. B.H. Sripathi Rao	Dr. Gangadhara Somayaji K.S.
Controller of Examinations	Pro Vice Chancellor	Registrar

9945144399 reachus@yenepoya.edu.in



KMCT
DENTAL COLLEGE

CERTIFICATE OF HONOUR

This certificate of excellence award is proudly presented to Dr. Tim Peter for achieving PhD Degree from Yenepoya University

Dr. K.M. NAVAS
CEO & Executive Trustee
KMCT Group of Institutions

Dr. AYSHA NAZREEN
Director
KMCT Group of Institutions

Dr. MANOJ KUMAR K.P
Principal
KMCT Dental College

YENEPOYA
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Accredited by NAAC with 'A' Grade

YU/EXAM/Ph.D./ADJU/110/2021 Date: 13.08.2021

NOTIFICATION

In accordance with the regulations of the University regarding the award of the Degree of Doctor of Philosophy (Ph.D.), it is hereby notified for the information of all concerned that the report of the Board of Examiners appointed to examine and adjudicate the Ph.D. thesis submitted by **Tim Peter Thermadam,** Reg. No.157/Jan 2015, entitled topic "CHEILOSCOPY AND DERMATOGLYPHICS FOR GENDER DETERMINATION AND PERSONAL IDENTIFICATION: A DESCRIPTIVE STUDY" has been approved by the University and the candidate has been declared eligible for the award of the **Doctor of Philosophy (Ph.D.)** under the **Faculty of Dentistry of Yenepoya (Deemed to be University), Mangalore.**

The research scholar was successfully supervised by Prof. Dr. Laxmikanth Chatra (Guide), Associate Dean, Yenepoya Dental College, Yenepoya (Deemed to be University), Deralakatte, Mangalore-575018 and Prof. Dr. Auswaf Ahsan K P (Co Guide), Head of the Department, Department of Oral Medicine and Radiology, KMCT Dental College, Calicut, Kerala - 673602.

B.T.

Controller of Examinations

To,

The Candidate

Copy to:

1. The Dean of Faculty of Dentistry, Yenepoya (Deemed to be University).
2. Pro Chancellor
3. The Director of PG Studies & Research
4. The Principals of Constituent Colleges
5. Director (M.Phil & Ph. D. Program)
6. The Research Guide /The Co- Guide
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9. P.A. to Chairman , University Grants Commission, New Delhi
10. P.A. to Vice-Chancellor
11. P.A. to Registrar
12. P.A. to Finance Officer
13. P.A. to Controller of Examinations

C.c to:

The O/o the Hon'ble Chancellor

Dear Dr. Vipindas A. P.,

On behalf of the Indian Board of Oral and Maxillofacial Surgery, I take this opportunity to extend my gratitude for being part of the examination process held at MCODS, Mangalore on 1st December 2021.

You were assigned candidate number **FMe0129**. During the process of examination, we observed you to have put great efforts to participate in the examination. The examiners evaluated all candidates with equal standards.

We have the pleasure to inform you that you have **successfully** achieved the standards required by the board to be admitted as a Fellow. I welcome you as a Fellow of the Indian Board of Oral and Maxillofacial Surgery, and hope that you will contribute towards the enhancement of the board. You will receive your certificate of fellowship at the convocation scheduled to be held at Indore during the 46th National Conference of Association of Oral and Maxillofacial Surgeons of India, 2022. You may deposit the required enrollment and convocation fees to register. I congratulate you on your achievement.

We thank you again for your active participation in the examination process of the board and look forward to your continued participation and support.

Shaji Thomas,
Latha P Rao,
Secretary,
Exam Coordinator,
IBOMS.

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Thrissur, Kerala-680596

Faculty of Dental Sciences

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This is to certify that Dr. RANJITH M has attended the webinar on ***'Opportunities, Challenges & Threats facing the Teachers of Dentistry'*** by Dr K Chandrasekharan Nair, Emeritus Professor, Vishu Dental College, Andhra Pradesh, organized under the auspices of Faculty of Dental Sciences of The Kerala University of Health Sciences on 6th June 2020.

Sd/-
Dr K Chandrasekharan Nair
Emeritus Professor, Vishu Dental College,Andhra Pradesh

Sd/-
Dr. S. Anil Kumar
Dean [Faculty of Dental Sciences]

Sd/-
Dr.V.V.Unnikrishnan
Dean [Academic]

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School of Health Policy and Planning Studies, TVM

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No: 02/2020/A1/Covid Cell/KUHS

Dated : 07-10-2020

This is to Certify that Mr./Mrs./Ms./Dr./Sr. DHANYA MURALIDHARAN has participated as delegate in the three-day Webinar on ***'National guidelines for Ethical committees reviewing biomedical and health research during COVID-19 pandemic and challenges in functioning of Ethical committees during COVID-19 resilience phase'*** organized by School of Health Policy and Planning Studies of Kerala University of Health Sciences on 19/9/2020, 20/9/2020 and 21/9/ 2020.

Prof.Dr. Rajamohanan.K
Professor-in Charge

International Federation of Endodontic Associations

IFEA WEC 2020NE

Online IFEA 12th WEC
Sep 23-26 | 2020
www.ifea2020india.com

Onsite IFEA 12th WEC
August 12-14 | 2021
Chennai | India

12th IFEA World Endodontic Online Congress

Certificate of Participation

This is to certify that

Dr. Elsy Bijoy

has attended and actively participated during the scientific deliberations of the IFEA 12th WEC Online Congress held online during Sep 23rd - 26th 2020

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IFEA WEC 2020NE

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DCI credit points-24

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48th IPS

Indian Prosthodonitc Society

NATIONAL CONFERENCE 2020-NAGPUR

Date : 3rd - 6th Dec. 2020

Theme

Confluence : Practice with Evidence

CERTIFICATE *of* ATTENDANCE

20 CDE Points

Letter No MSDC/CDE/662/2020-2021
Dt 02/12/2020

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32nd NATIONAL IAOMR CONFERENCE-2021

DEPARTMENT OF ORAL MEDICINE & RADIOLOGY

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3rd - 5th December, 2021

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President, IAOMR	Gen. Secretary, IAOMR	Organising Secretary	Organising Chairman

32nd NATIONAL IAOMR CONFERENCE-2021

DEPARTMENT OF ORAL MEDICINE & RADIOLOGY

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A Ravi Kiran

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President, IAOMR

Dr. Shalu Rai
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DEPARTMENT OF ORAL MEDICINE & RADIOLOGY

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ORIGINAL RESEARCH PAPER

Volume - 9 | Issue - 6 | June - 2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

COMPARATIVE STUDY OF DENTAL FLUOROSIS WITH INTELLIGENT QUOTIENT (IQ) IN SCHOOL CHILDREN IN CHITTOOR DISTRICT

Dental Science

Dr. B. Haripriya	MDS (Pedodontics), Door No 306, Rambagh mallaiah towers, Madhavi bloc, Rambagh, Attapur, Hyderabad, Andhra pradesh
Dr P Pratyusha*	MDS (Pedodontics), Professor &HOD, KMCT Dental College, Manassery, Mukkam Kozhikod, Kerala *Corresponding Author
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Dr. C. Lalitha Samyukta	MDS (Pedodontics), Ramachandranagar, K. T. road, Tirupathi 517501

ABSTRACT

Objectives: The objective of the study was to assess the relationship between fluoride levels and intelligence quotient in children aged between 7 - 11 years in Chittoor district. Andhra Pradesh, India

Materials and methods: Ground water from Madanapalli and Tirupathi was collected and fluoride levels were measured using colorimeter test. 960 subjects in the age group 7-11 years were included in the study. Dental fluorosis status was measured using Dean's fluorosis index 1945. The intellectual ability of each child was calculated using Raven's colored progressive Matrices (RCPM) and results were analysed.

Results: Fluoride levels in drinking water in Madanapalliranged from 2.5 -3.5 ppm and in Tirupathi 1-2 ppm. When both the regions were compared, IQ levels decreased from 21.1198 to 16.5052, which showed a statistically significant difference (p=0.007)

Conclusion: From this study it was concluded that there is a significant relationship between fluoride levels in drinking water and intelligent quotient

KEYWORDS

IQ, Fluoride levels, Drinking water

INTRODUCTION:

Fluorine is often called as double-edged sword. Inadequate intake of fluoride in drinking water is associated with dental caries. Similarly, prolonged ingestion of fluoride through drinking water in excess of the daily requirement is associated with dental and skeletal Fluorosis[1]. Also the existing literature reports the neurological consequences associated with excessive exposure to fluoride.

In view of reports of high fluoride levels in water supplies worldwide, studies were conducted to prove whether there is a link between fluoride and intelligence quotient levels in children. Majority of studies were conducted in China, Iran, and Iraq. There is a paucity of studies in India to establish this fact, and has Chittoor district in Andhra Pradesh is endemically affected with fluorosis, this study was undertaken to evaluate the relationship between fluoride levels and intelligent quotient of children.

MATERIALS AND METHODS:

Children were selected from various educational institutions. 960 subjects participated in the study after taking prior consent from teachers, parents and care takers. Of these 960 subjects 480 were from Madanapalli and 480 from Tirupathi. All subjects in the age group of 7-11 years were included from both sexes.

Subjects with normal birth history, who were permanent residents in the region and with no history of trauma to the head, were selected for the study. Subjects,who were mentally retarded, physically disabled and with questionable fluorosis were excluded from the study.All the children were examined for the dental fluorosis status according to the Dean's fluorosis index 1945. Intelligent quotient (IQ) test was conducted individually for every child using the coloured progressive matrices component of Raven's educational test. The scores were compared using Ravan's manual and the collected observational data was subjected to statistical analysis using Chisquare test, Post hoc tukeys test and t test.

RESULTS:

The region evaluated was classified into no fluorosis area and fluorosis areas based on the level of fluoride in drinking water. In Tirupathi fluoride levels in drinking water showed about 1-2 ppm and in Madanapalli it showed about 2.5 – 3.5 ppm. Table 1 shows mean IQ in fluorosis group is about 16.5052 and in no fluorosis it was about 21.1198 which was statistically significant (p = 0.007) (Graph 1).

Table 2 shows that difference in the proportion of children with various IQ categories which revealed that 79% of children with dental fluorosis had low/Borderline IQ scores whereas 74% of children without fluorosis had low/ borderline IQ scores and there was no significant difference between the two groups. About 4.80% of children in fluorosis area had below average IQ scores whereas 8.80% of children in no fluorosis area had below average IQ scores.8% of children in fluorosis area had average IQ and 14% of children in no fluorosis area had average IQ. High IQ scores were seen in 44% of children in fluorosis area and 22% of children in no fluorosis area. Although there were more number of children with high IQ in fluorosis region the overall IQ scores reveal that fluorosis area had significantly lower IQ ($p<0.001$) than region with no fluorosis (Graph 2)

Table 3shows that the average IQ of children in each age group in Tirupathi was higher than in Madanapalli. For 7 year old subjects the mean IQ score of children in Madanapalli was 47.50 and in Tirupathi it was 10.00 which show a statistically significant difference (0.003) between two groups. In 8 year old subjects mean IQ scores in Madanapalli and Tirupathi were 42.50 and 13.06 which were statistically significant (0.000). In 9 years old children mean IQ scores of two groups were 22.57 and 23.61 which were not statistically significant (0.776). Mean IQ scores of 10 years old children in the two groups was 15.80 and 13.29 which did not reveal significant difference (0.454).most of the children in the study belong to 11 years age group and the mean IQ scores of the children in Madanapalli and Tirupathi were17.56 and 12.46 and there was significant difference (0.031)

ORIGINAL RESEARCH

Effectiveness of Various Dental Varnishes in Prevention of Enamel Demineralization around Orthodontic Brackets: An *In Vitro* Study

Dharmesh H Shivananda[1], Waseem Ansar[2], Abdul RN Dinsha[3], George Sam[4], Sajai Bharath[5], Ateet Kakti[6], Hosam Ali Baeshen[7]

Abstract

Aim: The present study aimed to assess the efficacy of different dental varnishes in prevention of demineralization of enamel along the orthodontic brackets.

Materials and methods: A total of 60 premolars that do not have caries and were extracted for orthodontic purposes were used in this study. Transbond™ Plus was used to bond premolar brackets onto the treated surface of enamel. The teeth were then divided into three groups. Group I: Profluorid varnish, group II: CPP-ACP varnish, and group III: Duraflor™ varnish. A Vickers diamond indenter was used to assess the microhardness of the surface of enamel at baseline, fourth day, and seventh day.

Results: A slightly meaner surface microhardness (SMH; 334.20 ± 2.10) was seen in group III when compared with group I (332.16 ± 3.02) and group II (330.40 ± 2.02). The mean SMH was 342.02 ± 0.82 in group I on the fourth day which was slightly higher than that of the baseline values, followed by group III (339.48 ± 0.34) and group II (336.64 ± 1.14). No statistically significant differences were noted between the groups. A higher mean microhardness of 349.84 ± 0.66 was seen in group I on the seventh day, followed by group III (342.26 ± 1.08) and group II (338.18 ± 1.08). A statistically highly significant difference was seen between the groups.

Conclusion: The present study concluded Profluorid varnish to have maximum potential to reduce demineralization of enamel followed by Duraflor and casein phosphopeptide–amorphous calcium phosphate (CPP-ACP) group.

Clinical significance: A most common clinical challenge encountered in orthodontic clinical practice is enamel demineralization or white spot lesion (WSL) development throughout the fixed appliance treatment. Thus, the information about several available varnishes is important to prevent demineralization in regular dental practice.

Keywords: Brackets, Demineralization, Orthodontic treatment, Varnish.

The Journal of Contemporary Dental Practice (2020): 10.5005/jp-journals-10024-2820

Introduction

Loss of mineralization of enamel is sequential to orthodontic treatment and is exacerbated by bad oral hygiene. Initial stages of enamel caries result in loss of mineral along the subsurface with an undamaged enamel on the upper surface. The demineralized enamel reflects light differently than healthy adjacent enamel resulting in a chalky white image. White spot lesions (WSLs) look as tiny lines along the orthodontic brackets in few patients, while they may appear as big unmineralized zones either without cavitation or with cavitation. Identification of WSLs post-orthodontic appliance removal is completely unpromising.[1]

Even though this undesirable complication has been identified by orthodontists and many have taken effective measures to reduce, the formation of white spot and development of caries in patients who do not follow aggressive caries preventive measures during orthodontic treatment still remains a problem. As these conditions are irreversible, not healthy and esthetically unpleasing, it is mostly unpromising to that branch of dentistry which primarily aims to enhance dental and facial esthetics.[2]

Several specialized preventive measures are suggested for patients undergoing fixed orthodontic treatment as the prevalence of WSLs in patients receiving orthodontic treatment is approximately 68.4%. It is the responsibility of an orthodontist to reduce enamel demineralization by providing timely education and drive the patient to achieve good oral cleanliness. Local/

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How to cite this article: Shivananda DH, Ansar W, Dinsha ARN, *et al.* Effectiveness of Various Dental Varnishes in Prevention of Enamel Demineralization around Orthodontic Brackets: An *In Vitro* Study. J Contemp Dent Pract 2020;21(6):621–625.

Source of support: Nil

Conflict of Interest: None

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Journal of Pharmacy & BioAllied Sciences

ORIGINAL ARTICLE
Year : 2020 | Volume : 12 | Issue : 5 | Page : 238–244

Variations of mandibular first molar root canal in school children: An observational study

Santosh Kumar[1], Alisha Singh[2], P Mohammed Ashik[3], Sarin Koroth[4], Akash Narayan Dutta Barua[4], Amitabh Kumar Sinha[1],
[1] Department of Conservative Dentistry and Endodontics, Patna Dental College and Hospital, Patna, Bihar, India
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Abstract

Background: Root canal (RC) treatment is most common and effective method for treatment of diseases related to periapical area and pulp of teeth. With the increase in age, the formation of secondary dentin, calcification of canals, and reduction of medullary cavity volume, it becomes increasingly difficult to accomplish a perfect RC treatment, hence the understanding of RC variation and changes in variation with increasing age improves the success rates. **Aim:** The aim of this study was to study the RC variation in the age-group of 10–14 years and to find if the gradual increase in age plays a role in increasing the complexity of RC variation. **Materials and Methods:** This study was carried out in Government Medical College, Patna, Bihar, India, from January 2018 to April 2019. Subjects within the age range of 10–14 years were selected conferring to predetermined inclusion and exclusion criteria. The subjects were divided into the groups according to age—Group I: 10–11 years, Group II: 11–12 years, Group III: 12–13 years, and Group IV: 13–14 years. The subjects were further divided into Group A and B according to sex to study if there is any significant difference in RC variation. Three intraoral periapical (IOPA) radiography with radiovisiography (RVG) of each subject were taken from three different predetermined angles and these IOPAs were then analyzed by three independent observers and the most agreed on value was included. The IOPAs were analyzed for the number of roots, the number of canals in each root and the variation of each RC were classified according to Vertucci's Classification. **Results:** The most common T of RC variation in mesial root of mandibular first molar was T IV succeeded by T II and T I. For distal canal of mandibular first molar, the most common variation was T I, followed by T II and T III. In our study we found that 98.88% of mandibular molars were having two roots. No significant difference was found in the variation of canal according to age or sex in our study. **Conclusion:** Hence, we conclude that no significant difference is seen in RC variation according to sex and age. As the groups we included in our study were not wide apart enough in age, a further long-term study is needed to ascertain if the complexity of RC increases with age.

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Full Text

Introduction

The first tooth erupted in the oral cavity is 1mandibular first molar, hence it is more likely to get caries and need root canal (RC) therapy.[1] To achieve success in RC therapy, a detailed knowledge of root and RC variation is needed.[2] Mandibular first molar typically has two roots with a round or elliptical canal in the distal root and two canals in the mesial root, but infrequently, it has three with two or three canals in the mesial root and one, two, or three canals in the distal root. Though many variations have also been reported with this tooth, which includes the presence of single root,[3] four roots,[4] taurodontism,[5] radix entomolaris,[6] and radix paramolaris.[7]

The distal canal is usually straight till the apex. It has a large cross section and is oval or flattened in shape, making instrumentation easy. Usually the apical 1–2 mm of this canal curves distally up to 90°, but this is rarely a problem. In 90% of the cases mesial root remains separate as far as the foramen; in the remaining 10%, they join together at a common foramen. The mesial RCs take a more curved course with a mesial alignment immediately below the orifice and then distal in the rest of the RC.[8]

Great variation in root and canal variation within populations, between populations, and even within the same individual are observed.[9],[10],[11],[12] To achieve success, an effective RC debridement is essential for which the knowledge of RC variation is foremost.

The RCs have been classified on various morphological features, which include number of canals from orifice to apex, number of roots, number of canals in each root, and number of isthmus.

Weine et al.,[13] in 1969, classified RC configurations within a single root for the first time. They divided it depending on the division of the main RC along its progression from the pulp chamber to the root apex and the number of canals from orifice to apex. As per Weine's classification, the canals of tooth were divided into four Ts.

Vertucci[8] further expanded Weine's classification and classified RC systems into eight Ts.

Zhang et al.[14] gave a classification based on number of roots and number of canals in each root; to his classification, three more variants were added by Silva et al.[15]

Kim et al.[16] divided apex into five Ts depending on the number of isthmus.

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ORIGINAL ARTICLE
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Evaluation of remineralization potential and cytotoxicity of a novel strontium-doped nanohydroxyapatite paste: An *in vitro* study

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Abstract

Background: The focus of caries management has shifted to the early detection of caries and noninvasive methods of management of incipient lesions with novel remineralizing agents. **Aim:** The aim of this study is to evaluate and compare the remineralization potential of a novel laboratory synthesized strontium-doped nanohydroxyapatite (SrnHAp) paste to a commercially available regular dentifrice. **Materials and Methods:** Sixty enamel specimens (4 mm × 4 mm × 1 mm) were divided into two groups based on the type of dentifrice applied: Group I – regular toothpaste and Group II – SrnHAp paste. Calcium/phosphorous ratio of all sound specimens was evaluated using Scanning Electron Microscopy-Energy Dispersive X-ray analysis. Samples in both groups were subjected to demineralization, and the calcium/phosphorous ratio was analyzed. The samples were then subjected to remineralization using the specific agents in each group, and the mean calcium–phosphorus ratio was assessed. Cytotoxic evaluation of both pastes was done by direct microscopic observation and MTT assay. **Statistical Analysis:** Comparison of mean calcium and phosphorous values of sound enamel, demineralized, and remineralized specimen in Groups I and II was done using the one-way ANOVA and Tukeys *post hoc* test. Intergroup comparison after remineralization was done using the Student's *t*-test. **Results and Conclusion:** Group II showed higher remineralization potential than Group I and was statistically significant. Cytotoxicity of novel paste was less compared to the regular toothpaste. SrnHAp showed better remineralization than regular toothpaste and can be considered for enamel repair in incipient carious lesions.

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Full Text

Introduction

Dental caries is one of the significant public health problems and we continue to search for ways to reduce the risk of caries in patients. The focus of caries management has shifted to the early detection of caries and noninvasive methods of management of incipient lesions with novel remineralizing agents.[1]

White-spot lesions are the earliest phase of the caries process and are reversible. The mechanical and crystallographic studies on white-spot lesions revealed around 10% loss in mineral content, making the area softer and prone to enamel caries.[2] Noncavitated lesions as well as caries extending up to the dentinoenamel junction can be arrested. This is possible if the cariogenic challenges of the specific microenvironment are sufficiently controlled or/and if therapeutic agents are applied for tissue healing.[3]

Recently, nanoparticles of hydroxyapatite (nHAp) with the same chemical composition as of tooth enamel Ca10(PO4)6(OH)2 has been used for remineralization. Nanohydroxyapatite (nHAp) shows higher Ca2+ ion release rates and superior functional properties due to uniform grain size.[4] Fluorides which are considered as a gold standard for remineralization cause hypermineralization of the surface layers and fail to strengthen the teeth from within, while nHAp induces mineralization from within the teeth along with the natural therapy of saliva.[5]

However, the main drawbacks of nHAp are lack of strength, brittleness, high degree of crystallinity, and low solubility at neutral pH.[6] Many researchers have tried replacing calcium (Ca2+) ion with strontium ion (Sr2+) in varied ratios to increase the acid reactivity of apatite, improvement in solubility, and increased fluoride release successfully [7],[8],[9],[10] Hence, strontium-doped nHAp (SrnHAp) may be beneficial for inducing enamel repair and remineralization.

Evaluation of remineralization will require the measurement of even small changes in a tooth's mineral content. Scanning electron microscopy (SEM) along with energy dispersive X-ray analysis (EDX) is a microanalytical technique that is employed to quantitatively estimate the amounts of mineral in a given tooth sample.[11] SEM helps to assess the topographic changes of the enamel surface.

The present study evaluates and compares the remineralization potential of a novel laboratory synthesized paste-containing SrnHAp to a commercially available regular dentifrice. Toxicology assessment was also done to correlate its possibility for future application.

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Review Article

Pathogenesis of Gustatory and Olfactory Dysfunction in Coronavirus Disease 2019 Patients: A Neurophysiological Hypothesis

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ABSTRACT

Coronavirus disease 2019 (COVID-19), the global pandemic, has taken a toll on health and socioeconomic status of the entire world. Clinical spectrum and outcome of this disease still remain a mystery. Centers for Disease Control and Prevention has recently included olfactory and gustatory dysfunction in the key symptoms suggestive of COVID-19 infection. In spite of various studies since the outbreak of this disease, the exact pathological mechanism of this ailment is yet unclear. Cyclic adenosine monophosphate (cAMP), the ubiquitous protein essential for many biological processes, has been proved as a key factor in signal transduction of taste and smell as well as in viral replication. This article hypothesizes that virus utilizes cAMP for its replication in oral and olfactory mucosa resulting in depleted level of cAMP available for transmission of chemosensory impulse and thereby resulting in dysregulated taste and smell in COVID-19 patients.

Key words: ACE2 receptor, Coronavirus disease 2019, Cyclic adenosine monophosphate, Gustatory dysfunction, Insular cortex, Olfactory dysfunction

INTRODUCTION

Coronavirus disease 2019 (COVID-19), a zoonotic infection caused by SARS-CoV-2, started as an outbreak in Wuhan, China, in December 2019 and quickly became an epidemic. Within no time, it attained pandemic status to shudder the entire world and has caused an unprecedented and unimaginable psychosocial impact on millions of people. Clinical spectrum of COVID-19 is exceedingly varied and can range from asymptomatic form to severe multiorgan dysfunction and failure. In extremes of life and in people who are immunologically compromised, the disease can run a fatal course. In symptomatic cases, the disease manifests as fever, dry cough, tiredness, and shortness of breath which appears 2–14 days after exposure. Mild-to-moderate symptomatic cases, if not treated adequately, may progress to more severe condition within a couple of days leading to dire consequences. Unfortunately, there are no specific clinical symptoms to secernate COVID-19 from other viral respiratory infections.

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Chemosensory dysfunction was not a commonly reported symptom from the initial epicenter of COVID-19. Subsequently, both olfactory and gustatory dysfunctions were found to be prevailing in patients with mild-to-moderate infection. The American Academy of Otolaryngology-Head and Neck Surgery and The British Association of Otorhinolaryngology are now recommending these symptoms to be added to the list of primary screening symptoms for COVID-19.[1,2] Centers for disease control and prevention has recently included olfactory and gustatory dysfunction in the key symptoms for COVID-19 infection.

Olfactory and gustatory dysfunction may appear before, during, or after the general symptoms. The altered taste

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Hollow ocular prosthesis: an offshoot from the conventional

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Abstract

Fabrication of an ocular prosthesis not only restores the esthetics of the patient but also preserves the socket by restricting the outgrowth of soft tissues. A well preserved socket is open to more treatment options compared to a poorly managed ocular defect. Custom ocular prosthesis improves tissue health by eliminating any stagnating space with its close tissue adaptation. It provides better range of movements and improves patient comfort. Primary factor that decides the fabrication protocol for a maxillofacial prosthesis is the defect size. Larger ocular defects could be rehabilitated using a custom fabricated hollow ocular prosthesis.

Keywords: Ocular Prosthesis, Hollow Prosthesis, Enucleation

Introduction

Custom ocular prosthesis has got many advantages over stock prosthesis. It adapts closely to the soft tissue bed in the socket there by distributing the pressure equally and improves tissue health by eliminating any stagnating spaces.[1,2] A customized prosthesis shows better range of movements through its close adaptation.[3] Hollow ocular prosthesis further improves patient comfort by reducing the weight through its hollowness. Size of the ocular defect is the primary factor that decides the prospects of fabricating any prosthesis. Larger defects are usually rehabilitated using hollow ocular prosthesis.

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ORIGINAL ARTICLE
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Serum Iron Indices in Patients with Oral Submucous Fibrosis- A Comparative Study

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Abstract

Introduction: Oral submucous fibrosis (OSMF) is a potentially malignant disorder whose etiopathogenesis is still under investigation. Studies have reported altered serum iron levels in patients with OSMF. Hence, iron has been proposed to play an important role in the incidence and progression of the disease. This study was undertaken to understand the role of iron in the etiopathogenesis of OSMF by estimating haemoglobin and serum iron indices (serum iron, Total iron binding capacity [TIBC], percentage transferrin saturation and serum ferritin) in subjects with OSMF. **Materials and Methods:** Study group comprised of patients with histopathologically confirmed OSMF (n = 30). Age and sex matched subjects with clinically normal mucosa were selected as control group (n = 15). Hemoglobin, serum ferritin, serum iron, and TIBC were estimated (Siemens Dimension RXL Max Integrated chemistry system™). **Statistical analysis used:** SPSSv16 was used for statistical analysis. Independent sample *t* test was performed to compare the values between the study group and control group. 'p' value less than 0.05 was considered to be statistically significant. **Results:** There was a significant decrease in the haemoglobin, serum iron percentage transferrin saturation, serum ferritin levels and an increase in TIBC levels in the study (OSMF) group when compared to the control group ($P < 0.001$). TIBC levels showed a significant ($P< 0.001$) increase in the study group. Among the study group 44% were in an anemic state as per the hemoglobin values. **Conclusion:** The findings of the present study suggest that, iron deficiency state is prevalent among patients with OSMF. This deficiency of iron has an important role in the pathogenesis and progression of this disease.

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Original Article

Frequency of Middle Mesial Canals in Mandibular First Molar in Malabar (North Kerala) Population without Advanced Aids – An *In Vivo* Study

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ABSTRACT

Introduction: This study was undertaken in department of conservative and endodontics, KMCT dental college, Kozhikode, within the span of 2 years ranging from June 2017 to June 2019. Total of 227 teeth were evaluated from 220 patients. All the teeth evaluated were mature mandibular permanent first molars referred for endodontic therapy to the department.

Purpose: The presence of middle mesial (MM) canals is quite high in North Kerala population. Missing these canal space would potentially lead to failure of root canal treatment.

Methods: All the mature mandibular first molars treated between June 2017 and June 2019 were considered for the study. Mesial developmental groove was inspected and explored in every case to detect accessory canal. If cases were that having MM canal was found, it was cleaned, shaped, and recorded. Results were analyzed using Chi-square test.

Results: A total of 227 first molars from 220 patients were treated during the specified period, of which 78 teeth (34.36%) had negotiable MM canals. Statistical analysis revealed no significant relationship between different age groups with incidence of MM canals but gender had slight influence, wherein female patients had more.

Conclusion: The presence of MM canals is quite high in North Kerala population.

Key words: Accessory canal, Mandibular molar, Middle mesial canal, Root canals

INTRODUCTION

A successful endodontic treatment depends on complete debridement of pulp space and creating a fluid tight seal. Favorable environment for healing should be created, [illegible] microbes and necrotic tissue. However, this is not always possible in teeth with unusual canal morphologies. They are probably more prone to treatment failures due to insufficient knowledge of canal anatomy and aberrations associated with it.

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Mandibular first molars normally have two roots and three to four canals (two mesial and one-two distal).[1] The incidence of variation is quite high, including seven to eight canals, C-shaped canals, isthmus, and an additional third canal in the mesial root.[2,3]

The middle mesial (MM) canal used to be an occasional entity, which lies in the developmental groove between the mesiobuccal (MB) and mesiolingual (ML) canals. Since its first reporting by Vertucci and Williams as well as Barker *et al.* in 1974, the MM canal has been extensively studied. Its incidence has been reported to be 0–46%.[4]

Pomeranz *et al.* classified MM canals into three categories – (1) Fin: The file passes freely between the main mesial canal (ML or MB) and the MM canal (transverse anastomosis), (2) confluent: The MM canal merges with the main mesial canals in the apical third, and (3) independent: The MM

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Original Article

Vertical Fracture Resistance of Endodontically Retreated Teeth Using Two Instrumentation Systems

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Abstract

Introduction: Vertical root fractures are the most challenging complication associated with endodontically treated teeth. Different nickel-titanium (NiTi) instrument designs are associated with different levels of stress and resistance of roots to fractures.

Purpose: This study was designed to evaluate the fracture resistance of retreated roots using two different rotary retreatment systems.

Materials and Methods: Sixty freshly extracted human mandibular premolar with single, straight roots were randomly divided into four groups of fifteen specimens each. Samples of negative control were left untreated. Samples of positive control were cleaned and shaped with ProTaper files up to F_3. Obturation was done using gutta-percha and AH Plus sealer (Dentsply Detrey, Konstanz, Germany). For the samples of experimental groups three and four, removal of gutta-percha was performed using ProTaper Universal (Dentsply Maillefer, Ballaigues, Switzerland) and Mtwo (Sweden and Martina, Padova, Italy) rotary retreatment systems. The specimens were then embedded in a self-curing polymethyl methacrylate resin, and the force required to cause vertical root fracture was measured using a universal testing device. The force of fracture of the roots was recorded, and the results in the various groups were compared. Statistical analysis was accomplished by one-way analysis of variance and a *post hoc* Turkeys tests.

Results: There were statistically significant differences between the control groups and experimental groups ($P < 0.05$). However, there were no significant differences among the experimental group.

Conclusion: Type of rotary files used for retreatment does not significantly alter the fracture resistance of the tooth.

Key words: Endodontically retreated tooth, Fracture resistance, Retreatment files

INTRODUCTION

Residual necrotic tissue or bacteria existing in an obturated canal can be responsible for recurrent periapical inflammation and pain.[1] Thus, the main objective of nonsurgical retreatment is to regain access to the apical foramen and eliminate persistent organisms.[2] Efficient removal of the existing root canal filling material is essential for optimal non-surgical retreatment. The techniques applied to remove gutta-percha are varied and include the use of hand or rotary instruments, with or without heat, solvents, and/or ultrasound.[3] However, manual removal of gutta-percha using is time-consuming, especially in well-condensed canals. Thus, the use of contemporary rotary nickel-titanium (NiTi) instruments is more efficient and less fatiguing to the patient and operator.

Vertical root fractures (VRF) are the most challenging complication associated with endodontically treated teeth.[4] True vertical root fracture is defined as a longitudinal fracture confined to the root that usually initiates on the internal canal wall and extends outward

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CASE REPORT
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An extremely rare pseudoaneurysm of posterior superior alveolar artery arising after orthognathic surgery

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Abstract

Le Fort 1 osteotomy is one of the most versatile techniques in orthognathic surgery employed for the correction of dentofacial deformities and is considered technically safe. Pseudoaneurysms (PAs) which can cause life-threatening hemorrhage are rare after corrective jaw surgery. Here, we describe a clinical case of delayed postoperative epistaxis secondary to an extremely rare PA of the posterior superior alveolar artery followed by Le Fort 1 osteotomy subsequently managed with endovascular selective embolization.

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Full Text

Introduction

Orthognathic surgery became the need of the hour for the patients with dentofacial skeletal deformities. Le Fort 1 osteotomy is considered to be one of the safest, reliable, and predictable surgical techniques across the globe for the correction of such dentofacial deformities.[1],[2] Le Fort 1 osteotomy also carries few uncommon serious postoperative vascular complications, resulting from unrecognized intraoperative vascular injury.[3] Vascular complications as a result of this can range from common postoperative oronasal bleeding to very rare arteriovenous fistulas and pseudoaneurysms (PAs).[4] Utmost care should be taken while performing osteotomies, especially the pterygomaxillary disjunction in order to prevent injury to the nearby vasculature, including the internal maxillary artery (IMA) and its branches.

Acute epistaxis after Le Fort 1 osteotomy in the immediate postoperative period is relatively common, but the diagnostic challenge lies when it persists further. True aneurysms are characterized by the expansion of all the three layers of blood vessel, whereas PA involves rupture of one or more layers followed by an incomplete injury of the vessel. This results in the leakage and collection of blood within the layers of blood vessels or formation of a capsule into the surrounding soft tissues.[4],[5]

The rupture of PA can lead to severe life-threatening hemorrhage, and the surgeon should be competent enough to diagnose and perform primary management in an emergency suite. PA can be asymptomatic most of the times or they may even present with symptoms such as pain, swelling, and epistaxis. Therefore, they can be undiagnosed for a period of weeks or months, which becomes a diagnostic challenge. The most vulnerable facial vessels for the formation of PAs are facial artery and superficial temporal artery because of their relative superficial anatomy[2],[4] and their nature of being more prone to maxillofacial trauma. The possibility of PA in the branches of IMA was reported in the literature,[1],[2],[3],[4],[6] but they are relatively uncommon after Le Fort 1 osteotomy.

Here, we report an extremely rare case of PA of posterior superior alveolar artery (PSAA) followed by Le Fort 1 osteotomy treated with endovascular selective embolization using gelatin foam.

Case Report

A 26-year-old gentleman reported to the department of oral and maxillofacial surgery for the correction of dentofacial deformity. He was diagnosed with vertical maxillary excess and hypogenia. The patient had no history of drug, alcohol, or tobacco intake, and his blood values were within normal limits. As per the proposed treatment plan, the patient underwent Le Fort 1 osteotomy with superior maxillary repositioning [Figure 1] accompanied by augmentation genioplasty [Figure 2] under general anesthesia. The postoperative course was uneventful, and the patient was subsequently discharged on the 4th postoperative day.{Figure 1}{Figure 2}

The patient was apparently normal, with no signs of infection and other relative illness up to 5 weeks after the surgery. By the 6th postoperative week, the patient reported to the outpatient department with mild pain and swelling over the right anteromedial cheek region. Clinical examination was inconclusive with nonspecific symptoms, and he was prescribed with analgesics for symptomatic relief. After 2 weeks, the patient was brought to the emergency department following an episode of epistaxis during sleep and was primarily managed with anterior and posterior nasal packing. A contrast computed tomography was performed, which did not reveal any abnormalities. Hemogram and bleeding parameters were within the

MALAYSIAN DENTAL JOURNAL

BUCCAL BIFURCATION CYST: COHERENT YET MISCONSTRUED

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ABSTRACT

Background: The buccal bifurcation cyst is an often confusing inflammatory cyst that occurs in young children between the ages of 5.5 years to 11 years predominantly in relation to the mandibular first molars. Though the histological picture is non-specific, it can be clearly distinguished by the presence of very distinct clinical and radiographic features. Giving undue importance to the histological features without a proper clinical and radiographic examination can result in loss of a tooth which is extremely vital for maintaining skeletal and dental symmetry.

Case Report: A 9-year-old boy presented with a mildly tender, unilateral swelling on the left side of his lower face. The case report discusses the investigation protocol followed in this case with an impetus on cone-beam computed tomography and also adds a note on adjunctive aids like ultrasonography and immunohistochemistry and their relevance to the diagnosis.

Conclusion: The advent of cone-beam computed tomography has made it easier to examine the buccal bifurcation cyst. This is extremely relevant to this entity as misdiagnosis can lead to unwarranted removal of a tooth that is important for the maintenance of a balanced occlusion.

Keywords:
Buccal bifurcation cyst, odontogenic cyst, inflammatory collateral cyst, paradental cyst

ORIGINAL RESEARCH PAPER

Pathology

A COMPARATIVE STUDY OF THE EFFICACY OF CEDARWOOD OIL, COCONUT OIL AND DISH WASH LIQUID AS ALTERNATIVES TO XYLENE AS DEPARAFFINIZING AGENTS

KEY WORDS: Xylene, Cedar wood oil, Coconut oil, Dishwash liquid (DWL)

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ABSTRACT

Xylene is an aromatic hydrocarbon which is widely used as a deparaffinizing agent, and it is extremely biohazardous. Various biosafe alternatives to xylene have been studied in the past with variable results. The aim of this study was to compare the efficacy of Cedar wood oil, Coconut oil and Dish wash liquid (DWL) with Xylene as a deparaffinizing agent and to figure out the best biosafe alternative to Xylene. The study consisted of 60 samples and results were analyzed based on the cellular architecture and total quality of staining. Xylene and DWS showed same result of high-quality staining in case of cellular architecture. But in case of total quality of staining, only Xylene showed the best results. Hence, we could conclude that though Xylene is toxic, it is still the best deparaffinizing agent and more studies has to be done in this field to prove the efficiency of natural agents.

INTRODUCTION

Histopathology is an art of analyzing and interpreting the shapes, sizes and architectural patterns of cells and tissues within a given specific clinical background and a science by which the image is placed in the context of knowledge of pathobiology, to arrive at an accurate diagnosis.[1]

Hematoxylin and Eosin-stained Paraffin sections are the backbone of daily histopathological diagnostic work. Paraffin sections are conventionally prepared by methods largely unchanged for over 150 years. The process of deparaffinization of the slides using Xylene is an important preliminary step before the staining process, which makes the tissue sections to uptake the Hematoxylin and Eosin stain properly. This makes Xylene an unavoidable compound in histopathology due to its paraffin solvent action. But unluckily; Xylene is found to be a toxic compound, that is hazardous for human use and the environment in which it is disposed. Therefore, any substitute that minimizes the use of Xylene in experiments is the need of the hour.[2]

MATERIALS AND METHODS:

The present study consisted of 60 Formalin fixed paraffin embedded tissue blocks of previously diagnosed random cases which were collected from the departmental archives.

From each paraffin blocks, 4 sections of 3-4 µm were sliced using semiautomatic Microtome (MICROM model HM340E). Since sample size was 200, total 200 sections were obtained. Each section of same blocks was deparaffinized with Dish wash liquid, Coconut oil, Cedar wood oil and Xylene respectively at different time in a single day. Deparaffinizing agents were changed in a weekly basis to improve deparaffinization.

Table 1:- Deparaffinization & H and E staining procedure for Xylene, Cedar wood oil, DWL & Coconut oil:

Procedure	Material used	Temperature	Time
Deparaffinization	Xylene I	At room temperature	5 min
	Xylene II	At room temperature	5 min
	Cedar wood oil	At room temperature	4 hrs
		70°C	1 min
		Water wash with distilled water	5 min
	1.7% DWL	90°C	2 min
		Water wash with distilled water	2 min
	Coconut oil	90°C	2 min
		Water wash with distilled water	2 min
Rehydration	Descending grades of alcohol	At room temperature	10 min
	Water wash	At room temperature	10 min
Nuclear staining	Harri's Hematoxylin	At room temperature	8 min
	Water wash	At room temperature	2 min
Differentiation	1% acid alcohol	At room temperature	1 dip
	Water wash	At room temperature	10 min
Cytoplasmic staining	1% eosin	At room temperature	1 min
Dehydration	100% alcohol	At room temperature	5 min

The deparaffinized sections were stained with H & E and seen under Compound microscope. Assessment of staining was done by using the scoring system given by Sugunakar Raju Godishala et al.

- **Scoring system: -**

1. Cellular architecture:

1) SCORE 0: Indistinct nucleus - cytoplasm
2) SCORE 1: Distinct Nucleus – cytoplasm

2. Quality of staining:

1) SCORE - 0 = Poor
2) SCORE - 1 = Satisfactory
3) SCORE - 2 = Good[3]

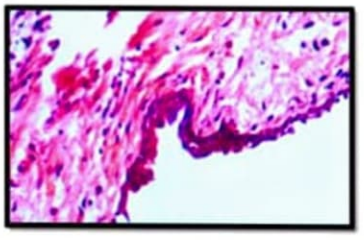


Figure 1: Deparaffinization with Xylene (H & E, 20X)

Screenshot_2021_0922_153911.png

Original Article

Attention to COVID-19 Pandemic among Dental Experts of Kerala State, India: A Knowledge, Attitude, and Practice Study

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ABSTRACT

Background: Dentists are the common preys for the transmission of pandemic disease because of the airborne spread via routine dental checkups. This study which is a cross-sectional one gives the idea about awareness and alertness of dentists about COVID-19 in Kerala, India. **Materials and Methods:** The survey comprised 25 closed-ended questions. The survey was separated into two sections. The initial segment of the poll was identified with the socio-segment qualities that were researched, while the subsequent part was worried about dental practitioners' perspectives toward the management of COVID-19 and the apparent danger of defilement in dental facilities. **Results:** Coronavirus management in dental clinics differs regarding adherence to the rules. An aggregate of 750 respondents finished the form, out of which 686 (91.46%) complete reactions were incorporated. The majority of the respondents concurred on inquiries regarding the knowledge, practice, and mentality of dental specialists toward the COVID-19 pandemic. **Conclusion:** The feedback of most dental specialists with respect to the readiness and view of disease control measures against the COVID-19 pandemic was positive. Dental facilities need to adhere more to the central and state government suggestions in alertness of their facilities or by tutoring their dental specialists and staff

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KEYWORDS: *Dental practitioners, fear, safety*

INTRODUCTION

Coronavirus Disease (COVID-19) infection was first appeared in Wuhan, China, in December 2019.[1] The novel virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) has rapidly extended from Wuhan to a large portion of Hubei region and to the remainder of the world.[2] On January 30, 2020, the World Health Organization (WHO) declared that coronavirus episodes as a pandemic.[3] The first instance of COVID-19 in India, an MBBS student who had returned home from Wuhan University, was tested positive on January 30 in Kerala's Thrissur district.[4]

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COVID-19 and dental treatment

Dentistry is experiencing its difficult stretch yet, with the coronavirus pandemic. Dental specialists are at the greatest danger of contracting and transferring the coronavirus, alongside other medical care providers. Dental facilities in the country over have stayed shut for more than 5 months. With the disease still on the ascent, there is no expectation of improvement at any point in

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Evaluation of Tetracycline Hydrochloride and Chlorhexidine Gluconate in Intracan Smear Layer Removal – A Comparative in Vitro S.E.M Study

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Biologically, smear layer has been considered to be an avenue for leakage. The aim of this study is to evaluate with the aid of scanning electron microscope the efficacy of Tetracycline Hydrochloride and Chlorhexidine Gluconate on the removal of intra canal smear layer, compared to Bidistilled water and Sodium Hypochlorite intra group and inter group comparion was done after SEM analysis. Tetracycline HCl and NaOCl removed smear layer better than Chlorhexidine Gluconate and NaOCl.Chlorhexidine Gluconate and NaOCl is better in smear layer removal than NaOCl used alone.

Keywords: Smear Layer, S.E.M Study, Tetracycline Hydrochloride, Chlorhexidine Gluconate.

Introduction

Smear layer is a combination of organic and inorganic debris on the canal walls following instrumentation [3]. The inorganic materials in the smear layer are made up of tooth structure and some nonspecific inorganic contaminants. The organic components may consist of heated coagulated proteins, gelatin formed by the deterioration of collagen heated by cutting temperatures, necrotic or viable pulp tissue and odontoblastic processes plus saliva, blood cells and microorganisms.

Obturating the canal wall with smear layer must be considered a weak union because the smear layer can be torn away from the underlying matrix[4]. Biologically, smear layer has been considered to be an avenue for leakage. Also viable bacteria may use smear layer for their sustained growth and activity. Similarly the smear layer may delay the action of disinfectants on the bacteria harboured in the dentinal tubules. In endodontics, once the smear layer is removed, a better adaptation of obturating materials and sealers become possible. Dentin

IN VITRO EVALUATION OF PUSH-OUT BOND STRENGTH OF FIBER POSTS CEMENTED USING TWO DIFFERENT ADHESIVE APPROACHES

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ABSTRACT

Objective. : To compare push-out bond strength of fiber-posts luted with two different adhesive approaches to root canal dentin

Materials and methods : Twenty mandibular first premolars were decoronated and endodontically treated. Specimens were randomly distributed into two groups (n = 10) and fiber-posts were inserted using two different luting materials: self-adhesive resin cements (RelyX Unicem, 3M Espe) in group one and a self-etch adhesive/ dual cure resin cement(Para Core , Coltene) in group two. The roots were sectioned into slices of 2mm thickness at the coronal third and middle third and after 24 hours push-out bond strength was investigated.

Key Words: bonding technique, root canal, fiber posts, push-out, self-adhesive resin cements

Introduction

For post-endodontic restorations various luting agents and adhesives systems, respectively, have been proposed to bond fiber-reinforced composite (FRC) posts to root canal dentin. Compared to conventional post cementation adhesive post luting offers less mikroleakage [1,2], improved retention [3,4] and load capability. Thus, a durable bond to root canal dentin to seal the endodontic environment is considered to be the major issue in longevity of postendodontic restoration.[5]

According to the way they interact with the smear layer current adhesives used in this study are attributed to the following bonding strategies/techniques [6]:

(1) Self-etch adhesives include acidic monomers making the smear layer permeable without removing it.

(2) Self-adhesive resin cements, which show a different cement/dentin interface.

Current developments tend to adhesively restore the weakened endodontically treated teeth with fiberpost and composite core in a one-stage core-and-post procedure [7], whereas core build-up will immediately follow post cementation using the same composite material (core-and-post materials). Recently, a new resin-based cement (RelyX Unicem Cement, 3M ESPE, Seefeld, Germany) has combined the use of adhesive and cement in one single application, eliminating the need for pretreatment of both tooth and restoration[8]

Such a procedure could reduce the technique sensitivity, hazards of possible incompatibility of different composites (interface between cement and core material) and the time necessary to complete the core-and-post treatment procedure. Also the the bond strength of fiber posts to root canal dentin may be varied in different regions of the root canal , which may be due to the difficulty of curing light to reach the more apical parts of the root canal and Difficulty of moisture control and adhesive application .[9,10]

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CASE REPORT
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Oral rehabilitation of a patient with Kenny–Caffey syndrome using telescopic overdenture

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Abstract

Kenny–Caffey syndrome (KCS) is a rarely reported autosomal disorder characterized by skeletal, ocular, and oral manifestations. Oral features such as microdontia, hypodontia, malalignment of teeth, bone loss, and difficulty in mastication results in serious esthetic and functional handicap. The prosthetic rehabilitation of such patients is challenging, especially when implant placement is not a good choice due to poor Vitamin D levels. The existing literature is scarce in describing the treatment options. This case report describes the oral rehabilitation of a patient affected with KCS using telescopic overdenture.

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Full Text

Introduction

Kenny–Caffey syndrome (KCS) is a rare autosomal disease characterized by short stature, cortical thickening and medullary stenosis of tubular bones, delayed closure of anterior fontanelle, ocular abnormalities such as microphthalmia and papilledema, hypoparathyroidism, and associated hypocalcemia.[1],[2],[3],[4] It can be classified into KCS type 1 and KCS type 2. KCS type 1 is an autosomal recessive form caused by mutations of the tubulin-specific chaperone E gene, and KCS type 2 is an autosomal dominant form caused by mutations of the FAM111A (family with sequence similarity 111 member A) gene.[1] The patient discussed in this

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Integrating dentistry into palliative medicine - Novel insights and opportunities

SADJ April 2021, Vol. 76 No. 3 p153 - p159

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ABSTRACT

Palliative care is a global human right, to be provided in a systematic way. The dentist can help the patient right from the initial diagnosis of the condition up to the relief of pain in the terminal stages of the diseases. This inquiry into the oral physician's role on elderly care and special needs would be of benefit to researchers of Palliative Dentistry; particularly in multidisciplinary contexts. This text proposes to discussintegrated oral care, oral health care delivery system, and a flow of educational actions, resources, research, conceptual framework, guidelines and dissemination of newer trends in oral palliative care.

Keywords

Palliative dentistry, geriatric dentistry, mobile dentistry, portable dentistry, palliative oral care.

BACKGROUND

Oral care, in majority of terminally ill patients is often neglected. This is because patients are not always able to receive oral care in their preferred place of care, are often shuttled between sites of care and experience unnecessary hospital admissions as they near the end of life. The patient's emotional, social and economic wellbeing add to these woes. Literature has shown that oral palliative care can have a positive impact on the quality of life of patients; however, the provision of oral palliative care is often still less than optimal.[1-4] There is therefore a need to integrate dentistry to palliative care needs and to disseminate the concept of palliative care amongst oral healthcare professionals. Palliative care dentistry has been defined by Wiseman as the study and management of patients with active, progressive, far-advanced disease in whom the oral cavity has been compromised either by the disease directly or by its treatment; the focus of care is quality of life.[5]

Palliative care is a global human right, to be provided 'throughout the illness course'.[6] According to Obadan-Udoh et al. "providing care that is patient-centered is an indication of quality and that should be our ultimate goal. Dental profession has huge challenges in meeting these expectations."[7] The purpose of this article is to offer practical tips and techniques for establishing successful oral palliative care.

Palliative care in South Africa

South Africa has a population of 55 million people of which 62% constitutes the urban population. It is designated an upper middle-income country by the World Bank with $12,730 GNI per capita in 2014. Life expectancy in 2014 was 57 years.[8] In 2011, the World Bank report on human resources in health identified that there were 4.7 nurses, 0.8 doctors and 0.085 dentists per 1000 people.[8,9] The estimated need for palliative care using only mortality data is that 0.52% of the population requires palliative care in any year. There are currently eight hospital palliative care services (two dedicated children's palliative care services) and 150 hospices providing palliative care, about 40 of them also provide care for children. Funding for palliative care is a limiting factor and a number of hospices closed in the period 2011-2016 for wants of funds.[8]

The South African National Department of Health (NDoH) requires the support of all government and non-government organizations (NGOs) in their vision of a healthy life for all people of SA. The care provided by hospices takes place mainly within the patient's home. In response to this need Hospice Palliative Care Association (HPCA) adopted the Integrated Community- Based Home Care Model,[10] which was developed by the South Coast Hospice in KwaZulu-Natal (KZN). The NDoH recognized this as a best practice model and commissioned HPCA to replicate the model in urban, peri-urban, and rural communities; to determine the cost of the model and to develop a training curriculum for home-based carers.[8]

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Silk Fibre Reinforced GIC – A Promising Alternative to Conventional GIC

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: Glass Ionomer cements are excellent anti cariogenic restorative materials in the non-stress bearing areas of the teeth. Poor mechanical properties like compressive strength and wear resistance limits its use clinically. In order to overcome these limitations various chemical resin fillers and natural fibres like silk were added to GIC. Natural silk fibres exhibit excellent mechanical properties apart from being highly biocompatible. Hence this in-vitro study was undertaken to analyze the shear bond strength of silk fibre reinforced GIC and compared to conventional GIC.

Materials and Method: A total of 60 permanent decoronated premolar teeth were used in this study. The teeth were randomly distributed into 20 samples each of 3 groups. Silk particles extracted from Bombyx mori silkworm cocoons was incorporated into conventional type 2 GIC (GC, CORP, JAPAN) at 3% by weight. Thus, obtained silk reinforced GIC was tested for shear bond strength on dentin surface of the decoronated premolar

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OTHER ARTICLES

Paramassetric Subcutaneous Dirofilariasis: A Rare Entity

Ajay T. Das[1] · Sooraj Soman[2] · Tom Thomas[2] · Sachin A. Aslam[2] · Leslie Sara Mathew Kalathil[2] · Depesh Vijayakumar[1]

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Abstract Dirofilariasis is an uncommon zoonotic parasitic infection affecting humans due to the bite of a mosquito vector. It is an endemic caused by Dirofilaria which is characterized in humans as nodules in lungs, subcutaneous tissue, peritoneal cavity, eyes. We present a case of Dirofilariasis with subcutaneous presentation in paramassetric region.

Keywords Dirofilariasis · Facial swelling · Paramasseteric region · Maxillofacial surgery

Introduction

Dirofilariasis is a zoonotic infection caused by a helminthic nematode belonging to the genus Dirofilarae. They usually occur as habitual parasites of canines. Although rare, humans have been reported to serve as end hosts for these parasites. The parasitic infection is usually transmitted by an intermediate host mosquito vector belonging to the genre *Ades, Anopheles or Culex* [1].

There are about 40 variants of Dirofilarial species identified, among which six are known to cause infection in humans. *D. repens, D. ursi, D. tenuis* and *D. striata* are found in the subcutaneous tissue where as *D. immitis* and *D. spectrum* are found in the pulmonary and vascular spaces [2]. The species causing the subcutaneous infection tends to show geographical variation, where the *D. repens* is reported to be found commonly in Asia.

In India majority of the cases have been reported from the southern state Kerala [3, 4]. We report a case of an elderly female with subcutaneous Dirofilariasis in the paramassetric region.

Case Report

A 50 year old female hailing from Malappuram district, Kerala presented with a painless nodular swelling on the left cheek in the inferior paramassetric region of one month duration which was insidious in onset and gradually increasing. Clinical examination revealed a firm, oval swelling in the left cheek measuring 2 cm × 1 cm, which was freely mobile. The skin and the mucosa overlying the swelling were normal in appearance. The systemic examination was non remarkable and the patient was unable to recall any injury or insect bite to the face. No regional lymph node enlargement was detected (Fig. 1a).

An ultra-sonographic examination revealed an oval cystic lesion in the left side of the face superficial to masseter muscle with curvilinear echogenic areas suggestive of live worms (Fig. 1b).

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Case Report

Double Flap Palatoplasty for Management of Post-traumatic Oronasal Fistula

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ABSTRACT

Oronasal fistula mainly represents functional problem which can lead to nasal regurgitation of food and fluid. It can also cause significant impairment of speech resulting in mental trauma to the patient. Palatal fistulas are formed mostly by various pathologies, secondary to radiotherapy,removal of cyst and tumors, trauma, minor surgeries including extraction of posterior tooth etc. Many fistula closure techniques have been proposed but with high reccurrence rates. So here we are sharing our institutional experience of succesfully treating residual post-traumatic Oronasal fistula by double flap palatoplasty technique.

Key-words: Palatal fistula, oronasal fistula, oroantral comunication,palatal flap,Double Flap Palatoplasty

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INTRODUCTION

Palatal fistulas can usually involve nasal cavity or maxillary antrum or combination of both. They are formed as a result of various etiologies such as cleft palate surgeries, post trauma, surgical removal of maxillary pathologies, sequelae of radiotherapy and other minor surgeries including maxillary posterior tooth extraction (1). Palatal fistulas can cause significant morbidity to the patients by way of nasal regurgitation of fluids and food, speech impairment, halitosis and recurrent respiratory infection. All these can lead to emotional and psychological troubles in speaking and eating (1,3). Surgical closure of palatal fistula is challenging and technique sensitive with high failure and recurrence rates of about 25%(4,5,6). Several techniques have been employed extending from local flaps to free tissue transfer to fulfil the closure. Palatal flap, nasolabial flap, buccal fat pad, facial artery myomucosal flap and tongue flap are the most common locoregional flaps that can be used for the closure (6). Palatal flap itself shows wide diversity in various literatures (10,11,12). Here we are reporting a case of delayed repair of post-traumatic Oronasal fistula closure in an elderly man with double flap palatoplasty technique. Our palatoplasty technique was influenced from the original Bardachs two-flap palatoplasty (13) widely practiced in the cleft palate repair.

CASE HISTORY

A 56-Year-old gentleman was referred to our department complaining of oronasal communication for the past one month. He gives alleged history of Road Traffic Accident (RTA) 6 weeks back and underwent primary care and palatal wound suturing from elsewhere. Patient had comorbidities like uncontrolled Diabetes mellitus and hypertension. Clinical examination of the hard palate revealed a 3cm x1cm defect over left hard palate close to midline without soft palate extension, obliterating and exposing the ipsilateral floor of the nasal cavity (Figure-1). The defect was associated with communication between the nasal and the oral cavity with no active pus fluid discharge. CT scan confirmed the isolated palatal defect with oronasal communication not involving any other structures of the face.

On the basis of the clinical and radiological findings the patient was provisionally planned for fistula closure surgery. After evaluation of the large residual midline palatal defect, the proposed double flap palatoplasty (Figure-2) inspired from Bardach's

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OTHER ARTICLES

Primary Reconstruction in Segmental Resection of Mandible—An Outcome Analysis of Different Reconstructive Techniques

K. P. Manoj Kumar[1] · Sujatha Varma[1] · A. P. Vipindas[1] · T. Das Ajay[1] · Aswathi Vinod[1] · Aswin Mullath[1]

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Abstract Functional and cosmetic defects in the maxillofacial region may result from trauma, inflammatory disease, benign or malignant tumors. There are several well established reconstructive options for restoring mandibular continuity and function. Traditionally, surgeons have used their past experience to determine the best way to perform the osteotomy, graft harvesting, and graft shaping procedures for mandibular reconstruction. Focus has now shifted to optimize functional and aesthetic outcomes in mandible reconstruction. Refinements in surgical techniques continue to improve patient's quality of life. The purpose of this study was to evaluate the outcome of a range of reconstructive techniques in 20 patients who underwent segmental resection of mandible during the period 2004–2017.

Keywords Mandibular reconstruction · Odontogenic cyst and tumor · 3D planning

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Introduction

Mandibular continuity is essential for oral function and aesthesis. Aggressive treatment of tumors of dentofacial region often creates complex mandibular defects. Aesthetic appearance of the face, speech, oral competence, deglutition and mastication are often compromised which may have an impact on the patient's quality of life [1]. Reconstruction of segmental mandibular defects represents a significant challenge for the maxillofacial surgeon. Though the reconstruction of mandible has evolved significantly over the last 40 years with a wide range of surgical techniques, the choice of the most suitable method remains an important issue. Early attempts in mandibular reconstruction using non-vascularized, autogenous bone grafts, reconstruction plates were often disfiguring and encountered with complications [2]. Pedicled osteomyocutaneous flaps like the pectoralis major with rib, sternocleidomastoid with clavicle and trapezius with scapula, led to improved outcomes by bringing vascularized bone to restore the mandibular contour [2, 3]. The introduction of micro vascular surgery and its subsequent application in the transposition of bone grafts has brought about a revolution in mandibular reconstructive surgery [3–7]. In developing countries and probably in some parts of the world, this implies high costs and is therefore not affordable.

Alloplastic materials like wire mesh provide good aesthetic acceptance, but the failure rates were as high as 65% [2]. Since the late 1980s, the technique of computer aided design (CAD)/computer aided manufacture (CAM) has been extensively applied in the field of medicine which significantly facilitates orthopedic surgery, plastic surgery and oral and maxillofacial surgery. Rapid prototyping (RP) technology has the ability to fabricate complex-shaped

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Effect of Incorporation of Nanoclay on the Properties of Heat Cure Denture Base Material: An *In vitro* Study

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Abstract

Purpose: The aim of the study was to evaluate the effect of incorporation of organically modified nanoclay in 1%, 3%, and 5% by weight on the flexural strength, surface hardness, and linear polymerization shrinkage of heat cure denture base material. **Materials and Methods:** One hundred and twenty specimens of heat-polymerized acrylic resin were fabricated. The specimens were divided into four groups (n = 10) coded I to IV. Group I was the control group (unmodified acrylic resin specimens). The specimens of the remaining three groups were reinforced with nanoclay (organically modified montmorillonite) nanoparticles to achieve loadings of 1%, 3%, and 5% by weight. The resulting nanocomposites were subjected to mechanical testing and were characterized using X-ray diffraction, scanning electron microscope, and transmission electron microscope. **Results:** The statistical analysis showed that there was no significant increase in flexural strength within and between the groups. The most significant increase in surface hardness was observed between Group I (control) and Group II (1% nanoclay). Linear polymerization shrinkage of the specimens showed a significant decrease in the control and all the experimental groups. **Conclusion:** Addition of 1 wt% nanoclay to polymethyl methacrylate heat cure denture base material could enhance the surface hardness and reduce the linear polymerization shrinkage of the resin. However, there was no significant increase in flexural strength of the resulting nanocomposite.

Keywords: *Linear polymerization shrinkage, nanoclay, nanocomposite, polymethyl methacrylate, surface hardness*

Introduction

Over the centuries, a variety of materials have been used for denture construction. Polymethyl methacrylate (PMMA), since its introduction in 1930, has dominated the denture base arena for over 85 years. To date, up to 95% of dental prosthesis are composed of PMMA which is due to several reasons such as esthetics, ease of processing, stability in the oral environment, biocompatibility, and easy for patients to maintain oral hygiene. However, few important disadvantages are poor strength properties, low abrasion resistance, and polymerization shrinkage.

Polymer nanotechnology represents a new field of nanoscience. Polymer nanocomposite attracted great attention, especially because of their unexpected hybrid properties that are synergistically derived from the two components. Recently, much attention has been directed toward the incorporation of inorganic nanoparticles into PMMA to improve its properties. Nanofillers such as clay, silver, zirconium oxide, and calcium carbonate have been incorporated into PMMA in order to bypass the shortcomings of PMMA.[1]

Organically modified montmorillonite (OMMT) is one of the nanomaterials incorporated into polymer because of its excellent biocompatibility and esthetics. The nanosized clay has been used to derive nanocomposites with high hardness, tensile, fatigue, and impact strength. However, there are insufficient data evaluating the flexural strength and polymerization shrinkage of the resulting nanocomposite. This study was designed to evaluate the effect of incorporation of organically modified nanoclay in 1%, 3%, and 5% by weight on the flexural strength, surface hardness, and linear polymerization shrinkage of heat cure denture base material. The null hypothesis was that there would be no effect on incorporation of the nanofiller on the properties of heat cure denture base material.

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Marginal Fit of Metal Copings Fabricated from Digital and Conventional Impression Methods: an *In Vitro* Study

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Abstract

The impression method plays a major role in success and longevity of restorations. Accuracy of digital and conventional impressions can be evaluated by assessing the marginal fit of the prosthesis.

The current study compared the vertical marginal fit of metal copings fabricated by digital and conventional impression methods. DMLS copings made by digital and conventional impression methods were investigated. Twenty-three samples were prepared for each group from a single master die. The marginal discrepancy was studied by measuring gap between the coping margin and master metal die finish line using measuring microscope at four locations: mesial, distal, buccal, palatal. Measurements were made to determine the vertical component of marginal gap at the four locations using 46 copings fabricated from digital and conventional impressions.

Measurements were obtained from these 46 samples by observing 184 images (23 copings per group). DMLS metal copings made by digital impression method showed lesser marginal gap compared with that fabricated by conventional method in all four points measured. There were statistically significant differences between the two groups at mesial, buccal and lingual site. At the distal site though the marginal discrepancy was low (112.4±19.1 µm) it was not significant compared to the conventional impression method (211.6±28.9 µm).

Within the limitations of the *in vitro* study the digital impression technique was found to be more accurate than conventional impression. Further studies in clinical settings could substantiate the current observation.

Experimental article (J Int Dent Med Res 2020; 13(1): 149-154)

Keywords: Marginal discrepancy; digital impression; measuring microscope; DMLS copings; Computer-Aided Design.

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Introduction

The accuracy of dental impressions is crucial for the long-term success of a restoration. Marginal adaptation of the crown is essential for maintaining gingival health and protecting tooth from physical, chemical, thermal and bacterial insult. Poor marginal adaptation in fixed prostheses leads to cement dissolutions, increased plaque retention and subsequent changes in the sub gingival microbial flora leading to periodontal disease, and secondary caries.[1] The accuracy of the marginal adaptation is measured by marginal gap and is affected by various factors such as the tooth preparation, final impression technique, properties of impression materials, master cast production, fabrication methods and materials used for restoration, and the material and method used for cementation.[2,3] Most investigators used the marginal gap criteria established by McLean and von Fraunhofer,[4] who concluded that a maximum of 120 µm is acceptable. Values between 50 and 200 µm are reported with the absence of an objectively accepted threshold.[5]

The impression technique plays an important role in marginal fit of crowns. Conventional impression materials and techniques were used successfully to fabricate fixed restorations. [6] However, the conventional impression procedures have drawbacks, such as patient discomfort, the need for storage of the materials and trays, mixing of the impression materials and disinfection.[7] Voids and bubbles in

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ORIGINAL ARTICLE

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Single-insertion technique for anesthetizing the inferior alveolar nerve, lingual nerve, and long buccal nerve for extraction of mandibular first and second molars: a prospective study

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Abstract (J Korean Assoc Oral Maxillofac Surg 2020;46:403-408)

Objectives: Appropriate and accurate local anesthetic (LA) techniques are indispensable in the field of oral and maxillofacial surgery to obtain a satisfactory outcome for both the operating surgeon and the patient. When used alone, the inferior alveolar nerve block (IANB) technique requires supplemental injections like long buccal nerve block for extraction of mandibular molars leading to multiple traumatic experiences for the patient. The aim of this study was to anesthetize the inferior alveolar, lingual, and long buccal nerves with single-needle penetration requiring a minimal skillset such as administering a conventional IANB through introduction of the Benny Joseph technique for extraction of mandibular molars.

Materials and Methods: This was a prospective study conducted in the Department of Oral and Maxillofacial Surgery, Kunhitharuvai Memorial Charitable Trust (KMCT) Dental College, Calicut, India. The duration of the study was 6 months, from June to November 2017, with a maximum sample size of 616 cases. The LA solution was 2% lignocaine with 1:100,000 adrenaline. The patients were selected from a population in the range of 20 to 40 years of age who reported to the outpatient department for routine dental extraction of normally positioned mandibular right or left first or second molars.

Results: Of the 616 patients, 42 patients (6.8%) required re-anesthetization, a success rate of 93.2%. There were no complications such as hematoma formation, trismus, positive aspiration, and nerve injuries. None of the cases required re-anesthetization in the perioperative period.

Conclusion: The Benny Joseph technique can be employed and is effective compared with conventional IANB techniques by reducing trauma to the patient and also requires less technique sensitivity.

Key words: Benny Joseph technique, Lingual nerve block, Inferior alveolar nerve block, Long buccal nerve block

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I. Introduction

Appropriate and accurate local anesthetic (LA) techniques are indispensable in oral and maxillofacial surgery to obtain a satisfactory outcome for both the operating surgeon and the patient. For these purposes, various surgical techniques have been utilized for the maxilla and mandible. To obtain anesthesia in the mandible, various techniques like the inferior alveolar nerve block (IANB), Spix, Vazirani-Akinosi, and Gow-Gates techniques are available[1]. The Spix IANB is the most commonly used technique, but there have been reports of its failure to achieve adequate anesthesia[2,3]. When used alone, the IANB technique requires supplemental injections like long buccal nerve block for extraction of mandibular molars, leading to multiple traumatic experiences for the patient. Conventional mandibular nerve block techniques like Vazirani-Akinosi and Gow-Gates require a larger volume of LA solution and a well-experienced surgeon. The technical acuity required and the lack of bony stops for these techniques discourage their use by normal dental practitioners even though they are single-penetration techniques[4,5].

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Original Article

Cheiloscopy in gender determination: A study on 2112 individuals

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Abstract

Background: Lip prints are seen to remain the same for an individual throughout his/her life. Cheiloscopy can be used as an effective tool in the identification of the persons from pieces of evidence that may be left behind from lip prints. **Aim and Objectives:** The aim of the current research was to evaluate the predominant lip groove pattern among Calicut population, Kerala. **Materials and Methods:** The study involved 2112 individuals (1056 males and 1056 females) in the Department of Oral Medicine and Radiology, KMCT Dental College, Calicut, Kerala. Lipstick was used to record the lip groove patterns and the patterns were visualized by magnifying lens after the institutional ethical clearance and informed consent from the individual. Statistical analysis was done using SPSS software 22.0. **Results:** Among the study population, Type 1', Type 1, Type 4, and Type 5 were found to be common lip groove patterns. Males showed predominance on Type 1' and Type 1 lip groove patterns, whereas females showed predominance on Type 4 and Type 5 lip groove patterns. The results were similar when analyzed on upper and lower lips separately on males and females. **Conclusion:** Cheiloscopy is a reliable tool in personal identification and gender determination of an individual. The geographical prevalence of lip groove patterns was reported in the current research and is added to the database of the anthropological data. Studies in different geographical regions will add lip groove patterns on the database in the future and henceforth the potential of cheiloscopy could be further utilized.

Keywords: Cheiloscopy, gender determination, lip print, personal identification

Introduction

The identification of human beings is a process based on certain scientific principles.[1] There are many methods used in personal identification rather than traditional methods for anthropometry, age estimation, gender determination, differentiation by blood groups, fingerprints, and DNA analysis.[2] The branch of dentistry that deals with the identification of individuals based on evidence in the court of law is termed forensic dentistry. It includes rugoscopy, cheiloscopy, bite mark analysis, tooth prints, radiographs, photographic study, and molecular methods.[3]

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Identification in civil and criminal cases requires scientific evidence and support. Cheiloscopy is the technique in which individuals are identified based on the lip groove patterns.[4] It is possible to identify the lip groove patterns as early as the sixth week of intrauterine life. Lip groove pattern once formed is permanent and does not change permanently following climatic variations, pathology, minor trauma, inflammation, and infections.[5,6] The salivary and sebaceous secretions from glands located at vermillion border aid in the formation of a latent lip groove pattern.[7]

Lip groove patterns aiding in criminal investigations have been well documented.[8] It is an adjunctive mode of identification accepted in the court of law.[9]

Cheiloscopy is a forensic investigative technique that deals with the identification of individuals based on lip groove patterns.[10]

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Evaluation for Correlation of Cheiloscopy and Dermatoglyphics in Gender Determination

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Abstract

Background: Identification of the suspect, living or dead with the help of physical charachteristics play a vital role in forensic science. Improved methods of gender determination and personal identification are important in solving criminal cases. Cheiloscopy and dactyloscopy have been proved to be of use in personal identification. The present study aims to evaluate correlation of Cheiloscopy and Dermatoglyphics in gender determination

Materials and Method: The study was carried out from January 2017 to January 2019 on 2112 individuals (1056 males and 1056 females) aged from 15 to 60 years in KMCT Dental College, Calicut. For lip print analysis Suzuki and Tsuchihashi classification was followed. For finger print analysis impression of all the fingers were taken. For analysis, the images were cropped and abode photoshop software was used

Results: Type I and I' lip groove patterns were found to be predominant among males Type 4 and Type 5 lip groove patterns were found to be predominant among females. Loop finger print patterns were found to be predominant among males Whorl finger print patterns were found to be predominant among females. Positive correlation (+0.80) was found between loop finger print pattern and Type I' lip print pattern in males which is statistically significant (p=0.003).Positive correlation (+0.75) was found between whorl finger print pattern and Type IV lip groove pattern in females which is statistically significant (p=0.005)

Conclusion: There was definite correlation of Cheiloscopy and Dermatoglyphics in gender determination

Keywords: *Cheiloscopy, Dermatoglyphics, Gender determination.*

Introduction

Forensic science plays a vital role in the identification of the suspected victim or victimizer of a crime, with the help of physical characteristics. Physical evidence is important to solve criminal cases. Improved methods of gender determination and personal identification are gaining importance in recent years.[1,2]

Lip patterns and finger print patterns remain the same throughout life and are uninfluenced by environmental changes and diseases. Cheiloscopy is a forensic investigation technique that deals with identification of humans based on lip traces. A lip print at a crime scene would throw light on many areas of the investigation like the number of people involved, the gender and the behavior pattern of the crime. Edmond locard was the first scientist to recommend the use of lip prints in personal identification.[1]

Dermatoglyphics is the term specified to the scientific study of fingerprints. The term "fingerprint" predominantly means an impression of the epidermal ridges of the fleshy distal portion of a finger. It was first given by Harold Cummins in the year 1926.[3]

Cheiloscopy and dactyloscopy are used in personal identification.[4,5] The present study aims to evaluate

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ABSTRACT

Background: The stainless steel crowns (SSCs) placed using the Hall technique disrupts the occlusion, but stabilization appears to occur within a short period post placement. Negligible understanding and comprehension is presently handy about the changes in overbite and bite force after placement of stainless steel crown using the hall technique in children.

AIM/ HYPOTHESIS: To evaluate the digital occlusal analysis of vertical dimension and maximum intercuspal position to understand the changes in overbite and bite force after placement of stainless steel crown using the hall technique.

Design: Twenty children who needed treatment for the carious tooth with decay extending to enamel and dentin and multisurface caries were managed using the Hall technique. Following that overbite measurement for vertical dimension was carried out clinically using digital vernier calipers. Later the T-Scan III was used for measuring occlusal load at the maximum intercuspal position. The bite force and occlusal premature contacts were digitally analyzed and recorded preoperatively, immediately after placement of SSC and after 1 month follow-up period.

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Mononeuritis Multiplex: A Rare Case Report of the Extra-glandular Manifestation of Sjogren syndrome

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Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

The neurologic symptoms of Sjogren Syndrome are often ignored. Mononeuritis multiplex is a peripheral motor neuropathy that is not rare with primary Sjogren Syndrome, but is less reported in literature. Early diagnosis of neurological symptoms can help prevent the progression of disease and thereby improve the patient's quality of life. Here, we present a case report where the patient was under neurological consultation for mononeuritis multiplex with no reduction in symptoms for the past one year. She visited us with a complaint of recurrent parotid abscess, after clinical and laboratory examination, diagnosis of Sjogren syndrome was made. Identification of the relationship between Sjogren Syndrome and mononeuritis multiplex was the key to delivering proper treatment to this patient

Keywords: Mononeuritis multiplex, Sogren Syndrome, Parotid abcess,

Introduction

Sjogren's syndrome (SS) is an autoimmune inflammatory disorder characterized by lymphocytic infiltration of exocrine glands, mainly the lacrimal and salivary glands leading to a chronic sicca syndrome. Extra glandular organ systems may frequently be involved, including both the central and peripheral nervous systems. However there is limited mention in the literature, it is commonly acknowledged that about 20% of pSS (primary Sjogren's Syndrome) patients will present neurological manifestations.[1] Treating the neurological condition alone

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ORIGINAL RESEARCH

Assessment of Palatal Rugae Patterns among Different Age Groups: An Institution-based Study

[1]Aravind P Mohan, [2]Valappil T Beena, [3]Sabu Paul, [4]Manju M Stephen, [5]Thomas K Johnson, [6]Rohit Mohan

ABSTRACT

Introduction: Due to the distinctive anatomy of the human dentition, the teeth and palatal rugae of the oral cavity have a vital role in forensic dentistry. In certain situations, when teeth are missing due to trauma, palatal rugae have been used to help in recognition and matching of the individual. The palatine rugae pattern is unique for each human being and so can be used in identification. Age, sex, and even ethnic identity can be determined using rugoscopy.

Aim: To discover whether there are any specific rugal patterns pertaining to any age group, gender, and ethnicity, and whether these can be used to assess these parameters during forensic examination.

Materials and methods: Totally, 100 males and 100 females of Kerala origin and 12 non-Keralite males and females each were assessed in this study. Data from the right side and left side were collected separately.

Results: The results presented here provide data on the direction, shape, length, unification, and number of rugae. Statistical Package for the Social Sciences software was used to analyze the results statistically.

Conclusion: On analysis, significant differences existed in the shape, length, number, and direction among the populations. However, unification of rugae was not found to be significant statistically.

Keywords: Age, Dental identification, Ethnicity, Forensic odontology, Gender, Palatal rugae.

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Source of support: Nil

Conflict of interest: None

INTRODUCTION

Forensic science refers "to a group of scientific disciplines which are applied of their particular scientific area of expertise to law enforcement, criminal, civil, legal and judicial matters."

Dr. Edmond Locard, the father of modern forensics, formulated the fundamental principle of forensic science, "Every contact leaves a trace."[1] Forensic odontology deals with teeth and forensic stomatology deals with oral structures other than teeth.

Forensic odontology has three key applications:

1. Diagnosis, therapeutic assessments, and evaluation of injuries to dentition, jaws, and soft tissues of the oral cavity;
2. The person's identification, particularly, in criminal inquiries and/or mass catastrophes; and
3. Identification, analysis, and evaluation of bite marks that are seen in child abuse, sexual assaults, and in personal defense.[2]

Identification comprises a group of procedures to help individualize a person or a substance. However, identity cannot always be conclusively established by one particular method. Forensic dentistry or forensic odonto-stomatology is that "branch of forensic medicine which in the interest of justice deals with the proper handling and examination of evidence obtained from dental and oral structures and with the proper evaluation and presentation of those findings."

Forensic dentistry has become an integral part of forensic medicine over the past 100 years. The rationale behind forensic odontology is that "no two mouths are alike."[1] Assessment of rugae patterns come under the stomatology part of forensic odonto-stomatology. Palatal rugae refer to "the ridges on the anterior part of the palatal mucosa, each side of the median palatal raphe and behind the incisive papilla."

The rugae patterns are distinctive and individualistic, which can be used in identity fixation. The rugae have been associated with fingerprints and likewise display total individuality. Rugae are confined from injuries by their internal location in the oral cavity, and they are shielded from high temperature by the tongue and the buccal fat pads.

Even between twins, the patterns are analogous, but not identical.[2] Rugae patterns vary among different populations.[3,4] Variations can also be observed with increase in age.[3] Significant differences in rugal patterns can be seen between males and females.[5,6] Even though a number of

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Case report on low dose of Cilnidipine: A fourth-generation calcium channel blocker-induced gingival overgrowth

Sameera Gopinath, Vadakkedath Venugopal Harishkumar, Vediyera Chandroth Santhosh, Sreekanth Puthalath

Department of Periodontics, KMCT Dental College, Kozhikode, Kerala, India

Abstract:

Drug-induced gingival overgrowth is a frequently observed adverse effect of antihypertensive drug calcium channel blockers (CCBs). Gingival enlargements are more common with the dihydropyridine class of CCBs. The fourth-generation dihydropyridine CCB Cilnidipine was introduced in 1995 and is used as an antihypertensive agent for patients in the Indian subcontinent. This is the first report in literature to document an isolated case of generalized gingival overgrowth induced by the long-term use of low dose of cilnidipine in an elderly female patient who is under antihypertensive therapy. Gingival overgrowth is an adverse drug reaction of new-generation CCB Cilnidipine when administered even as low-dose antihypertensive therapy agent. Physicians and dentists should identify such late changes in susceptible individuals.

Key words:

Adverse drug reaction, calcium channel blocker, cilnidipine, dihydropyridine, gingival overgrowth

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INTRODUCTION

Drug-induced gingival overgrowth (DIGO) is an adverse effect of anticonvulsants, immunosuppressants, and calcium channel blockers (CCBs).[1,2] CCBs are a class of widely used antihypertensive agents. DIGO is more common with the dihydropyridine class of CCB. The first- and second-generation dihydropyridines (nifedipine, verapamil, diltiazem, and amlodipine) are associated with DIGO.[3,4] The prevalence of nifedipine-induced gingival overgrowth ranges from 20% to 83%, while for other CCBs such as diltiazem, amlodipine, and verapamil, the prevalence is around 74%, 3.3%, and 21%, respectively.[3,4]

The fourth-generation dihydropyridine CCBs are now in common use as antihypertensive agents. Cilnidipine is a promising fourth-generation CCB that came into market in 1995 and is widely used as an antihypertensive agent in India. So far, only one case of fourth-generation dihydropyridine-induced gingival overgrowth has been reported in literature.[4] It was a report of a Japanese patient who had a combination therapy of Cyclosporin A and Cilnidipine. Interestingly, DIGO is a known adverse effect of the immunosuppressant Cyclosporin A.[1] Our case report could be the first report in literature to document the gingival overgrowth as an adverse effect of the long-term use of low-dose Cilnidipine alone.

CASE REPORT

A 55-year-old female patient, taking once-daily dosage of Cilnidipine – 5 mg, was referred by her physician to the Periodontics division of our Dental College, for improving her oral hygiene [Figure 1a-c]. She was under antihypertensive treatment for 6 years. She gave a history of slowly progressing enlargements on her gums for 1 year. She also reported discomfort while brushing the teeth due to bleeding from gums in the last 6 months after which the size of the swelling enlarged rapidly.

Intraorally, the gingiva was enlarged in relation to maxillary and mandibular teeth, and it was firm, diffuse, and lobulated and characteristically appears to project from beneath the gingival

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J. Multi Dent Res. 2019: 5(1); 20-25

Assessment of Relationship Between Insulin-Like Growth Factor- 1 Levels And Mp3 Radiographs in Determining Skeletal Maturity

Sunil Muddaiah[1], Sajai BharathV.U.[2], Goutham B.[3], Suhailuddin[4], Vikram Susil[5], Namitha Nanu[6]

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ABSTRACT

Context:

The clinical importance of evaluating skeletal maturation has long been recognized by the health professions. Skeletal maturation is an integral part of individual patterns of growth and development.

With many orthodontic patients, pubertal growth needs to be factored into the diagnostic equation.

Accurate prediction of the timing of the pubertal growth spurt and the amount of remaining growth affects the treatment decisions in orthodontics, orthognathic surgery and dental implantology.

IGF-1 mirrors growth hormone levels. Thus, IGF-I might be a good indicator of residual mandibular growth.

Aims:

1. To establish a relationship between IGF-1 levels evaluated from blood samples and MP3 stages of skeletal maturity.
2. To investigate the relationship between the IGF-1 and the skeletal age.

Methods and Material:

The sample size consisted of 40 subjects between the age group of 5 – 25 including both the sexes. The periapical radiographs for MP3 and blood sample for IGF-1 was collected. Sample was sent to the lab to determine IGF-1 values.

ORIGINAL RESEARCH

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QR CODE

Knowledge and Experience about Medical Emergencies among Dental Interns in Bangalore City

ARUN PAUL[*1], GULAM ANWAR NAVIWALA[2], DEEPA PRAKASH[1]

ABSTRACT

INTRODUCTION: Medical emergencies are very frequent in dental setting. It is imperative to judiciously manage these situation in clinical setting. Having correct knowledge about the medical emergencies and the management methods are crucial successful clinical practice.
AIM: To assess the knowledge and experience about medical Emergencies among Dental interns in Bangalore City.
MATERIALS AND METHODS: A cross sectional study was conducted among 350 dental interns from sixteen dental colleges in Bangalore City using a structured questionnaire consisting of 14 item questions.
RESULTS: Syncope being the most commonly encountered medical emergency (79.14%), followed by hypoglycaemia(17.14%). About 49.71% respondents considered medical emergency training was moderate. 98% of them think that medical emergencies training is important. Knowledge of the presence of drugs and equipments in the emergency drug kit and the confidence with regard to using them was not satisfactory.
CONCLUSION: Dental graduates had a superficial knowledge of management of medical emergencies and use of drugs and equipments.

KEYWORDS: Dental Interns, Medical Emergencies, Knowledge

INTRODUCTION

A medical emergency can be described as any situation in which the patient's life may be at risk due to a failure of an effective oxygenated circulation to the vital organs. The dentist has the responsibility to identify the medical emergencies and initiate the management procedures at the earliest.[1] An elaborate history of the patient enable the dentist to anticipate the potential adverse events that may precipitate during the treatment.[2]

Some drugs like anaesthetics, some procedures and the mere thought of dental treatment can cause stress and anxiety in the patients, these in turn can lead to a life threatening situation.[3] Effective and successful management of life-threatening situations includes adequate education of the dentist, presence of emergency drug kit, education of the chair side assistant and provision for referral to the nearby healthcare facility.[4]

A dental graduate is expected to identify the medical problems in a patient during history recording, and they should be confident enough to provide basic life support, including positioning, airway maintenance, and circulation. They should be familiar with resuscitation drugs and emergency equipment (both modified for dental practice).

It's the prime duty of dentist to manage an emergency situation in the dental office with utmost care and responsibility. Insufficient training and lack of sufficient knowledge can lead to tragic consequences and sometimes even fatal.[5]

Keeping in mind the risk associated with dental treatment, it becomes important for the dental interns to have a thorough knowledge about medical emergencies and to take appropriate steps for the prevention and management of such emergencies in the dental clinic. The aim of this study is to assess the knowledge and experiences about medical emergencies among dental interns of various dental colleges in Bangalore City.

MATERIALS AND METHODS

The present study is a descriptive, cross-sectional questionnaire survey. Permission to conduct the study was obtained from the Principals of the respective dental colleges where the study was conducted. The study proposal was submitted for approval and clearance was obtained from the ethical review board of Oxford Dental College, Hospital and Research Center – Bangalore.

All the dental interns from 16 dental colleges in

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Mpacted Anterior Teeth Localisation: Cognition over Radiation

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Type of Publication: Review Paper
Conflicts of Interest: Nil

Abstract

Impacted anterior teeth are an impediment to treatment planning in Dentistry. Therefore, proper localisation of the impacted tooth is imperative. CBCT is the gold standard of imaging such teeth, however, poor availability of such devices in rural areas and the economic costs involved often deter patients. Additionally, the high radiation from such devices cannot be ignored. As technology advances and we move towards a 'smart world', we need to retrospect on whether we are foregoing our cognitive skills at the expense of patient radiation. Previous studies have proven that plain film radiographs are highly sensitive and specific at anterior impacted teeth localisation. Here we review different localisation techniques that can enable us to identify correct tooth position using plain films.

Keywords: Localisation, Impacted, Maxillary anterior teeth, Conventional Radiography, CBCT

Introduction

Impacted tooth is the one that fails to erupt into dental arch within the expected developmental period. Localization is determination of the site or place of any process or lesion.

Impacted anterior teeth can be localised by three methods – visual inspection, palpation & radiography. Clinically, impaction of anterior teeth is determined by the lack of a bulge in the buccal sulcus at the age of 10 years, prolonged retention of a primary teeth, delayed eruption of the permanent teeth, asymmetry in the exfoliation of primary canines and eruption of the right and left permanent canines, loss of vitality and increased mobility of a permanent incisor.

But, radiographic examination is the best method for the determination of position of an impacted canine.

Accurate localization in three planes of space normally requires the use of more than one film. Precise localization is crucial for predicting the direction of subsequent orthodontic forces and planning the means of surgical access to the impacted teeth. Currently, there are accurate radiographic methods that can be used to localize an impacted teeth: horizontal tube shift, vertical tube shift, right angle technique, stereoscopy, panoramic radiography, cone beam computed tomography. Of these,

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ORIGINAL ARTICLE

Surgical Correction of TMJ Bilateral Dislocation with Eminectomy and Capsulorrhaphy as an Adjuvant: Case Reports

Suresh Vyloppilli[1] · Benny Joseph[2] · K. P. Manojkumar[2] · Shermil Sayd[3] · K. S. Krishnakumar[4]

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Abstract

Introduction Anterior excessive movement of the temporomandibular joint (TMJ) is a condition which reduces the quality of life of a person to great extent with the patient always living in the fear of inherent dislocation. Dislocation of the temporomandibular joint represents 3% of all reported joint dislocations.

Case report In this article, we discuss about two cases where the patients with chronic TMJ dislocation were treated with eminectomy and capsulorrhaphy. Both the patients were reviewed over a period of 1 year and did not show any recurrence of the condition with satisfactory controlled increase in mouth opening.

Conclusion The combination has proved to be useful for the better neuromuscular control and psychological aspect, i.e., the fear of dislocation. Future of the technique combination lies in further prospective studies.

Keywords TMJ dislocation · Chronic recurrent dislocation · Eminectomy · Capsulorrhaphy

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Introduction

Individuals having excessive anterior movement of the mandibular condyle, passing the articular eminence during maximal opening, causes them discomfort. The terms "subluxation" and "dislocation" were used to describe this phenomenon. In cases where repeated dislocations occur, the term "chronic," "chronic recurrent" or "habitual" could be used. [1, 2] A dislocation of the temporomandibular joint represents 3% of all reported joint dislocations [3].

Temporomandibular joint dislocation is defined as an excessive forward movement of the condyle beyond the articular eminence with complete separation of the articular surfaces and fixation in that position [4, 5]. It is commonly associated with poor development of articular fossa, laxity of temporomandibular ligaments or joint capsule, excessive activity of the lateral pterygoid and infrahyoid muscles due to drug usage or disease [4–6] and to a lesser extent trauma [3]. Precipitating factors are yawning, vomiting, laughing and dental and otolaryngological treatments [1]. Various therapeutic approaches designed to limit the forward excursion in the literature had been applied. This paper reports 2 cases of chronic recurrent dislocation treated using both restricting and relieving procedure, i.e., eminectomy with capsulorrhaphy simultaneously.

Case Report

Both the cases were female patients of age 23–25 years who had attended the emergency department, unable to close their mouth after yawning. Both the patients gave a

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Original Article

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Comparison of the Effect of PRP, PRF and Induced Bleeding in the Revascularization of Teeth with Necrotic Pulp and Open Apex: A Triple Blind Randomized Clinical Trial

Dentistry Section

1

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ABSTRACT

Introduction: Treatment of a tooth with necrotic pulp and open apex is a special challenge to the clinicians. Apexification with calcium hydroxide and MTA barrier technique fails to induce continued root maturation which makes the tooth susceptible to root fracture. Hence, an ideal outcome for such a tooth should be regeneration of pulp like tissue into the root canal capable of continuing normal root maturation.

Aim: This study aims to compare the effect of Platelet Rich Fibrin (PRF), Induced bleeding technique and Platelet Rich Plasma (PRP) in the revascularization of tooth with necrotic pulp and open apex. The main objectives of the study were to: (a) Radiographically evaluate the continuation of root development, increase in the dentin wall thickness and narrowing of canal space, apical closure and resolution of the periapical lesion; and to (b) To clinically evaluate the response to pulp sensibility testing and response to percussion and palpation tests.

Materials and Methods: Sixty patients (6 to 28 years) with necrotic immature permanent tooth were randomly categorised into three groups after the root canal disinfection procedure. PRF as scaffolding material (Group A: n=20), revascularization with conventional induced bleeding technique (Group B: n=20), and PRP as the biomaterial (Group C: n=20). The primary outcome variable was measured using Periapical Index (PAI) (for periapical healing), Chen and Chen index (for apical responses), Schei's ruler (for root lengthening and root thickening) and other clinical parameters. The Chi-square test was used to interpret the data among the three groups at the end of 12 months for the variables root lengthening and lateral wall thickness. ANOVA test was performed to compare the mean of the PAI scores of the three groups at preoperative stage and 12 months. If statistically significant, Bonferroni test was done to compare the outcome among the three groups. The significant level was set at $p<0.05$. Kappa agreement was used to see whether the clinical criteria of success (asymptomatic) were in agreement with radiographic criteria.

Results: At the end of 12 months, patients presented with no pain and no signs of reinfection or no radiographic enlargement of the pre-existing apical pathosis in all the three groups. PRP was better than PRF and induced bleeding technique with respect to periapical wound healing when used in the regenerative endodontic procedures. The groups were comparable on grounds of root lengthening and lateral wall thickening. Type 3 apical response was the most common apical response in all the three groups.

Conclusion: On analysing the pros and cons of the techniques performed, it is wise to establish induced bleeding technique as the standard endodontic procedure for revascularization of a non vital immature permanent tooth.

Keywords: Apical response, Pulp dentin complex, Root maturation, Schei's ruler, Triple antibiotic paste

INTRODUCTION

An archetypal outcome for a tooth with an immature root and necrotic pulp would be the regeneration of pulp tissue into the canal capable of bolstering the continuation of normal root development [1]. Three components contributing to the success of this procedure include, stem cells that are capable of hard tissue formation, signalling molecules for cellular stimulation, proliferation, and differentiation, and finally, a 3-dimensional physical scaffold that can fortify cell growth and differentiation [2]. The induced bleeding technique of revascularization is well documented in the literature [3-5].

PRP has been mentioned as a potentially ideal scaffold for regenerative endodontic treatment regimens because of its increased growth factor concentrations [1]. PRF is a second generation platelet concentrate which requires no biochemical handling of blood and is easy to procure [6]. The potential applications of PRF as a biologic scaffold to promote the regeneration of lost or injured dental pulp tissues and stimulate dentinogenesis was mentioned in a research study [7]. It has been mentioned that PRF is an ideal biomaterial for pulp dentin complex regeneration [8].

No study has compared the effect of PRP, PRF and induced bleeding in the revascularization of a tooth with necrotic pulp and open apex. The purpose of this study was to add knowledge to the existing literature in the field of regenerative endodontics by comparison of the effect of PRP, PRF and induced bleeding in the revascularization of a tooth with necrotic pulp and open apex. The main objectives of the study were to: (a) radiographically evaluate the continuation of root development, increase in the dentin wall thickness and narrowing of canal space, apical closure and resolution of the periapical lesion; and to (b) to clinically evaluate the response to pulp sensibility testing, percussion and palpation tests.

MATERIALS AND METHODS

A triple blind randomized controlled trial was conducted at Government Dental College, Calicut, Kerala over a period of one

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Dentistry Section

Immuno-Histochemical and Quantitative Study of Melanocytes and Melanin Granules in Oral Epithelial Dysplasia

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ABSTRACT

Introduction: Oral Epithelial dysplasia (OED) is a potentially malignant disorder that is characterized by the presence of architectural and cytological changes. One of the prime factors responsible for the development of these lesions is the usage of tobacco. A variety of factors provide protective mechanism in order to prevent the effects of chemotoxic agents including tobacco products of which, melanin pigmentation is one of the vital elements.

Aim: Role of melanocytes in progression of OED has remained unclear, so the present study was done to evaluate density of melanocyte and melanin granules in different grades of epithelial dysplasia and to correlate both findings with different grades of epithelial dysplasia.

Materials and Methods: The study included 60 OED cases, of which three histopathogical sections were prepared from each block. The sections were stained with Hematoxylin and Eosin, Masson Fontana and Human Melanoma Black (HMB-45), an immunohistochemical stain. Quantification of melanin granules was evaluated under 40X magnification using arbitrary scale with micrometer square as, 0= Absence of melanin granules, 1= Rare and scattered melanin granules, 2= Dense but not aggregated melanin granules, 3= Dense and aggregated melanin granules. Density of melanocytes was evaluated under 10X magnification. Five consecutive fields were evaluated for melanocytes and melanin granules starting from the field of highest density.

Results: There was an insignificant increase in number of melanocytes and melanin granules in mild and moderate dysplasia compared to normal but significant reduction was observed in severe dysplasia.

Conclusion: The decrease in number of melanocytes and melanin granules was proportional to severity of epithelial dysplasia. This could be due to chronic irritation by chemical products leading to death of melanocytes.

Keywords: Carcinoma in situ, Masson fontana, Smoking, Tobacco, Silver nitrate

INTRODUCTION

Dysplasia is a Greek term used in pathology refers to abnormal (dys) growth (plasia). It is characterised by the presence of architectural and cytological changes and considered as gold standard for assessment of potentially malignant disorders [1,2]. One of the principal factors responsible for the development of these lesions is the usage of tobacco in its various forms like smoking cigarette, bidi and snuff chewing [3,4].

Tobacco releases benzopyridine epoxides when it is burnt, which initiates pathogenesis of oral squamous cell carcinoma. These chemicals stimulate oral mucosal melanocytes, which are non-keratinocytes situated in basal epithelial layer. These melanocytes synthesize melanin pigment which binds to epoxides to prevent further deleterious effects on cells [5]. Hence, the variation in melanin pigmentation and melanocyte density is one of the defensive components against the chemotoxic products of tobacco.

The pigment melanin produced by specialized cells melanocytes, is most commonly responsible for colour of oral mucosa. Melanin is synthesized within melanocytes as small structures called melanosomes, which are inoculated in to cytoplasm of melanocytes and transferred to adjacent keratinocytes [6]. Melanocytes have a low proliferation potential and resist apoptosis as they are endowed with antiapoptotic mechanisms. And these cells have a very long life span, and survive for decades [6,7].

Melanin pigment producing cells are altered in various physiologic and pathologic conditions. Their role in health and disease has remained unclear which attracted further research. There is an absence of evidence related to melanocytes and their possible role in progression of OED. So, the present study was aimed at assessing the changes in density of melanocytes and melanin granules in different grades of epithelial dysplasia which can bring new auxiliary data about role of melanocytes and melanin in different grades of OED.

MATERIALS AND METHODS

This retrospective study was carried out on 60 pregraded cases of OED of which 20 cases of mild, moderate and severe dysplasia were taken from the archives of Department of Oral Pathology and Microbiology, College of Dental Sciences, Davangere, Karnataka, India. The study was lacking details of age, gender and tobacco habits of each case since they were not properly available in archives. Normal oral mucosa were used as control. The proven cases of malignancies were excluded.

Two paraffin embedded tissue sections of 5 µm -6 µm and one section of 4 µm were prepared from each block using semiautomatic soft tissue microtome (Leica, Germany). Two sections were mounted on glass slide and stained with Harris Haematoxylin and Eosin (H&E) stain for regrading epithelial dysplasia [Table/Fig-1] and Masson Fontana's special stain for melanin granules [Table/Fig-2]. Third section of 4 µm thickness was mounted on adhesive coated slides and stained with HMB-45 immunohistochemical staining kit (Bio genex private Ltd, USA), which detects particularly activated melanocytes [Table/Fig-3,4].

- The H&E stained slides were graded as mild, moderate and severe epithelial dysplasia according to WHO 2005 criteria [8].

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ORIGINAL ARTICLE
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Spectrophotometric analysis of coronal discoloration induced by white mineral trioxide aggregate and Biodentine: An *in vitro* study

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Abstract

Aims: The aim of this study was to evaluate the specific chromatic alterations in tooth crowns induced by two different endodontic restorative materials. **Settings and Design:** This *in vitro* study was conducted at the Department of Conservative Dentistry, KMCT Dental College, Kozhikode, Kerala. **Subjects and Methods:** Forty-five freshly extracted, fully developed, single-rooted teeth were prepared and randomly assigned to two experimental groups (n = 15 each) and one negative control group (n = 15). Group 1 consists of white mineral trioxide aggregate (WMTA), Biodentine formed Group 2, and controls formed Group 3. Double-beam ultraviolet spectrophotometer equipment was used to assess the coronal discoloration as determined by CIE L^*, a^*, and b^* and their corresponding total values. **Results:** At baseline, no significant difference was detected for CIE values between the groups. Group 1 showed a significant decrease in L^*, a^*, and b^* values over time. The color change with WMTA led to clinically perceptible crown discoloration after 6 weeks which exceeded the perceptible threshold for the human eye, i.e., $\Delta E > 3.3$. No changes were observed with Biodentine. **Conclusions:** Materials used in endodontics may stain teeth. WMTA induced clinically perceptible crown discoloration, whereas Biodentine demonstrated color stability.

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Full Text

Introduction

Tooth discoloration induced by endodontic materials is a common finding and may impair the esthetic outcome of endodontically treated teeth.[1] A major etiological factor for the occurrence of local intrinsic staining, especially in the cervical and middle third of the crown, is the presence of root canal filling materials in contact with the coronal dentin of the pulp chamber. Any change to the optical and chromatic properties of the dentinal structure is likely to cause an alteration in the outward appearance of the crown caused by its light transmitting and reflecting properties.[2]

Mineral trioxide aggregate (MTA) is a biomaterial that has been investigated for endodontic applications since the early 1990s. MTA materials are derived from a Portland cement parent compound and have been demonstrated to be biocompatible endodontic repair materials, with its biocompatible nature strongly suggested by its ability to form hydroxyapatite when exposed to physiologic solutions. With some exceptions, MTA materials provide better microleakage protection than traditional endodontic repair materials, which is demonstrated by using dye, fluid filtration, and bacterial penetration leakage models.[3] In both animal and human studies, MTA materials have been shown to have excellent potential as pulp-capping and pulpotomy medicaments, but studies with long-term follow-up are limited. Even though high success rates were reported, a number of cases of discoloration have also been noted.

Calcium silicate-based materials have gained popularity in recent years due to their resemblance to MTA and their applicability in cases where MTA is indicated. Although various calcium silicate-based products have been launched to the market recently, one among these has been the focus of attention and the topic of a variety of investigations. This material is the "Biodentine" calcium silicate-based product, which became commercially available in 2009.[4] The material is actually formulated using the MTA-based cement technology and the improvement of some properties of these types of cements such as physical qualities and handling.[5] It is indicated for crown and root dentin repair treatment, indirect and direct pulp capping, pulpotomy, repair of perforations or resorptions, apexification, and root-end fillings.[6],[7] Several studies reveal severe discoloration produced by MTA.[8] However, there are limited studies documenting discoloration caused by biodentine.[9]

Subjects and Methods

Forty-five freshly extracted, fully developed, single-rooted teeth that were free of cracks, fractures, caries, and abrasions, and intrinsic discolouration was selected. Soft tissue was removed, and teeth were sectioned in the coronal third of the root complex, 1 mm below the cementoenamel junction. Pulps were extirpated with an excavator, and the internal axial walls of the pulp chambers were chemomechanically debrided with Hedstrom files (sizes 60–80) and 2.5% w/w sodium hypochlorite (10 ml) through the access. After the final irrigation, the pulp chambers were washed with sterile saline (5 ml). The teeth (n = 45) were randomly assigned to two experimental (n = 15 each) and one negative control group (n = 15). White MTA (WMTA) (Angelus TM, Londrina, Brazil) (Group 1) and Biodentine (Septodont, France) (Group 2) were the materials under study. Materials were prepared according to the manufacturer's

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Original Article

Barriers to dental care for children with special needs: General dentists' perception in Kerala, India

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ABSTRACT

Introduction: Special children are among the underserved dental patient groups around the globe. Oral health care for disabled children remain an unmet challenge. One out of two persons with a significant disability cannot find a professional resource to provide appropriate dental care. Identification of barriers can be the first step in addressing the deficiencies in dental care for such patients. **Aim:** To investigate the perception of dental practitioners in Kerala, India regarding the hurdles faced by them in providing dental care to Special Needs Children including the challenges faced by them. **Materials and Method:** 149 dental professionals were interviewed through a questionnaire for their perceived barriers to provide oral health care for children with special needs. **Statistical analysis:** The data was obtained and Chi-square test, Pearson correlation coefficient and logistic regression model were assessed using the SPSS version 20.0. All analyses were performed using a level of 0.05 for statistical significance. **Results:** Greatest barriers as perceived by the practitioners were their level of training and lack of motivation of caretakers. Significant association was found between experience of the dentist with the frequency with which they reported seeing children with special needs ($p<0.05$). **Conclusion:** Findings from this study provide a valid picture of barriers to access for children with special needs within general dental private practice system. Recommendations for amendment of undergraduate dental curriculum is made in order to equip future graduates to deal with this group of children better.

KEYWORDS: Barriers, disability, oral health, special children

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Introduction

India ranks number two in the list of countries by population. The population of India is equivalent to 17.84% of the total world population.[1]

In 2001, it was reported that over 21 million people in India were suffering from one or the other kind of disability and this constitutes about 2.1% of the population of the country. According to United Nations Enable, around 10% of the world's population live with disabilities. The United Nations Universal Declaration of Human Rights (1948) emphasizes equal rights to good health and well-being even for persons with disability. Children with special healthcare needs (CSHCN) is one of the underserved dental patient groups throughout the world.

The poor oral hygiene can be attributed to underlying disability, reduced manual dexterity, or sometimes as a side effect of certain medications.[2]

Despite advances in dentistry, general oral health of people with special needs remains poor. The prevalence of dental caries might be or might not be similar to the general population but other aspects like periodontal

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ORIGINAL RESEARCH



Self-disinfecting Alginate *vs* Conventional Alginate: Effect on Surface Hardness of Gypsum Cast—An *in vitro* Study

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ABSTRACT

Introduction: For the construction of any dental prosthesis, accurate impressions are necessary. Hence, we undertook the present study to evaluate and compare the surface hardness of gypsum casts poured from impressions made using conventional alginate and self-disinfecting alginate.

Materials and methods: A total of 30 impressions of stainless steel die were made, out of which 15 impressions were made with conventional alginate and 15 were made with self-disinfecting alginate and poured using Type III dental stone. Thirty stone specimens were subjected for hardness testing. Data were analyzed using independent samples t-test to compare the mean surface hardness.

Results: Difference in surface hardness was statistically insignificant ($p > 0.05$).

Conclusion: Surface hardness of gypsum casts poured using impressions made from self-disinfecting alginate and conventional alginates were comparable.

Clinical significance: Self-disinfecting alginates may be employed in clinical practice as safe and effective materials to overcome the infection control issues without compromising on the properties of the material.

Keywords: Alginate, Gypsum cast, Hardness, Hydrocolloid.

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INTRODUCTION

Accurate impressions are necessary for construction of any dental prosthesis. Irreversible hydrocolloid (or alginate) is the most popular dental impression material in everyday practice.[1] They are more popular among dentists because these are inexpensive, fast setting, and simple to use. Dentistry is quite different from other fields of medical science in that all the clinical procedures are undertaken in an environment in which there are saliva and blood contaminated with microorganisms.[2]

Infections in the oral cavity can come from any external source including any type of dental instrument and impression material. Impressions have been identified as an area of concern. Dental impressions can easily become contaminated with patient's blood and saliva.[3] This impression material may act as a medium for the potential transfer of organisms from patient to operator, to other patients, and to dental auxillaries.[2]

Concerns regarding the transmission of infectious organisms have prompted a rise in the measures for infection control throughout the health-care field.[4] All the patients must be individually categorized under the category of potentially infectious group, and therefore, separate handling of the impression should be done with great care.[5] The rising profile of conditions, such as hepatitis B and human immunodeficiency virus has helped to increase awareness of the risk of transmission of infection within the dental environment. The hazard can be reduced by adequate chemical disinfection before the work leaves the clinic.[6] For disinfection for irreversible hydrocolloid impression materials, various methods

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A Cone-Beam Computed Tomography Study of the Root Canal Morphology of Mandibular First Premolars in an Indian Subpopulation

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Abstract: *Introduction: Successful root canal therapy requires an in-depth knowledge of root canal morphology. The aim of this study was to investigate root canal morphology in mandibular first premolars in an Indian subpopulation using Cone-Beam Computed Tomography (CBCT). Methods: Four hundred extracted mandibular first premolars were selected for the study, based on the inclusion and exclusion criteria. CBCT acquisition of each specimen was done and the root canal morphology was reconstructed three-dimensionally with a semiautomatic threshold-based segmentation approach. The root canal morphology of the mandibular first premolars was classified according to Vertucci's classification. The level of root canal bifurcation, if present, was also noted. Results: The mandibular first premolars showed Vertucci's Types I, II, III, IV, V and VIII. Type I was observed in 315 teeth [78.75%], Type II in 5 teeth [1.25%], Type III in 3 teeth [0.75%], Type IV in 64 teeth [16%], Type V in 11 teeth [2.75%] and Type VIII in 2 teeth [0.5%]. Root canal bifurcation, if present, tended to occur in the middle third (63.16%) or apical third (36.84%). Conclusions: Type I configuration represented the highest percentage (78.75%). There was high incidence of Type IV configuration as compared to Types V, II, III and VIII in the descending order. CBCT is a valuable diagnostic tool in the management of mandibular premolars with complex canal morphology.*

Keywords: *Cone-beam computed tomography; mandibular first premolar; root canal morphology*

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I. Introduction

Successful root canal treatment relies on a comprehensive understanding of the morphology of the root canal system. The inability to detect, prepare, or obturate one or more of the root canals is a common cause of failure of endodontic treatment.[1] According to Hoen and Pink, the incidence of missed roots or canals in the teeth that needed retreatment was 42%.[2]Frequently considered an enigma to the endodontist, the mandibular first premolar can generate complicated mechanical problems due to the tortuous nature of the canals dividing at various levels of the root. Mandibular premolars may present the greatest difficulty of all teeth to perform successful endodontic treatment.[3] This fact can be substantiated by the presence of multiple root canals[4], lateral canals, apical deltas and C-shaped canals. In addition, the access cavity in these teeth is relatively small, resulting in reduced visualization. Canal configurations in mandibular premolars may vary significantly with respect to ethnicity[5–7], race[8], and sex[6,9].Previous studies have shown that a high percentage of mandibular first premolars have more than one root canal ranging from 11.53% to 46%. These variations may result in missing root canals in mandibular first premolars that need root canal treatment.[10]

Advanced modes of radiographic imaging and analysis such as spiral computed tomography (SCT), micro-computed tomography (micro-CT) and cone-beam computed tomography (CBCT) have allowed for extensive knowledge of pulp space anatomy in three dimensions and identification of rare aberrations.[11] CBCT uses a cone-shaped beam instead of the fan-shaped one used by regular CT scanners. CBCT scanning can help clinicians view morphologic features from a 3-dimensional perspective. The images are displayed in axial, sagittal, and coronal sections and can reduce the superimposition of surrounding structures.[12]Owing to the variations in root canal anatomy, the mandibular first premolar is quite notorious for its high flare up and failure rates.[13] Though a few studies have been carried out in India, no study on the variation in root canal anatomy of mandibular first premolar has been done in the Malabar subpopulation of India. Hence, the purpose of this study was to determine root canal morphology of mandibular first premolars in Malabar subpopulation using CBCT and to classify the canal morphology according to Vertucci's classification[14] (Fig 1). The level of root canal bifurcation, if present, was also noted.

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Comparative Evaluation of Compressive And Flexural Strength of Newer Nanocomposite Materials with Conventional Hybrid Composites-An Invitro Study

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Abstract: *During the recent years, different brands of nanocomposites have been introduced and it is a matter of utmost importance to choose the one with most favorable properties. The present study aimed at comparison of compressive and flexural strength of hybrid and nanocomposites available in the market and also to compare the nanocomposites of different brands. The newer nanocomposite materials used in this study include Filtek Z350XT, Tetric N ceram & Brilliant NG. Hybrid composite include Filtek Z250.*
Methods: *A total of 100 specimens were selected. Four groups were made of four different composite materials having 25 specimens in each group.13 in each group were subjected to compressive test and 12 in each were subjected to flexural test. The specimens were stored in distilled water at 37 °C, 24 h. and transferred to the universal testing machine, subjected to compressive & flexural strength analysis.*
Results: *Filtek Z350XT had the highest compressive and flexural strength and Tetric N Ceram had the lowest*
Conclusion: *Within the limitations of our study it can be concluded that nanohybrid resins (Tetric N Ceram and Brilliant NG) tested presented inferior properties compared with the nanofilled composite (Filtek Z350XT).The performance of Hybrid composite Filtek Z250 was comparable to nanocomposite.*
Keywords: *Nanocomposites, hybrid composites, compressive strength, flexural strength, universal testing machine*

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I. Introduction

The use of composites based on Bowen's resin heralded a new era in restorative dentistry. Nowadays, composite restorations have gained more popularity and are widely used due to their high aesthetic properties, rapid application, ease of use and low costs. No single property can give a true measure of the quality of a restorative material. Several combined properties determined from standardized laboratory and service tests are employed to give a measure of quality and are of great importance in the clinical evaluation of a particular product. Composite resins have been available to the dental profession for over many years. During this time a tremendous amount of basic and clinical research have been conducted on this versatile class of materials. These materials have been improved far beyond the limits of the orginal formulations.

The latest development in the field has been the introduction of nanofilled materials by combining nanometric particles and nanoclusters in a conventional resin matrix. Nanocomposites thus have been introduced to serve these functional needs through the application of nanotechnology[1]. Nanotechnology is the production of functional materials and structures in the range of 0.1- 100 nanometers nanoscale by various physical and chemical methods. Nanocomposites have improved mechanical properties i.e. better compressive strength, diametrical tensile strength, fracture resistance, wear resistance, low polymerization shrinkage, high translucency, high polish retention and better esthetics[2]. They possess a combination of favorable properties of hybrid and microfilled composites. They also exhibit optimal aesthetic properties and therefore are good candidates for anterior restorations. At the same time, they show suitable mechanical properties which make them good alternatives for posterior restorations as well[3]. Their physical properties and wear resistance are comparable with those of hybrid composites[1]. Hybrid composites have smooth surface and good strength, hence widely used for anterior restorations including class IV. They are also widely employed for stress bearing restorations. In this study we have taken Filtek Z250, a hybrid composite as standard to compare with three nanocomposites. During the process of mastication, teeth are constantly subjected to mechanical and thermal cycles and restorative materials develop fatigue and fail/fracture eventually[4].Therefore it is especially important to restore teeth with materials than can handle such pressures. In our study we have evaluated two mechanical

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ORIGINAL ARTICLE

WILEY

Topical fluoride use: Knowledge, attitudes and practices of undergraduate dental students of three Dental Colleges in South India

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[1]Department of Public Health Dentistry, KMCT Dental College, Kozhikode, Kerala

[2]Department of Public Health Dentistry, CKS Theja institute of Dental Sciences, Tirupathi, Andhra Pradesh

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Abstract

Objectives: For effective utilisation of topical fluorides in caries prevention, dental professionals should have adequate knowledge regarding its appropriate use. The decision regarding preventive treatments like topical fluorides is influenced by knowledge acquired during undergraduate training. The aim of this study was to assess the knowledge, attitudes and practices of undergraduate dental students in the use of topical fluorides.

Methodology: A descriptive cross-sectional questionnaire study was conducted from June to August 2015 following ethical clearance. Three willing Dental Colleges from 3 states of South India participated. Information regarding the knowledge, attitudes and practices of students in the use of topical fluorides was collected using a validated questionnaire.

Results: Nine hundred and seventy-two dental students (79.6% females, 20.4% males) participated. Freshers and preclinical batches had poor overall knowledge of fluorides, which did not show substantial improvement by internship. Self-applied topical fluoride use (fluoridated toothpaste) was seen in more than 90% of interns, and majority had "positive fluoride attitude." Having knowledge of topical fluorides and positive attitudes to topical fluorides did not result in "good oral self-care behaviour" nor appropriate clinical use of topical fluorides. Students who used topical fluorides for persons with history of caries had highest odds of brushing twice a day (OR = 2.7, 95% CI = 1.54, 4.12) and a "positive fluoride attitude" (OR = 1.2, 95% CI = 0.21, 1.57).

Conclusion: Dental students showed deficiencies in their knowledge and understanding of topical fluorides. Dental education in India needs emphasis on topical fluorides across all years, with a special focus on caries risk-based topical fluoride use.

KEYWORDS
attitudes, caries risk, dental education, knowledge, topical fluorides

1 | INTRODUCTION

Dental caries has shown a remarkable decrease since the 1960s in the Western countries.[1] However, it is still a major public health problem amongst the underprivileged communities in both developed and developing countries.[2] Changing dietary habits and inadequate exposure to fluorides have been cited as reasons for the increasing prevalence of dental caries.[3] WHO promotes the effective use of fluorides for the prevention of dental caries and has emphasised the responsibility of national health authorities of each country to ensure exposure to fluorides through feasible fluoride programmes.[2-4]

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ORIGINAL RESEARCH PAPER

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INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

KAP STUDY ON PRESURGICAL MANAGEMENT OF CLEFT LIP AND PALATE INFANTS AMONG PRACTIONERS AND POSTGRADUATES OF PEDIATRIC DENTISTRY IN KERALA.

Dental Science

P.Pratyusha* Professor & HOD, Department of Pediatric and Preventive Dentistry, KMCT Dental College, Mukkam, Kerala. *Corresponding Author

Jipsa Venugopal Post graduate, Department of Pediatric Dentistry, KMCT Dental College, Mukkam, Kerala

Anju.R.V post graduate, Department of Pediatric Dentistry, KMCT Dental Collge, Mukkam, Kerala.

ABSTRACT

Presurgical infant Orthopedics reduces the width of cleft gap to achieve an optimal alignment of the cleft segments and to allow surgical repair with minimal tension. Pedodontists should have the knowledge and practice of handling these patients in their daily practice. Hence this study was undertaken to investigate the perception of Pedodontists and post graduates of Pediatric Dentistry in Kerala regarding the pre surgical management of Cleft lip and palate infants.

A total of 134 Pedodontists and post graduates were interviewed through an online survey. Significant association was found between experience of the dentist and the frequency with which they reported seeing infants with CL/CP and the type of treatment rendered.

There is less exposure among Pedodontists and postgraduates regarding the presurgical orthopaedic techniques which needs to be reinforced through meaningful continuing dental education and training programs.

KEYWORDS

Cleft lip and palate, Presurgical orthopaedics, Pedodontists, Kerala.

INTRODUCTION

Cleft means 'split' or 'separation'. It is a birth defect that occurs when tissues of the lip and /or palate of the foetus do not fuse very early in gestation period. This is the most common congenital malformations of the head and neck and second most common congenital malformation of the entire body, second to clubfoot. The incidence of clefts in the Indian population is not precisely known; it is estimated that between 28,000 and 35,000 children are born with clefts in India each year, or about 1 out of every 500 to 800 live births.[1,2,3] Only half of the cleft cases in India were treated by a trained surgeon. This results in a backlog of about one million untreated clefts in India.[3]

During the last forty years, Pre surgical infant procedures became integrated into the comprehensive care protocol for patients with clefts in many teams around the world. The treatment of Cleft lip and palate patients presents challenges for the Pedodontists which act as a barrier to the provision of high quality care. Identification of such barriers can be the first step in addressing the deficiencies. Till now no survey has been undertaken to assess the Knowledge attitude and practice of Pedodontists regarding the presurgical orthopaedic techniques for the management of infants with Cleft lip and palate in India.

AIM OF THE STUDY

Aim of this study is to investigate the perception of Pedodontists and post graduates of Pediatric Dentistry in Kerala regarding the pre surgical management of Cleft lip and Palate infants.

MATERIALS AND METHODS

The Study was approved by the Institutional Ethical Committee. Questionnaire was designed and developed consisting of 21 questions. Content validity was assessed by a panel of 5 experts. Aiken's V was used to quantify the concordance between experts for each item.

A total of 134 Pedodontists and post graduates were interviewed through an online survey. Pedodontists who are teaching and practicing in Kerala and post graduates of Pediatric dentistry from various institutes in this state were included in this study.

All the data was entered and statistical analysis was performed using the SPSS program version 20.Predictor variable included number of cases attended, choice of impression materials and techniques used and experience with Presurgical orthopaedic techniques. Output variable was the number of years of practice. Association between the output variable and the predictor variable was assessed using chi square test. For all statistical tests, a confidence interval of 95% and significance level of 5% ($P \leq 0.05$) was adopted.

RESULTS

The response rate of survey was 60.44% (Of the 134 questionnaires sent, 81 responded).81% of the respondents had less than 10 years of clinical experience, while 6.6% of Pedodontists had more than 20 years of experience.

Only 30.9% of the study population have attempted Presurgical Orthopaedic Appliance Therapy in CLCP patients. 43.3% concluded that upright position is best impression technique and 53.4% stated elastomeric impression material is the ideal material for impression. 87.2% responded that their postgraduate curriculum included CLCP management. 54.4% of the Pedodontists were updated in Pre Surgical Orthopedics.73.8% have treated only less than 5 cases in their clinical practice.72.3% of the Pedodontists achieved favourable outcome with their Presurgical orthopaedic appliance therapy.

Most commonly practiced technique in Presugical orthopaedics is Naso alveolar moulding.76.7% had experience with Naso alveolar moulding.72.9% have reported that patients were regular in their treatment procedure and75% turned for follow up treatment.



Graph 1: Distribution of sample based on number of years of practice

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9 CREDIT POINTS

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CERTIFICATE OF ATTENDANCE

The Organising committee certifies that
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International Cleft Lip and Palate Foundation

Balaji Dental and Craniofacial Hospital, Chennai, India, 26-28 October 2016

icpf

Certificate of Merit

The Organizing Committee of the 10th World Cleft Lip, Palate and Craniofacial Congress held at Chennai, India, is pleased to present this Certificate to

Dr. Manoj Kumar. KP.

for participating in the

Pre- Conference Live Surgical Workshop

on Cleft Lip, Palate & Craniofacial deformities

and for the valuable contributions to the deliberations of the Conference

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Centre for Dental Education and Research
All India Institute of Medical Sciences, New Delhi, INDIA

International Symposium

Is Sugar the New Tobacco ? - Oral Health Perspectives

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Dr. Vaishali

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24 25 26 NOV 2016

@ Karnavati Knowledge Village

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28th NATIONAL CONFERENCE 2016

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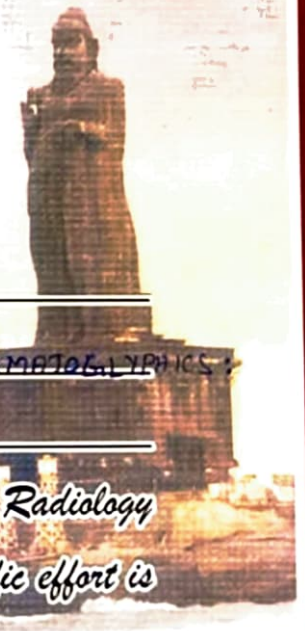
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MANIPAL UNIVERSITY

Department of Oral and Maxillofacial Surgery

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42

GNATHOPAEDIA - I

"Encyclopaedia of Orthognathic Surgery"

A National Symposium

Certificate of Attendance

9
CDE CREDIT POINTS
APPROVED BY KSDC

This is to certify that

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has actively participated in Gnathopaedia- I: A National Symposium

held from January 21-22, 2017 at Manipal College of Dental Sciences, Manipal University, Manipal.

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Kerala State Dental Conference
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ISSN 2518-1297 (Online)

Original Research Article

Comparative Evaluation of Apical Extrusion of E Faecalis Using Hand and Rotary Systems

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Abstract: The objective of the study was to evaluate the bacteria extruded apically during root canal preparation using hand and two rotary instrumentation techniques. The method include eighty freshly extracted mandibular premolars were mounted in bacteria collection apparatus. Root canals were contaminated with the pure culture of Enterococcus faecalis (ATCC 29212) and dried at 37 ^{0}c for 24 hour. Then teeth were equally divided into three experimental groups and one control group of 20 each. In group I teeth were instrumented with the hand stainless steel k files in group 2 instrumentation with rotary protaper universal in group 3-instrumentation with rotary protaper next and in group 4-No instrumentation is carried out.Then bacteria extruded were collected ,incubated in brain heart infusion broth for 24 hour at 37 ^{0}c and the colony forming units were counted.The result showed that all hand and rotary instrumentation technique extruded debris.Among all the instrumentation technique hand file extruded more number of debris and protaper next least number of bacteria.

Keywords: apical extrusion, E faecalis, hand file, protaper universal file, protaper next file

INTRODUCTION

The goals of endodontic instrumentation include thorough debridement and disinfection of the root canal system, in addition to creating a suitable shape to achieve a complete three dimensional obturation. In an effort to obtain these goals, debris such as dentinal shavings, necrotic pulp tissue, bacteria and their byproducts or irrigants may be extruded into the periradicular tissue. The extruded material has been referred to as a 'worm' of necrotic debris and has been cited as a major cause of mid-treatment flare-up [1].

Bacteria extruded mainly include gram positive, gram negative bacteria and obligate anaerobes. Microorganism seen in root canal failure cases include Enterococcus faecalis,propionibacterium alactolyticus and propionibacterium propionicum.E faecalis has been identified as a species most commonly recovered from post treatment cases [2].

Apical extrusion of debris has been associated with all types of instruments and instrumentation technique even when the preparation is maintained short of the apical terminus,with some instrumentation technique extrude less material than others.Various factors affect the quantity of apically extruded debris including instrumentation method ,file size and file types [3]. As all instrumentation technique produce some amount of apical extrusion, the choice of technique should also take into consideration how well the apical extrusion of debris can be controlled. Sonic and ultrasonic technique produces less apical extrusion of debris than hand instrumentation. Apical extrusion of debris tends to be greater with hand instrumentation than with technique that use rotary instrumentation because the file may act as pistons that push irrigating solution and debris towards the apex. Conversely rotary instrumentation may move debris along the files which may result in debris being expelled cervically [4]. Reddy and Hicks were the first to compare apical debris extrusion between manual instrumentation and engine driven technique [5].

Nowadays there are lots of rotary instruments. As they differ greatly in their design, type of blade use number of files and kinematics different amount apically extruded debris can be found between the system [6]. Previous study reported that protaper universal rotary file generated large amount debris that

Research Article

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Comparing the Anesthetic Efficacy of 4% Articaine HCL with 1:100000 Epinephrine and 2% Lignocaine with 1:100000 Epinephrine in Periodontal Flap Surgery: A Case-Control Study

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ABSTRACT

Background: The present study compares the anesthetic efficacy of 4% articaine HCL with 1:100000 epinehrine and 2% lignocaine with 1:100000 epinehrine in Periodontal flap surgeries.

Methodology: Twenty adult subjects diagnosed with moderate to severe periodontal disease requiring bilateral periodontal surgery were enrolled. Bilateral periodontal flap surgery was planned in maxillary posteriors in a single appointment. Maxillary posteriors in the first quadrant were selected as experimental site for articane, while the second quadrant in the same patient was chosen as the control sites for lignocane. The intraoperative pain intensity was measured objectively using the visual analog scale. Data was analysed using wilcoxon signed rank test.

Results: All the 20 sites in lignocaine group showed moderate to severe pain while 7 among the articaine group showed absolutely no pain during palatal flap reflection. A statistically significant difference was obtained.[p value=0.002]

Conclusion: Articaine in 4% solution with 1:100000 epinephrine can be recommended as a safe alternative anesthetic to lignocaine local anesthetic in periodontal flap surgeries. Use of articaine can avoid routine administration of painful palatal injection for palatal flap procedures.

Keywords: Bilateral periodontal flap surgery, 4% articaine hydrochloride with 1:100000 epinephrine, 2% lidocaine with 1:100000 epinephrine, visual analog scale.

INTRODUCTION

Dental pain is usually of acute inflammatory nature and it compels the patient for seeking professional help [1]. Effective pain control during dental procedures is essential for the success of treatment. To achieve this goal local anesthesia is being used since the past century [2]. Local anesthetics are chemicals that block nerve conduction in a specific, temporary, and reversible

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ORIGINAL ARTICLE

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Submental intubation: alternative short-term airway management in maxillofacial trauma

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Objectives: To assess submental route intubation as an alternative technique to a tracheostomy in the management of the airway in cranio-maxillofacial trauma, along with an assessment of its morbidity and complications.

Materials and Methods: Submental intubation was performed in 17 patients who had maxillofacial panfacial trauma and management was done under general anesthesia during a period of one year from 2013 to 2014 at Departments of Oral and Maxillofacial Surgery and Dentistry, the Malankara Orthodox Syrian Church Medical College, Kochi, India.

Results: In all 17 cases, the technique of submental intubation was found to be simple and reliable. Hypertrophic scars were noted in three cases, oro-cutaneous fistula and mucocele in one case each. All these complications were managed comfortably without significant morbidity to the patient.

Conclusion: Submental intubation is a good technique that can be used regularly in the management of the airway in cranio-maxillofacial trauma, but with some manageable complications.

Key words: General anesthesia, Oral intubation, Submental intubation, Tracheostomy, Maxillofacial trauma

[paper submitted 2015. 12. 16 / revised 2016. 2. 14 / accepted 2016. 3. 6]

I. Introduction

Early reconstruction by open reduction and rigid internal fixation has become the standard of care in the management of panfacial fractures[1]. Airway reconstruction and maintenance should be given equal importance during surgery. However, in cases of panfacial fracture, surgeons and anesthesiologists essentially compete for the same space. Surgeons require an unobstructed view for reconstruction and maxillo-mandibular fixation, if needed[2,3]. In such cases, oral intubation cannot be performed, as it may interfere with maxillomandibular fixation. Previously, in situations where oral and nasal intubation are contraindicated, a cricothyrotomy or tracheostomy has been used for airway maintenance[4].

In 1986, Hernández Altemir[5] introduced the submental route for intubation as an alternative technique for airway management in cranio-maxillofacial trauma. In this technique, a tube is passed through the anterior floor of the mouth in order to allow free intraoperative access to the oral cavity and nasal pyramid without compromising the airway in patients with skull base trauma. Submental intubation can be used for short-term airway control as an alternative to tracheostomy, but with minimal complications[6,7].

The purpose of this study was to investigate outcomes of submental intubation in a series of patients who underwent surgical intervention for management of panfacial trauma.

II. Materials and Methods

This was a prospective clinical study conducted at the

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Evaluation of chemokines in gingival crevicular fluid in children with band and loop space maintainers: A clinico-biochemical study

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Abstract

Background: Chemokines are pro-inflammatory cells that can be induced during an immune response to recruit cells of the immune system to a site of infection. **Aim:** This study was conducted to detect the presence of chemokines, macrophage inflammatory protein-1α (MIP-1α), and 1β (MIP-1β) and estimate their levels in gingival crevicular fluid (GCF) in children with band and loop space maintainers. **Materials and Methods:** MIP-1α and MIP-1β levels were estimated in GCF samples from twenty healthy children and twenty children with band and loop space maintainers. Periodontal status was evaluated by measuring gingival index, plaque index, and Russell's periodontal index. The GCF samples were quantified by ELISA, and the levels of MIP-1α and MIP-1β were determined. **Results:** The mean MIP-1α concentrations in healthy children and those with space maintainers were 395.75 pg/μl and 857.85 pg/μl, respectively, and MIP-1β was 342.55 pg/μl and 685.25 pg/μl, respectively. MIP-1α and MIP-1β levels in GCF from children with space maintainers were significantly higher than in the healthy group, and statistically significant difference existed between these two groups. **Conclusion:** MIP-1α and MIP-1β can be considered as novel biomarkers in the biological mechanism underlying the pathogenesis of gingival inflammation in children with space maintainers.

Keywords: Band and loop space maintainers, chemokines, gingival crevicular fluid, inflammation, macrophage inflammatory protein-1α, macrophage inflammatory protein-1β

Introduction

Space maintainers are intraoral appliances used to preserve arch length following the premature loss of primary teeth by guiding the permanent teeth into proper alignment and occlusion.[1] The band and loop appliance is the most commonly used fixed space maintainer in pediatric dentistry. The control of plaque formation which results in inflamed gums around the molar bands is a defending task for a pedodontist.[2] Improper cementation of bands on the tooth leads to local tissue response due to several factors such as plaque accumulation, close proximity to the gingival sulcus, and the increased area of the tooth that is covered, which makes oral hygiene maintenance difficult.[3] Direct injury to the gingiva as a result of overextended bands[4] and mechanical or chemical irritation due to exposed cement also causes a local tissue response that may lead to inflammation with additional difficulty in brushing and flossing.

Chemokines are critical mediators of cell migration and recruitment of specific leukocytes to the sites of infection during immune surveillance, inflammation, and development.[5] Chemokines mediate the recruitment and subsequent activation of specific leukocytes to inflamed tissues,[6] and therefore, play a key role in the immune response. MIP-1α is a cysteine-cysteine (CC) chemokine that was first identified in an Lipopolysaccharide (LPS)-treated monocytic cell line. It attracts monocytes, T lymphocytes, natural killer (NK) cells, dendritic cells, and granulocytes to inflammatory sites.[7] *Porphyromonas gingivalis* and *Actinomyces actinomycetemcomitans* induce high levels of MIP-1α in mononuclear cells.[7] The chemokine MIP-1α (also called CCL3) is considered to be the most abundantly expressed chemokine in periodontal diseases[8] and is a

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Case Report

Dentistry Section

Carcinoma of Maxillary Sinus Masquerading as Odontogenic Infection

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ABSTRACT

Malignant tumours of maxillary sinus are rare. They are usually diagnosed in the late stages when they perforate the sinus walls. The presence of large air space in the maxillary sinus facilitates asymptomatic growth of the sinus malignancy. The clinical presentation of these tumours depends on the sinus wall involved by the disease. The medial wall is usually the first to become eroded, leading to nasal obstruction, epistaxis or discharge. Rarely, symptoms of maxillary sinus carcinoma can resemble dental infection and the affected patients may visit dental clinic seeking treatment. This report presents a case of carcinoma of maxillary sinus mimicking odontogenic infection. Computed tomographic findings explained the reason for the present lesion to masquerade as an inflammatory condition. The importance of advanced imaging modalities for prompt identification of such lesions is discussed.

Keywords: Asymptomatic, Computed tomography, Squamous cell carcinoma

CASE REPORT

A 53-year-old male presented at the dental out-patient department with pain and swelling on the right side of the face of one month duration. Pain started after biting hard food on the grossly decayed tooth on the same side. The tooth was extracted for the same reason by a local dentist but the pain aggravated with the development of a swelling in the region. There was no significant response to antibiotics. Patient did not experience any bleeding or discharge from the swelling. The past medical, dental and personal history was unremarkable except for the habit of smoking bidis (A traditional form of tobacco commonly used among villagers in India) for the past 30 years. On examination, a diffuse swelling was evident over the mid face extending superiorly from the lower border of the orbit and inferiorly along the angle of mouth [Table/Fig-1]. The skin over the swelling was erythematous, stretched and shining. The lesion was bony hard in consistency; tender and local temperature was elevated. Intra-orally, the edentulous ridge of maxilla from right canine to right third molar region had healed satisfactorily. However, a diffuse swelling was seen on the slope of the edentulous ridge with obliteration of sulcus in relation to maxillary right second and third molar [Table/Fig-2]. Based on the history and clinical findings, a differential diagnosis of infected residual cyst and chronic osteomyelitis of right posterior maxilla was considered.

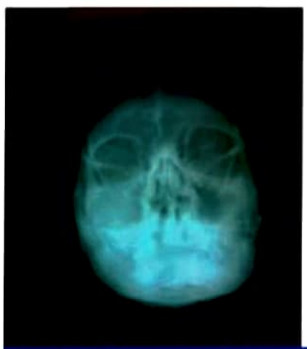


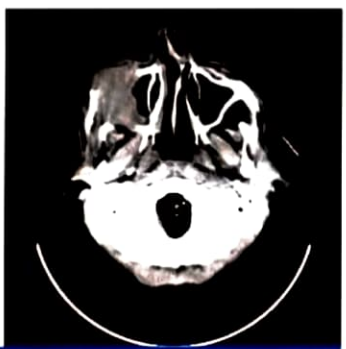


[Table/Fig-1]: Diffuse swelling on the mid-facial region. **[Table/Fig-2]:** Swelling along the edentulous ridge with vestibular obliteration.

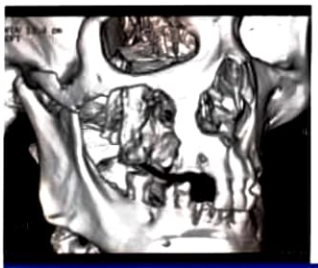
An Intraoral Periapical Radiograph (IOPAR) of the right maxillary posterior region was obtained which showed diffuse radiolucency with loss of continuity of the floor of sinus. Para Nasal Sinus (PNS) view exhibited diffuse haziness of the right maxillary sinus [Table/Fig-3]. Contrast enhanced Computed Tomography scan (CT) revealed lobulated infiltrative soft tissue attenuation mass lesion in the right maxillary sinus causing erosion of the floor, anterior and lateral wall of sinus with extension to maxillary region [Table/Fig-4,5].

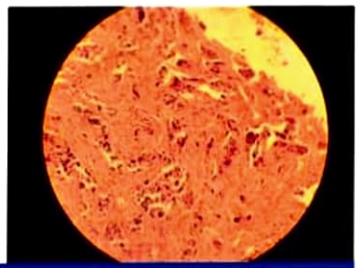
Incisional biopsy of the lesion was performed through intraoral approach and the specimen was subjected to histopathological





[Table/Fig-3]: Para nasal sinus view showing diffuse haziness of the right maxillary sinus. **[Table/Fig-4]:** Axial CT showing soft tissue infiltration and destruction of bony margins.





[Table/Fig-5]: The 3D reconstruction showing aggressive bone destruction. **[Table/Fig-6]:** Histopathology showing malignant epithelial islands in the connective tissues.

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Case Report

Dentistry Section

Identifying Aarskog Syndrome

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ABSTRACT

Aarskog syndrome also known as Aarskog-Scott Syndrome, Facio-digito-genital Syndrome or Faciogenital Dysplasia is a rare, X-linked **disorder** predominantly affecting males, characterized by facial, skeletal and genital anomalies. This is a case report of a 15-year-old male patient who visited our college complaining of poor facial aesthetics. History revealed consanguinity and his sibling to be suffering from the same. A diagnosis of Aarskog syndrome was made based upon the detailed patient history, thorough clinical evaluation and identification of characteristic findings in radiographs. Professional counselling explained him the nature of his condition and treatment options to correct dental anomalies and congenital malformations were advised.

Keywords: Aarskog-Scott syndrome, Facial anomalies, Genital anomalies

CASE REPORT

Syndromes not associated with severe medical problems or mental retardation can easily go unnoticed by physicians who may not be aware of the syndrome and co-related features. We report a case of 15-year-old male patient who came with a complaint of poor aesthetics because of missing teeth in the front region of the upper and lower jaws since childhood. He gave no history of extraction or exfoliation of teeth in front region of the jaw and there was no history of trauma either. He stated that he was the second son of consanguineous parents and had two brothers; the elder brother had a short stature, missing teeth and extra fingers. No relevant medical history was reported. On general examination he had short stature [Table/Fig-1], was well nourished and well oriented in time place and person. He had sparse scalp hair [Table/Fig-2]. His facial appearance was striking with abnormally large nose and ptosis of upper eyelids, hypertrophied and everted lower lip [Table/Fig-3]. The patient was 1.32 meter tall, weighed 46 kilograms and his vital signs were within the normal range. The patient had 6 digits on both his hands and the nails appeared smaller in size than normal [Table/Fig-4]. The patient could not adduct his thumb, index finger and the extra digit. Inward bowing of both lower limbs was noticed and both the feet had six toes [Table/Fig-5].

Intra-oral examination revealed an abnormally large tongue covering the occlusal surface of the mandibular dentition. The maxillary lateral incisors and all four mandibular incisors were missing. A high arched palate was observed with palatal positioning of second premolars [Table/Fig-6]. The maxillary central incisors were macrodontic with altered morphology and diastema [Table/Fig-7]. All the canines were conical in shape and the edentulous ridge of mandibular incisor region showed a soft tissue prominence and hyperplastic labial frenum [Table/Fig-7]. Based on the history and the clinical findings a provisional diagnosis of acrodental dysostoses was arrived. The other differential diagnosis considered were Weyers acrodental dysostosis which besides the dwarfism, postaxial polydactyly and dysplastic teeth is also characterized by cardiac problems but as patient did not report of any systemic problems and examination of vital signs did not reveal any abnormalities this was ruled out. Aarskog syndrome was also considered as similar features are noticed as in this case but a characteristic feature of genital abnormality had to be further examined. Leopard syndrome was excluded because of absence of multiple black macules on the skin and absence of sensorineural deafness.

Investigations: An Orthopantomograph (OPG) of the patient was done which confirmed all the clinical observations made regarding the number, shape and position of teeth. The hand wrist radiograph showed an extra digit and star like pattern of the digits [Table/Fig-8]. Further physical and clinical examinations were conducted by a general physician who acknowledged that there was no cardiac problem but the examination of genitals revealed unusual shawl like tissue around glans penis. This characteristic feature made us to presume the most probable diagnosis as Aarskog syndrome. Further blood investigations and genetic investigation to search for mutation in FGD1 were advised to the patient but he was quiet unwilling for further investigations. Besides explaining the patient his condition, prosthetic rehabilitation was done for him which was his main concern.

DISCUSSION

In 1970 Aarskog, in Norway, described a syndrome associating short stature with certain anomalies of the face, hands, feet, and



[Table/Fig-1]: Short stature. **[Table/Fig-2]:** Sparse scalp hair. **[Table/Fig-3]:** Large nose, droopy upper eyelids, hypertrophied and everted lower lip. **[Table/Fig-4]:** Extra finger on both hands, small nails.

PRF and Bonegraft-Magical tools in Periodontics- A case report

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Abstract

Periodontal regeneration can be defined as the reconstitution of a lost or injured part to restore the function of the periodontium. Regeneration of lost periodontal tissues are the ultimate goal of any periodontal therapy. Platelet-rich fibrin (PRF) was developed in France by Choukroun et al in 2001. It belongs to a second generation platelet concentrate with autologus fibrin matrix containing cytokines and platelets. In periodontal wound healing it helps and motivates tissue repair. This case report investigate the effectiveness of autologous PRF along with the use of DFDBA (Demineralised freeze dried bone graft) in the management of intrabony defects.

Keywords: DFDBA, Chronic periodontitis, Intrabony defects, Platelet rich fibrin.

Introduction

Periodontal disease can be defined as a complex, multifactorial disease characterized by the loss of connective tissue attachment with destruction of periodontal tissues.[1] The elimination of inflammatory process, the prevention of progression of periodontal disease and the regeneration of the lost periodontal tissues are the ultimate goal of periodontal therapy.[1] Root biomodifications, bone grafts, soft tissue grafts, guided tissue regeneraton and combinations of above procedures include various periodontal regenerative procedures.[2]

A sequence of coordinated interactions between gingival fibroblasts, epithelial cells, periodontal ligament cells and osteoblasts leads to periodontal wound healing. The rupture of vasculature during wound healing leads to fibrin formation, platelet aggregation and release of several growth factors into the tissues from platelets through molecular signals.[3]

As platelets are the hub of growth factors and cytokines they play an important role in periodontal regeneration. Growth factors and cytokines in platelets play unique roles in inflammation and wound healing.[4] Platelets secrete fibronectin, vitronectin and fibrin which acts as a matrix for connective tissue and as adhesion molecules for cell migration.[5]

This has led to the idea of using platelets as therapeutic tools to improve tissue repair particularly in periodontal wound healing. The clinical application of different bioactive surgical additives that manipulate surgical wound environment is the important step in developing new therapeutic approaches in order to enhance the wound healing.[5]

Case Report

A 35 yr old male patient came to the Department of Periodontology KMCT Dental College with slight mobility of upper right canine(13) and also bleeding from the gums. On intraoral examination it was found that there was a grade I mobility of 13. An IOPA radiograph was taken and it was found that there was a vertical bone loss in the distal aspect of 13. Endodontic treatment of 13 was performed. Splinting was done on the buccal aspect connecting 12, 13, and 14. After 2 weeks periodontal flap surgery was planned. Lignocaine hydrochloride injection 1.8 ml was injected in the buccal vestibule. Crevicular incisions are placed using a no 11 bard-parker blade from 12 to 14. Flaps are elevated using molt no.15 periosteal elevator. The exposed root surface was thoroughly debrided and root planed. DFDBA (Osseograft) was emptied into a dappen dish and were incrementally added to the defect. Autologus PRF was prepared and mixed with Osseograft and was condensed in the defect. The flap was closed with 3'0' black braded silk. A tension free primary closure was obtained. Periodontal pack was placed. Antibiotics and analgesics were prescribed. 500 mg of amoxycilin 3 times a day for 5 days and a combination of mefenamic acid with paracetamol for 5 days were prescribed. Post-operative instructions were given. Patients were adviced to avoid chewing in the area for 2 weeks and not to brush for 10 days. Suture removal was done after 10 days. Recall appointments were scheduled at 3 and 6 months after the surgery for soft tissue evaluation and recording clinical variables.

Pre-Operative



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Original Research Article

Thermal alteration on the external root surface during endodontic treatment using three different rotary file systems: An in vitro study

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Abstract: The aim of this study is to evaluate increases in temperature on the external root surface during endodontic treatment with three different rotary file systems. Fifty human mandibular first premolars with single root canal were selected. All root canals were instrumented using a size 20 H file, and the canals were irrigated with 5% sodium hypochlorite solution. The samples were randomly divided into the following three groups of 15 teeth: Group 1: The Protaper Next Rotary Files X1 and X2; Group 2: The Mtwo rotary File 20/06 and 25/06 Group 3: The Hyflex rotary File 20/06 and 25/06. During the preparation, the temperature changes were measured in the middle third of the roots using a noncontact infrared thermometer. The temperature data were transferred from the thermometer to the computer and were observed graphically. Statistical analysis was performed using the oneway ANOVA analysis of variance at a significance level of 0.05. The increases in temperature caused by the Hyflex rotary file system were lower than those of the other files. The Mtwo rotary file showed the highest temperature increases. However, there were no significant differences were noticed between the Protaper Next and Hyflex rotary files in terms of temperature increase during root canal preparation. Mean temperature increases no higher than 3.4°C were recorded for any of the system examined, which indicates that these instruments are safe for the surrounding periodontal tissues.

Keywords: infrared thermometer, Protaper Next, Mtwo, Hyflex.

INTRODUCTION

The aim of endodontic treatment is thorough debridement and cleaning of the root canal system of any infected pulp tissue so the canal space can be shaped and prepared to be filled with an inert material thus preventing or minimizing any chances of reinfection [1] Nowadays, there is an extensive array of nickel-titanium instruments available to the endodontist and appear promising as effective instruments for cleaning and shaping [2]. During rotary instrumentation frictional force generates heat along the root canal walls due to difference in velocities between the two sliding surfaces [3]. Surface and near-surface temperatures can become raised enough to cause changes in the structure and biological behavior of the adjacent tissues. These complications include tooth ankylosis, bone necrosis and resorption [4]. The study by Eriksson and Albrektsson reported that a temperature increase of 10°C on the outer root surface caused bone resorption and tooth ankylosis [4]. In 1972, Matthews observed that the threshold temperature increase for alveolar bone is 19°C because this temperature increase results in alkaline phosphatase denaturation [5]. However other studied observed that even temperature rise less than 19° may also results in protein denaturation and alveolar bone necrosis. In 1982, Eriksson and Albrektsson in another study indicated that exposing the bone to a temperature of 53°C for 1 min interrupted the blood flow [6]. In 1988; Sauk et al observed the exposure to a temperature of 43°C may result in protein denaturation in the periodontal ligament [7]. There are several methods of measuring tissue temperature with or without contact [8]. Infrared thermometers can measure the tissue surface and determine the superficial temperature without contact. The aim of the study is to evaluate the temperature changes on the external root surface during root canal preparation with three different rotary file systems (Protaper Next, Mtwo and