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Editorial

I am indeed delighted to see that the Vol I Issue 1 April- June 2014 of our journal is being released for circulation as per schedule.

The sum and substance of our Journal Dental Bites is meant for throwing light on articles based on the recent advancements and rapid changes taking place in all the specialties of Dentistry.

The read on book based knowledge is being surpassed by problem solving and evidence based learning and teaching which is being reflected in the articles published through our Journal.

In this aspect our journal is not only a medium of learning and updating for the fraternity as a whole, but also is a tool to guide the younger generations who are highly talented, for writing and publishing articles based on their daily practice.

I do hope and wish that all of us will spare our valuable time to share our experiences through our journal, prepare articles which will be informative and impressive enough to inspire the readers to wait for the next issue.

Sd/-

Dr. Kunjamma Thomas

Editor

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EXCISION OF PLEOMORPHIC ADENOMA OF THE PAROTID GLAND USING NOVEL LANDMARK FOR IDENTIFICATION OF FACIAL NERVE TRUNK – A CASE REPORT

*Dr. Manoj Kumar. K.P.,**Dr. Anroop Anirudh,**Dr. Nithin Kumar ,***Dr. Sarfras Raseel.T.

Abstract

This paper describes a five year standing benign pleomorphic adenoma of the left parotid gland, which was treated surgically after initial investigations and imaging. A novel and reliable method for identification and isolation of facial nerve trunk used in the surgery is also discussed in this article.

Key words: parotid gland, pleomorphic adenoma, surgical excision,facial nerve trunk

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Introduction

Salivary gland tumors are rare and account for 2–3% of tumors occurring in the head and neck.[1] Pleomorphic adenoma (PA) is a benign neoplasm which is commonly encountered in the parotid gland and other major salivary glands.[2-4] At times they can also develop in minor salivary glands of the palate. However the majority of minor salivary gland tumors are malignant.[5]

Pleomorphic adenoma (PA) is the most common neoplasm of the large salivary glands (80%) and affects mostly the parotid gland (85%), less frequently the accessory salivary glands. It derives its name from the architectural pleomorphism seen by light microscopy. It is also known as "mixed tumor, salivary gland type", which describes its pleomorphic appearance as opposed to its dual origin from epithelial and myoepithelial elements. Corresponding to small glands, the palate is the most common site for mixed tumor. Another region that is frequently affected by the tumor is the lips. A small minority of tumors are located in the oral cavity, neck and nasal cavity. Other intraoral sites include the buccal mucosa, tongue, floor of mouth, tonsil, pharynx, retromolar area, gingiva and nasal cavity. [5]

Pleomorphic adenomas may occur at any age, but mainly they affect patients in the fourth, fifth and sixth decades. Forty percent of them are male, 60% female.[5] It also ranks as the most common salivary gland neoplasm in children, representing 66–90% of all salivary gland tumors.[6] The potential risk of the PA becoming malignant is about 6%.[5]

Case report

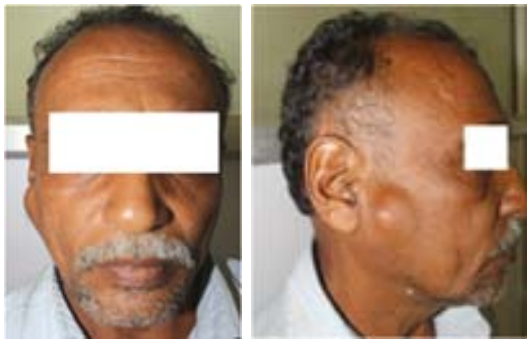
A 56 year old male patient reported to the Department of Oral and Maxillo-Facial Surgery in KMCT Dental College with a chief complaint of swelling over the left back region of face just beneath and in front of the left ear lobe (Fig1). Swelling was present for the last 5-6 years. Patient had no pain or other discomfort. No difficulty while eating and performing other routine activities or difficulty in mouth opening. The swelling continuously and gradually increased in size. Patient experienced occasional dryness of mouth which he assumed to be normal to all individuals.

Patient had a history of hospitalization 4-5 years back after chest pain. But currently he was not taking any medications and he does not have any problem. He had uneventful extractions and scaling few years back. He used to smoke previously but stopped it 20 years back.

On examination, patient appeared healthy otherwise, apart that he had discrete, non-nodular single, ovoid swelling of 5cm to 8cm diameter, over the left parotid region extending from below the earlobe posteriorly to 6cm anteriorly and to the tragus of ear superiorly to 4cm below the border of mandible(Fig2). The overlying skin appeared normal. On palpation it is a firm non nodular swelling which is superficially situated and freely movable. Mild elevation of the ear lobe was also seen. After initial clinical examination patient was sent for routine blood examination. As definitive investigation USG and CT were taken.

Both of these confirmed a tumor involving the entire superficial lobe and extending in to the deep lobe of parotid gland. To elicit the nature of lesion FNAC was performed which confirmed the diagnosis of pleomorphic adenoma.

Figure 1&2



Treatment

The mass was excised in-toto by standard submandibular approach. Histology showed a pleomorphic adenoma with an intact capsule and no indication of malignancy.

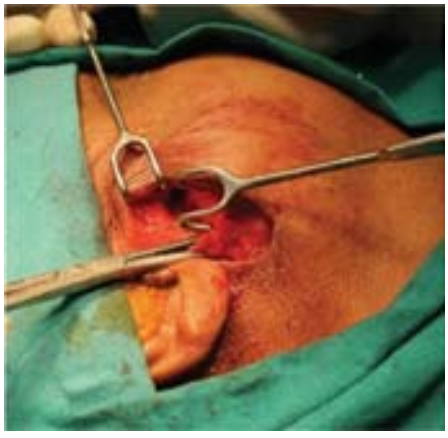
Surgical technique

The surgical technique used a reliable anatomic landmark to locate facial nerve trunk i.e, the notch formed by the anterior border of the mastoid process and the posterior border of the tympanic plate.[1] This notch forms most inferior point of the tympanomastoid suture.

Incision and reflection of flaps were performed in usual manner for parotid surgery(Fig3). The anterior border of the sternocleidomastoid muscle was freed from posterior border of parotid gland and retracted posteriorly. Index finger was then introduced into the incision to identify the

notch. After notch was located dissection was done carefully to expose the notch.

Figure 3



Simultaneously the location of posterior belly of digastric and posterior border of the gland was confirmed. From this point careful dissection 1cm medially was performed because stylomastoid foramen is located approximately 1cm medial to the anterior border of mastoid process. From this point facial nerve trunk could be easily identified (Fig 4, 5). Special note was given to keep the mastoid process always in surgical field.

Figure 4

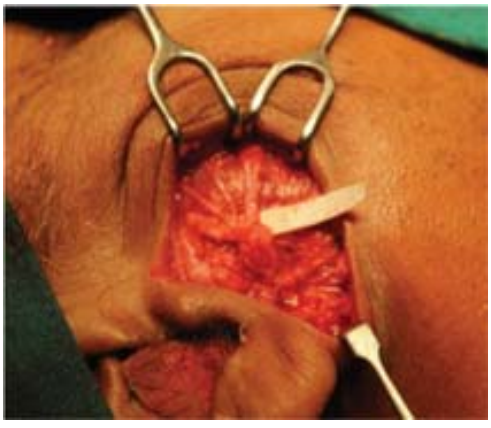
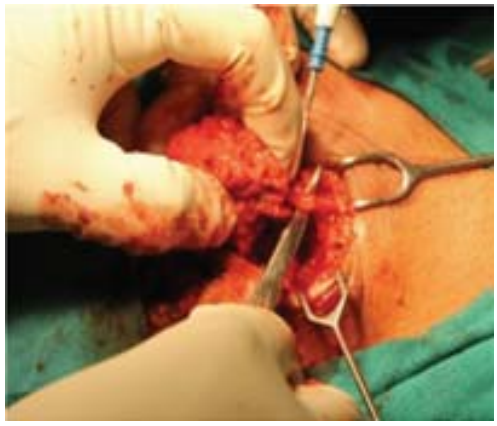


Figure 5



Surgical outcome

Perioperative period was uneventful with minimal transient paralysis of the left side face which was resolved automatically after 1 month of surgery. No recurrence was noted after one year of follow up.

Discussion

Pleomorphic Adenoma (PA) is the most common salivary gland tumour. The main site of occurrence is the parotid gland, affecting patients of any age, more frequently between the fifth and sixth decades of life. In 1989, Schultz-Coulon reviewed 31 cases of giant PA's of the parotid gland during the last 140 years.[2] He found a female predominance (64.5%), with an age range of 20–40 years old, and weight of the tumour between 1 and 27 kg.

In three cases (10%), malignant areas were found within the tumours. In most of the cases described, it is considered that lack of information and negligence of the patients is relevant for the long course of an evident clinical mass.

In general two basic surgical approaches have been used to identify and preserve facial nerve trunk during parotid surgeries. One method is to identify the facial nerve by dissecting the nerve from proximal to distal. Another method is identification and retrograde dissection from the peripheral nerve branches to the trunk. Use of the former technique is generally believed to be more safe and reliable. [1]

To locate the nerve trunk various landmarks such as the tragal cartilage pointer, upper belly of the digastric muscle and posterior auricular artery have been described. Each of these has its own advantages and short comings. However bone structures are more reliable as surgical landmarks because of their rigid and reliable location.

The advantage of the landmark which is used in this surgery is that main trunk of facial nerve exiting from the stylomastoid foramen can be directly identified by this; as a result parotid surgery is simplified considerably.

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HERPES LABIALIS: A CASE REPORT

*Dr. S Vidyanath, **Dr. Dexton Antony Johns, ***Dr. Pradeep Samuel, ****Dr. B Preethi

Abstract

Herpes labialis is a commonly occurring rash of the lips and is characterized by erythema and blisters. This case report discusses on a case of Herpes Labialis in an adult female patient. This article intends to highlight the features of this commonly occurring disease.

Key words: adults, herpes labialis, lips

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Introduction

Herpes labialis is a commonly occurring disease. Its average incidence is 1.6 per 1000 patients per year and its prevalence is 2.5 per 1000 patients per year. Approximately one-third of all infected patients suffer relapses.[1] Herpes labialis is a rash of the lips and is characterized by erythema and blisters that are preceded and accompanied by burning pain.

Case Report

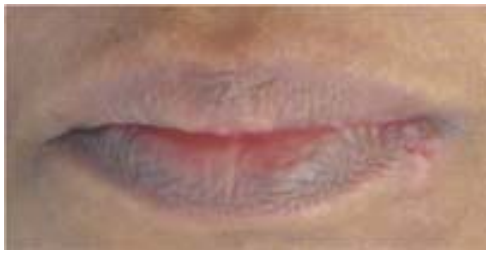
A 42 year old female presented with a chief complaint of ulcer in her left corner of the mouth (Fig 1). She noticed the ulcer 3 days back.

Patient gave a history of fever 1 week back and the fever subsided after 2 days and she also gave a history of similar lesion 1 year before. Based on these features a diagnosis of recurrent herpes labialis was given.

Discussion

Herpetic lesions occurring in children are usually primary lesions. On reactivation, these viruses develop recurrent infections and are called as recurrent herpes labialis.[2]

Fig 1: Multiple small ulcers in the corner of the mouth



Herpes Simplex Virus (HSV) is a double-stranded DNA virus and is a member of the human herpes virus family. The virus exists in 2 forms, HSV-1 and HSV-2. Most oral, facial and ocular infections result from HSV-1, whereas HSV-2 accounts for most genital and cutaneous lower body herpetic lesions.[3]

Herpes labialis is contagious for individuals who have not been previously infected by the virus and for those with

weakened immune systems. HSV is short-lived on external surfaces; infection therefore depends on intimate contact with an individual who is shedding live virus through secretions, saliva or skin. In addition, the virus must come into contact with a break in the integrity of the mucosa or skin of a susceptible host.[3]

After primary infection, the virus recedes via the sensory nerve into the respective ganglion (usually the trigeminal ganglion), where it lies latent throughout the individual's lifetime.[1] When a trigger occurs, the dormant virus begins to replicate, leaves the ganglion and makes its way along peripheral nerves to cause vesicles at the specific mucosal site.

Repeated viral waves can affect other branches of a single neuron, causing a larger lesion to form as smaller vesicles coalesce.[4] Dental procedures often cause herpetic recurrence on the epithelium adjacent to the teeth.[4]

To diagnose herpes labialis in general practice, physicians are limited to taking patients' histories and performing physical examinations. A primary infection with HSV-1 is often asymptomatic. However, when symptoms do occur, young children often present with herpetic stomatitis, characterized by fever and the formation of small blisters and ulcers in the front of and around the mouth, on the tongue, and on the lips.[1]

Relapses are characterized by burning skin rash on the lips and around the mouth. In about 25% of relapse cases the infection heals before any blisters can form.

The most practical diagnostic techniques are either Tzanck testing, viral culture or direct immunofluorescence.

Acute forms of HSV infection pose a high risk for transmission. Dental professionals risk occupational exposure to oral herpes, herpetic whitlow of the digits and ocular herpes. For this reason, gloves and safety glasses must be used during the examination, especially given that the risk of asymptomatic shedding is omnipresent.[3] Patients should also be advised to minimize intimate contact when active lesions are present, as they are at risk of spreading the virus.

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BIOPSY- ITS CLINICAL IMPLICATIONS

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**Dr. Swapna Honwad

Abstract

Biopsy is the removal of tissue from the living organism for the purpose of microscopic examination and diagnosis. Biopsy remains the touchstone of definitive diagnosis of hard and soft tissue lesions. All dental clinicians should use biopsies when nurturing the concept of total patient care.

Key Words: Biopsy, incision, excision

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Introduction

The famous theme that "The best surgeon is a clinical pathologist who performs operations" is repeated throughout the surgical literature. It is obvious that the surgeon who appreciates the fundamental morphological and biochemical changes in the tissues of his patients would be a better clinician.[1]

As the dental profession enters the new millennium, additional emphasis in detection of disease and sophistication in diagnosis is seen. Under these circumstances biopsy has become and probably will remain the most important factor to an accurate and timely diagnosis.[1]

Biopsy is the removal of tissue from a living organism for the purpose of microscopic examination and diagnosis. Clinician who performs the biopsy procedure should know when and how to do a biopsy, be able to list the indications for a biopsy, describe techniques to do biopsy, understand the importance of having a good differential diagnosis before doing a biopsy.[2]

Indications for Biopsy

- Any lesion that persists for more than 2 weeks with no apparent cause
- Any inflammatory lesion that does not respond to local treatment after 10-14 days (after removing local irritant)
- Persistent hyperkeratotic changes in surface tissues
- Any persistent tumescence, either visible or palpable beneath relatively normal tissue
- Inflammatory changes of unknown cause that persist for long periods
- Lesions that interfere with local function (e.g. fibroma)
- Bone lesions not specifically identified by clinical and radiographic findings
- Any lesion that has the characteristics of malignancy:
  - Erythroplasia
  - Ulceration
  - Duration more than 2 weeks
  - Rapid growth rate

- Bleeding lesion on manipulation
- Induration

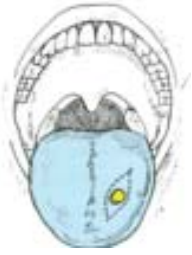
Types of Biopsy

1. Incisional biopsy
2. Excisional biopsy
3. Aspiration cytology
4. Exfoliative cytology

Incisional Biopsy

Only a particular portion or most representative part of a lesion is biopsied(Fig 1). Indicated if lesion is large or multiple or has different characteristics at different locations where more than one area should be biopsied or if the lesion appears difficult to excise because of its extensive size (i.e., larger than 1 cm in diameter), its hazardous location and whenever the clinician suspects malignancy.[2, 3]

Fig1: Incisional Biopsy



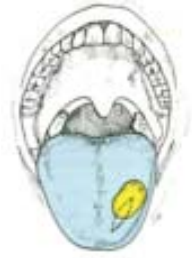
Technique to perform incisional biopsy:

- Representative areas are biopsied in a wedge fashion.
- Margins should extend into normal tissue on the deep surface.
- Necrotic tissue should be avoided.
- A narrow deep specimen is better than a broad shallow one.

Excisional Biopsy

This procedure is indicated for small lesions which is less than 1cm where complete excision is possible without mutilation of tissues and clinically benign lesions.Complete removal of the lesion along with a portion of normal adjacent tissue is performed.[2,3]

Fig 2: Excisional Biopsy



Technique to perform excisional biopsy:

- The entire lesion with 2 to 3 mm of normal appearing tissue surrounding the lesion is excised.

Steps to perform a biopsy

Select the most representative area of the lesion to be biopsied. Procedure is performed either using a scalpel or cautery or high frequency cutting knife. Other methods are removal by biopsy forceps or biopsy punch, aspiration using a needle with large lumen or exfoliative cytology where in surface of lesion is scraped and cytological study is performed.[1]

Procedure

a) Preparation of site to be biopsied

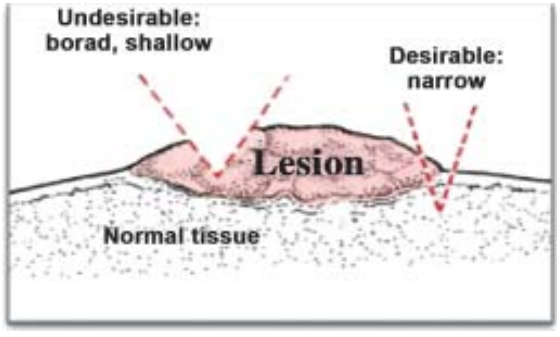
Do not paint the area to be biopsied with any colored antiseptic agent as the color may interfere with staining and may lead to artifacts.

b) Anesthesia

Block local anesthesia is preferred to avoid artifactual distortion of the specimen. If infiltration, local anesthesia should be at least 1 cm away from the lesion. Use minimal quantity of local anesthetic solution.

The most representative site of the wound is identified (Fig.3). A section from the identified site of the wound is removed. Stay sutures if placed should not pass through the lesional tissue rather placed away from the lesional tissue because it can cause compression of tissue and may interfere with diagnosis.

Fig 3: Desirable incision to be performed when tissue bit removed



Use sharp instrument for biopsy, repeated cutting of the tissue is to be avoided because it may lead to mutilation of tissue. Avoid beating up the tissue. Immediately mark the specimen for orientation.

Both epithelium and connective tissue has to be included in the section with adequate depth for the incision (Fig 4&5).If possible include adjacent normal tissue. Biopsy specimen should be of adequate thickness and depth. Incision should be deep and narrow rather than broad & shallow.

Thin specimens should be placed on a piece of glazed paper and dropped into fixative to prevent curling of the tissue. Care should be taken not to mutilate the specimen when grasping tissue with forceps. Stay sutures will help handling of tissue. Small atraumatic forceps should be used cautiously. Tissue is cleaned and inserted immediately in 10% formalin solution for fixation. Fixative should be twenty five times the volume of tissue bit. Do not squeeze the tissue into the container.The biopsy site is sutured after achieving hemostasis.

The specimen container should have a wide mouth, so that the specimen can be easily placed & retrieved. Proper labeling of the biopsy container including name, age, sex of the patient, date and time, type, nature and site of the biopsy.

Fig 4: In lesions with ulcerations, include a portion of the ulcerated area in your biopsy

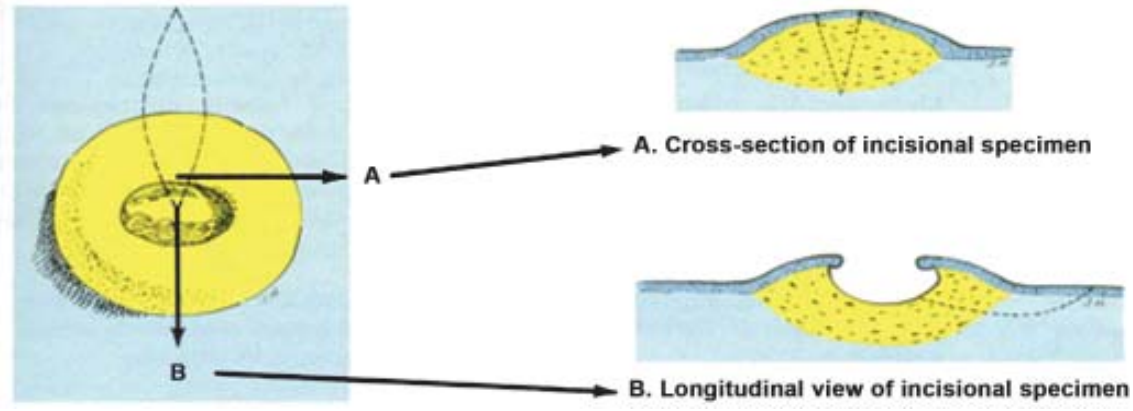
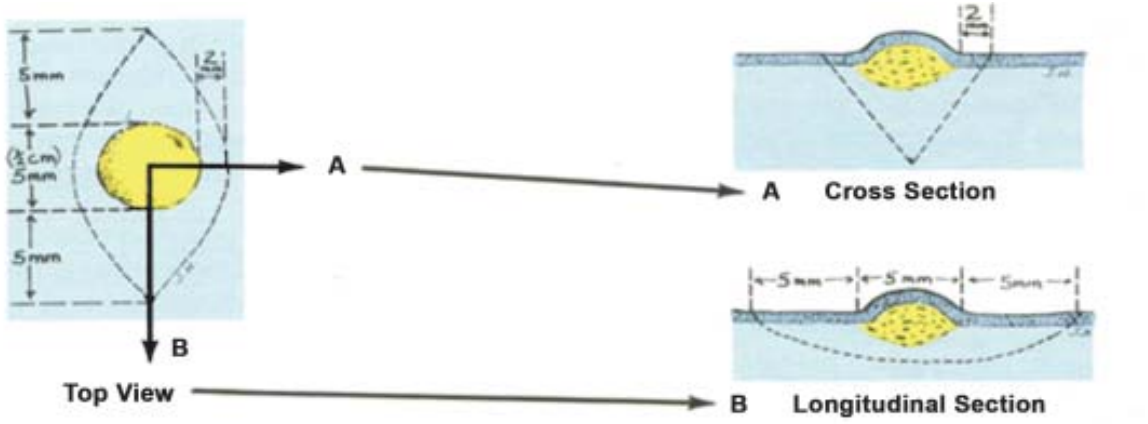


Fig 5: Dimensions for excisional biopsy. Extend margins at least 5 mm beyond the clinical margin of the lesion



Mention the brief clinical, radiological and other relevant features of the lesion along with the provisional diagnosis.

For lesions with diffuse borders palpate the extension of the lesion below the visible clinical margin, modify normal wedge biopsy technique so that the lateral surgical margins are more parallel and the base is wedge-shaped to ensure that all the lesional tissue is removed (Fig 6).

Removal of tissue with a wide flat base closure will be difficult. If unable to close the base, can develop into hematoma and possibly infection. For biopsies in palatal region it is ideal to leave the wound 'open' (Fig 7).

Certain points to be considered while performing an incision for biopsy

- Strive for an elliptical wedge of tissue as the surgical site is easier to suture closed
- Incise parallel, not perpendicular to nerves, arteries, and veins
- Incise parallel, not perpendicular to muscle fibres and attachments
- If there is a choice, follow the line of stress or tension to minimize visibility of the scar (especially if extending onto vermilion of lips)

Providing Clinical Data

The most neglected component of biopsy is adequately filled history sheet and

Fig 6: modified incision to include whole lesion

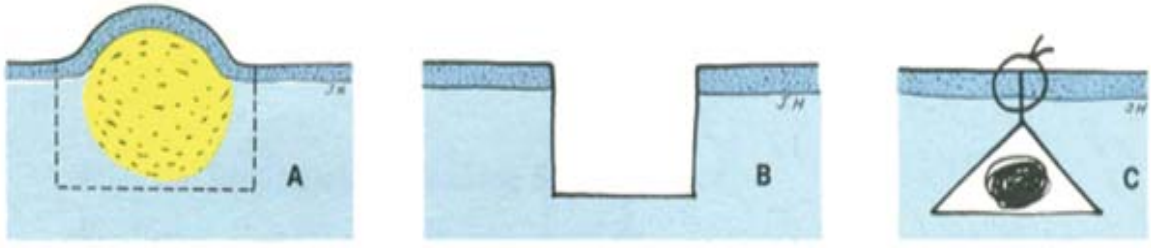
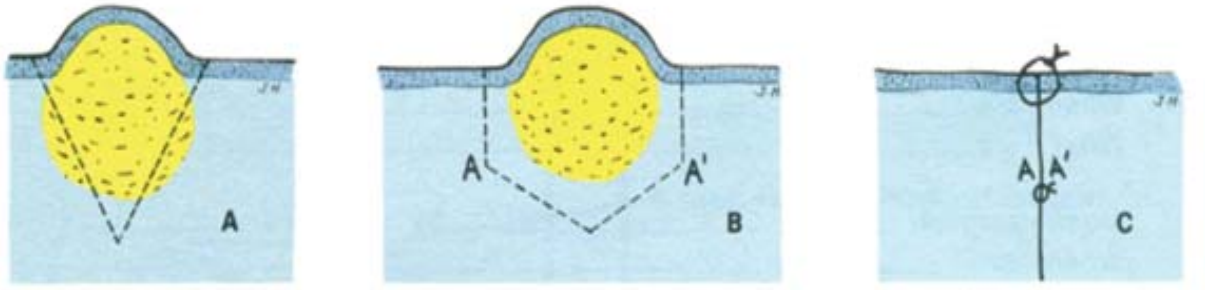


Fig 7 : biopsy performed in the palate



is the most common cause of equivocal, inaccurate & erroneous diagnosis.[1]

The pathologist is handicapped by not having seen the patient, not being able to ask pertinent questions or to examine the lesion. He relies exclusively on the observations and intellect of the contributor for this information, by means of a good history, description and clinical interpretation of the lesion. A detailed clinical data should accompany each biopsy specimen bottle. In addition submission of pertinent radiographs is highly desirable and occasionally imperative for diagnosis.[3]

Conclusion

Do not do a biopsy unless you can make a reasonable differential diagnosis. Your differential diagnosis will influence whether you do an incisional or excisional biopsy. An inadequate excisional biopsy on a malignant or potentially malignant lesion is not good, since it will be difficult to determine margins for definitive excision. Biopsy though performed by the clinician, histopathological interpretation is done by the pathologist, a sound & proper understanding between the two is required to arrive at a proper diagnosis. Thus dentist can render invaluable service to his patients with early detection & diagnosis.

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CONE BEAM COMPUTED TOMOGRAPHY- AN ADVANCEMENT IN IMAGING MODALITY

* Aarathi Krishna, ** Dr. Naseem K.T, *** Dr. Binu Purushothaman, ****Dr. Harishkumar V.V

Abstract

CBCT is a contemporary, three dimensional, diagnostic imaging system designed specifically for use on the maxillofacial skeleton. It has made great progress in the last 2-3 years. Dentistry has gone digital with the advent of CBCT.

Key words: Cone beam computed tomography, digital, dentistry

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Introduction

CBCT is a contemporary, three dimensional, diagnostic imaging system initially developed in 1982 for angiography, designed specifically for use on the maxillofacial skeleton. It is a compact, faster and safer version of regular CT. Also known as dental volumetric tomography, cone beam volumetric tomography, dental computed tomography and cone beam imaging. Most preferred term is cone beam computed tomography because it is a digital analogue of film tomography.

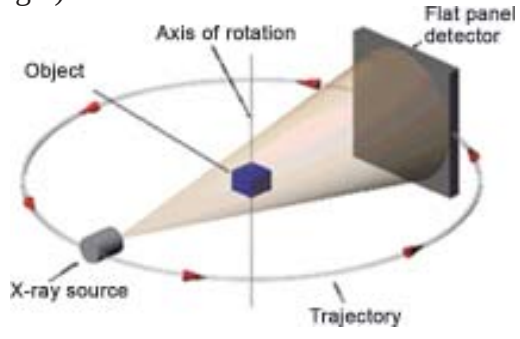
Its features include :

- Lesser radiation
- Less than a minute
- Small volume and high quality
- Uses a 2D flat panel detector
- Gives volumetric data
- Low cost, low heat and compact design

Patient positioning can be considered in 3 different positions: sitting, standing and supine. Scanning process consists of a scanner which rotates around patient's head and obtains nearly 6OO distinct images; Scanning software which collects the data and reconstructs it to produce a 3D voxel of anatomic data; and a visualizing software which manipulates the collected data and visualized as high quality images.

How CBCT works

A 3D cone or pyramidal divergent x-ray beam is directed through a central object onto a detector {either solid state flat panel or image intensifier/charge coupled device}. After a single two dimensional projection is acquired by the detector, the x-ray source and detector rotate a small distance around a trajectory arc. At this second angular position another basis projection image or frame is captured. This sequence continues around the object for the entire 36O degrees (full trajectory) or a reduced or partial trajectory (Fig 1).



CBCT image production has 4 components:

- X-ray generation – Pulsed x-ray beam is used to reduce patient exposure time.
- Image detection system – Flat panel detector provides greater dynamic range and greater performance.
- Image reconstruction –On the basis of 1OO-6OO projection images acquired.
- Image display – In axial, sagittal and coronal planes.

CBCT output includes:

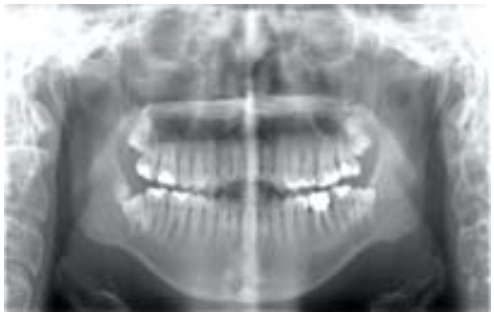
- 3D visualization of the oral and maxillofacial complex from any plane.
- Can be visualized as – 2D, 3D or a combination of both 2D and 3D techniques.

Comparison between CBCT, medical CT and panoramic view

Panoramic view (Fig 2) provides distorted and magnified image which can be viewed only in a layer, and often adjacent structures are superimposed.

In CBCT, the images are undistorted, and viewed in cross section, axial and sagittal modes(Fig 3). Also, structures can be separated without superimposition.

Fig 2: Panoramic View



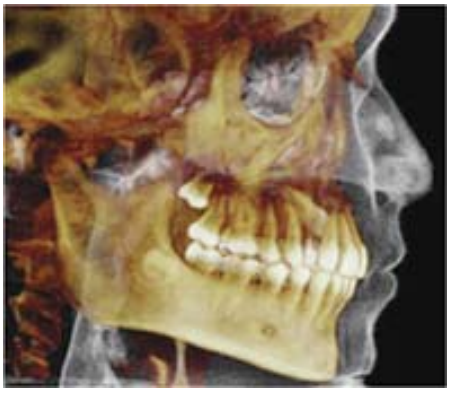
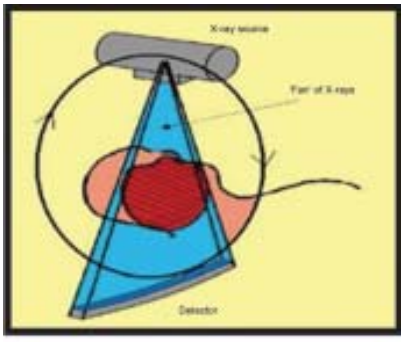
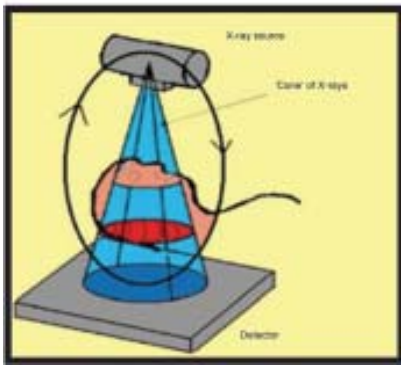


Fig 3: CBCT View

In medical CT, a linear detector is present which provides a conventional linear fan beam and less data (Fig 4). Whereas, a CBCT has an area detector with cone beam and more volume of data (Fig 5).

Fig 4& 5:Medical CT& CBCT





Clinical application

This is an OPG of a 11 year old child with a supernumerary tooth on the upper left first premolar region (Fig 6).

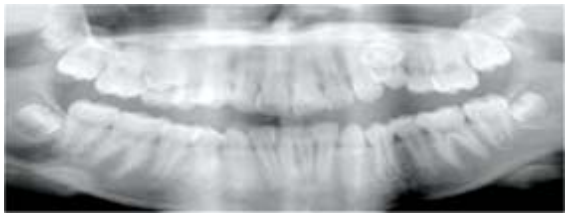
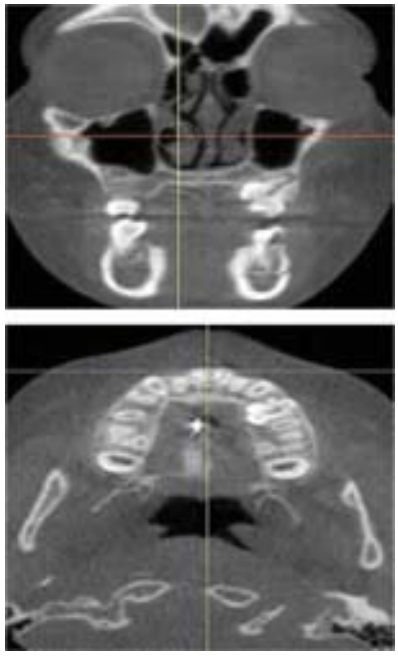


Fig 6: OPG of supernumerary tooth

No two dimensional radiographs were able to depict its size. Then CBCT was performed (Fig 7,8).

Fig 7&8: CBCT



This was the anomalous tooth after extraction (Fig 9). It was noticed that there were fused crowns with a single root canal system.

Fig 9: Anomalous tooth

Specific applications in dentistry

Implant site assessment:

- Provides cross-sectional images of alveolar bone height, width, & angulation.
- Accurately depicts vital structures such as inferior alveolar dental nervecanal in mandible or sinus in maxilla.

Orthodontics&

3-dimensional Cephalometry:

- CBCT imaging is being used in diagnosis, assessment, & analysis of maxillofacial orthodontic & orthopedic appliances.
- Provides display of position of impacted &supernumerary teeth & their relationship with adjacent roots & anatomic structures.
- CBCT also provides adequate visualization of TMJ, pharyngeal airway space, & soft tissue relationship.
- Greatest potential use of CBCT in orthodontics is that it is capable of providing both conventional two-& three-dimensional cephalometric images in one acquisition.
- CBCT data can be manipulated by the ray sum technique to generate simulated panoramic, lateral, submentovertex, & posteroanterior cephalometric images.
- A potential benefit of 3D cephalometry includes accuracy of linear measurements, visual demonstration of dentoskeletal relationships & facial esthetics & potential for assessment of growth &development.

Some of the representative CBCT imaging systems

- i-CAT CT SCANNER
- NEWTOM VG
- 3D ACCUITOMO

Drawbacks

- Noise from radiation scatter
- Streak artifacts from metal restorations
- Good training is required for interpretation
- Cost range is from Rupees 90,00,000 to 100,00,000
- Poor soft tissue contrast

Conclusion

CBCT is a breakthrough which supports one of the most discussed topic *"Dentistry is going digital"* or rather we can conclude that Dentistry has gone digital with the advent of CBCT. It has made great progress in the last 2-3 years. However there are issues to be rectified and further innovations required.

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Aarathi Krishna received the Best Paper Award for CONE BEAM COMPUTED TOMOGRAPHY- AN ADVANCEMENT IN IMAGING MODALITY at The Dr. Moideen Sha Chamba Memorial State level Scientific Paper Presentation Competition for BDS students & Interns, organized by Govt. Dental College Calicut Alumini Association in April 2014.

CYTOKERATIN: A REVIEW ON ITS MOLECULAR STRUCTURE AND EXTENT IN DIAGNOSTIC PATHOLOGY

*Dr. Swapna Honwad,** Dr. S V Ravi, * Dr. S Vidyanath, ***Dr. Ravichandra Handral

Abstract

Any living creature in this world is made up of variety of tissues and the basic unit of such tissues is cell. Like skeletal system of body cell also has cytoskeleton which serves in providing shape and support. Tissue mainly consists of epithelium and connective tissue which shows remarkable changes in health and diseases. In many pathological conditions identifying the tissue of origin is challenging for pathologists. In solving such puzzles cytokeratin plays very important role. Cytokeratin is intermediate filament of cytoskeleton present in the epithelium and is the most stable element. Different types of epithelia have different chains of cytokeratins. The present article deals with review of cytokeratin including its role in histopathological diagnosis.

Key words: cell, cytoskeleton, cytokeratin, histopathology

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Introduction

The cell is basic structural and functional unit of body. Cytoskeleton is skeletal system of the cell which gives support and shape. The concept of cytoskeleton was introduced by French embryologist Paul Wintrebert in 1931.[1] Cytoskeleton is system of filamentous intercellular proteins of different size and shape that form complex, interconnected network throughout cytoplasm. It is composed of actin-containing micro-filaments, tubulin-containing filaments and intermediate filaments (IF).[2]

These IFs are major part of cytoskeleton and are stable.[2] Cytokeratins (CK) are proteins of keratin-containing intermediate filaments found in the intracytoplasmic cytoskeleton of epithelial tissue. The term "Cytokeratin" began to be used in the late 1970s by Franke, Schmid, Osborn and Weber.[1,2]

Apart from being part of cytoskeleton, intermediate filaments have specific use in pathology. They can be detected in cell by use of specific monoclonal antibodies. They are highly sensitive markers for identifying carcinomas and are generally employed as markers.[3]

Malignant cells expressing keratin positivity indicate epithelial origin. Antibody against keratin is extremely use full marker for occult metastasis. The cell type of poorly differentiated tumors can be investigated because tumor cells tend to have same intermediate filaments as parent cell of origin.[4]

TYPE I	
Acidic keratins	Epithelia
TYPE II	
Basic keratins	Epithelia
TYPE III	
Vimentin	Mesenchyme
Desmin,	Muscle
Glial fibrillary acidic protein	Glial cells &astrocytes
Peripherin.	Peripheral & central neurons
TYPE IV	
Neurofilaments	Developing central nervous system and mature neurons.
TYPE V	
Nuclear laminins	Nucleus of all cells

Mark out of intermediate filaments

IFs are rope like filaments and are called intermediate because their diameter is intermediate between that of microfilaments and microtubules that is 8-10 nm. Nearly all intermediate filaments consist of subunits with molecular weight of about 50KDa.[2]

Different types of human cells i.e benign or their neoplastic counterparts express different intermediate filaments. The investigations appear to indicate that intermediate filaments expression patterns are characteristic for each kind of cells. So, the presence of certain intermediate filaments as well as intensity of their staining and their pattern of staining, are useful in the classification and diagnosis of neoplasms.[3]

Weak and aberrant staining for certain intermediate filaments is also characteristic of various neoplasms and is yet another useful diagnostic tool. The behavior of cytoplasmic intermediate filaments and their different polypeptides have been biochemically and immunohistochemically analyzed.[5, 6]

Types and structure of cytokeratin

Cytokeratin comprises large number of 30 distinct proteins but till now only 20 are known and are classified according to their molecular weight and isoelectric point. They are the products of two gene families and now are classified in to type I and II keratins.

- Type I are small molecules of molecular weight [40-56.5KD] with an acidic isoelectric point. The pH is < 5.6
- Type II are large molecules of molecular weight [53-67KD] and are neutral to basic. The pH is >6.[7,8]

Each epithelial cell expresses specific pairs of type I and type II keratins i.e the keratin form heterodimer, the filament being constructed from a protein pair which consist of a type I and II keratin.[9]

Type I and II keratins appear to exist in equimolar amounts in any given epithelial cell. The acidic group includes CK10- CK19 and the basic group contains CK1-CK8. Generally low molecular weight pairings are seen in simple epithelia, higher molecular weight pairings are present in stratified non-keratinizing epithelia and highest molecular weight keratins are found in skin and corneal epithelium. The unpaired lowest weight CK 19 is the first cytokeratin to appear during embryonic development, and is also frequently seen in epithelial tumors.[5]

Cytokeratin expression is not only restricted to epithelia and their tumor, some non-epithelial derived tumors such as synovial sarcoma, epitheliod sarcoma, myosarcoma, schwannoma, glial tumors, large cell anaplastic lymphoma and malignant mesothelioma, may express immunoreactivity for cytokeratin.[9]

Antibodies such as CAM 5.2, AE 1, AE3 and MNF 118 are the most widely used antibodies with broad range of reactivity recognizing epitopes present on a number of different cytokeratins.

Molecular structure of cytokeratin

All keratin protein chains consisting of a central á-helix rich domain encompassed by non á-helical N and C terminal domains.The molecular differences between keratins arise from variable character of the head and tails. End domain sequence is important in defining function of keratin characteristics of particular epithelial cell type.[5]

Chemical, biophysical, electron microscopy established that IFs are assembled from pair of helical monomers that twist around each other to form coiled-coil dimmers. The two coiled coil twist around each other in anti parallel fashion to generate a staggered tetramer or keratin tetramer of two coiled-coil dimmers, thus forming non-polarized unit of intermediate filaments.[10]

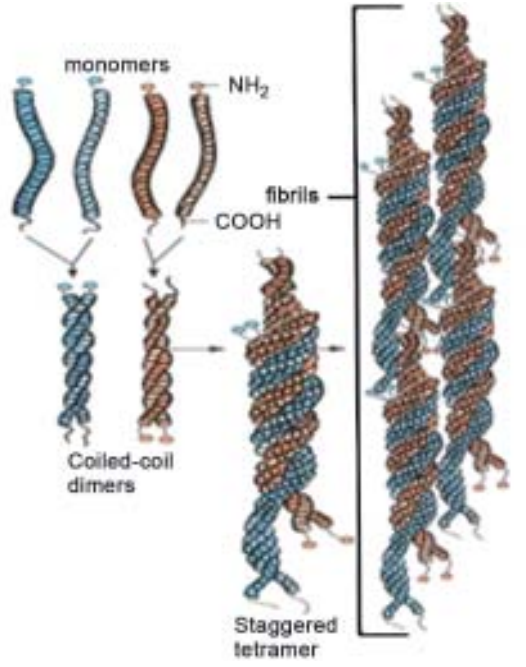


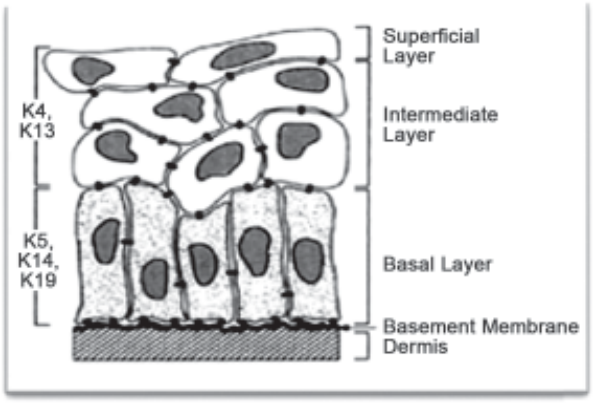
Fig 1: molecular structure of cytokeratin

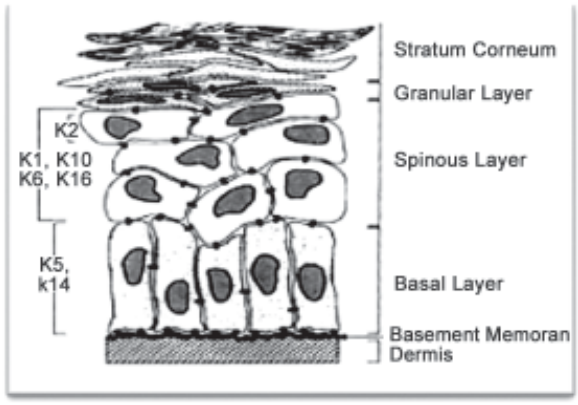
Conclusion

Understanding of intermediate filament expression at several levels has spread in the diagnostic field. The most widely used application is to clarify the tissue of origin in anaplastic tumors where diagnosis is based solely on histologic criteria, which can lead to error and inappropriate treatment.

Keratins may serve as markers of early alteration indicative of premalignant and malignant lesions. But pathologists should be aware of the existence of some rare neoplasms, which in spite of their

Fig 2&3: CK expression in non keratinized & keratinized epithelium





mesenchymal origin may show positivity for cytokeratins. More precise localization of different keratin species in oral epithelia would be possible by correlation of biochemical characterization and immunohistochemical staining with monoclonal antibodies.

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AWARDS & ACHIEVEMENTS

Dr. Kadeeja Rushin
1st year PG Student
(Periodontics)
Third prize in SPIK
essay competiton.

Dr Navia George
1st year PG Student
(Periodontics)
Best Paper in 13th ISP PG
Convention-2014

Dr. Indu Sundaram T S
1st year PG Student
(Oral Pathology)
Second Best Paper
1st KSOMP PG Convention

Dr. Anjhana Narayanan
1st year PG Student
(Periodontics)
Session Best E poster (review category)
38th ISP National Conference Kochi &
Second prize in SPIK essay competition

Dr. Benny Varghese
1st year PG Student
(Conservative Dentistry & Endodontics)
Best Poster
28th IACDE& 21st IES Conference

Aarathi Krishna
3rd yr BDS Student,Best Paper Award
Dr. Moideen Sha Chamba Memorial
State Level Scientific Paper Presentation
Competition for BDS students & Interns.

Mithila Moosa
Intern, won the Second Best paper at
Dr. Moideen Sha Chamba Memorial
State Level Scientific Paper Presentation
Competition for BDS students & Interns.

KMCT Dental College participated in "DENTWAR 2014", the Inter Dentos Sports Tournament held at PSM Dental College, Akkikkavu on 25th, 26th and 27th of April 2014. KMCT Dental College was placed in the 4th position with 15 points.

Dr. Niyas(1st year PG student, Oral Medicine) and Dr. Rahul (1st year PG student, Orthodontics) won Badminton Championship by defeating Royal Dental College in the finals.

Dr. Niyas was awarded the "Best Badminton Player" trophy.

Dr Rahul and Sreerag (Intern) won third place in Carroms. We also reached semifinals in Chess.

We also received the championship trophy and cash prize from the PSM Dental College Chairman at the award ceremony.

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Letter to the Editor: Up to 400 words and 4 references.

Announcements of conferences, meetings, courses, awards, and other items: Up to 100 words.

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dental@kmct.edu.in with covering letter.