Chronicles Of Dental Research

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EDITORIAL

Embracing Innovation and Collaboration in Dentistry

As we navigate an era marked by rapid advancements in technology and a growing understanding of holistic health, the dental profession stands at a pivotal crossroads. The challenges we face—ranging from evolving patient expectations to the increasing complexity of oral health conditions—demand a proactive approach. This issue of our journal highlights the critical need for innovation and collaboration within our field, offering insights that can drive us toward a brighter future for oral health. The integration of technology in dentistry is no longer a luxury; it has become a necessity. These innovations not only enhance clinical efficiency but also improve patient engagement and outcomes. As dental professionals, it is our responsibility to embrace these advancements, continually update our skills, and leverage technology to provide the best possible care.

This journal remains committed to promoting evidence-based practice. The articles featured in this issue exemplify the rigorous research that is essential for informed decision-making in clinical settings. By grounding our practices in scientific evidence, we not only enhance the quality of care we provide but also build trust with our patients. Encouraging a culture of curiosity and critical thinking within our practices will ensure that we remain at the forefront of dental care.

.As we continue to advance in our practices, we must not overlook the pressing issue of health disparities in oral care. Access to dental services remains a significant challenge for many communities, and it is our duty to advocate for equity in oral health. This journal aims to raise awareness about these disparities and highlight initiatives that strive to bridge the gap. By addressing these issues head-on, we can work towards a more inclusive and just healthcare system.

In conclusion, the future of dentistry is bright, fueled by innovation and a commitment to collaboration. As we move forward, let us remain dedicated to lifelong learning, embracing change, and advocating for our patients. This journal will continue to serve as a platform for sharing knowledge, best practices, and the latest research that can guide us in our pursuit of excellence in dental care. Together, we can shape the future of our profession and ensure that oral health is prioritized for all.

REVIEW ARTICLE

Prevalence of oral potentially malignant disorders in Tobacco chewers, smokers and Alcohal Drinkers: A histopathological analysis

Shakti Nayak[1] , Priyanka Rastogi[2], Sachin Kumar[3], Rudra Bhardwaj[4]

Abstract

The incidence of potentially malignant diseases of the oral cavity is increasing and also showing predilection in younger age group due to increase in intake of smokeless form of tobacco.To reduce the mortality and morbidity of disease, it is important to screen all the patients with the history of tobacco habit, and early screening plays a vital role for early intervention and prevention of oral cancer Tobacco cessation and education regarding the hazardous effects of tobacco is an essential component for reducing mortality and morbidity related to its use. Therefore, To identify Histopathological correlation of oral potentially malignant disorders in suspicious cases of squamous cell carcinoma in tobacco users,alcohol drinkers was planned and performed.

Keywords: *Potentially malignant diseases, Histopathological, Squamous cell carcinoma, Tobacco.*

INTRODUCTION

In India, tobacco consumption is responsible for half of all the cancers in men and one-fourth of cancers in women. The world health organization predicts that tobacco deaths in india may exceed 1.5 million annually by 2020.[1]Tobacco use in india differs from the globe. the documented form of tobacco used globally is the cigarette; however, in india, only 20% of tobacco is consumed as cigarette, 40% is consumed as bidi, and rest in the form of smokeless tobacco.[2] The incidence of potentially malignant diseases of the oral cavity is increasing and also showing predilection in younger age group due to increase in intake of smokeless form of tobacco.[3]To reduce the mortality and morbidity of disease, it is important to screen all the patients with the history of tobacco habit, and early screening plays a vital role for early intervention and prevention of oral cancer Tobacco cessation and education regarding the hazardous effects of tobacco is an essential component for reducing mortality and morbidity related to its use.

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AIM AND OBJECTIVES

Aim:

- To investigate the prevalence of oral potentially malignant disorders(Leukoplakia, Erythroplakia, Oral submucous fibrosis) in tobacco users, alcohol drinkers.

Objectives:

- To identify Epidemiological correlation of oral potentially malignant disorders in tobacco users,alcohol drinkers.
- To identify correlation of oral potentially malignant disorders in tobacco users,alcohol drinkers.
- To identify Histopathological correlation of oral potentially malignant disorders in suspicious cases of squamous cell carcinoma in tobacco users,alcohol drinkers

Material and method

- **Materials required:**

A: Equipment Required:

Microtome- fully automatic rotary microtome - Yorco (YSI- 062)
Microscope – Binocular light microscope (Magnus MLXi-PlusLED)
Slide warmer.
Tissue flotation bath

B: **Instruments Required:**

Coplin jars
Slide racks
Cover slips (Blue star – 22x50mm, thickness 0.13 to 0.16mm)

Microscope Slides (Blue star – 25x75mm, thickness 1.3 to 1.45mm)
BP knife
PMT set
Needle holder

C: Chemical/ Reagents Required:

10% buffered Formalin
Ethyl alcohol
Xylene
DPX Mountant
Haematoxylin
Eosin Y
L.A
Distilled Water
Acid alcohol
Alkali water
Normal saline
Betadine solution

D: Disposables Required:

Sterilized cotton
Filter papers
Gloves
Mouth masks
Headcaps
Syringe
Container to biopsy specimen
BP blade
Suture
Gauge piece

Semi Automatic Rotary Microtome Slide warmer and Tissue Floating Bath Haematoxylin and Eosin stain kit

Fig. 1 Kit for mucosal biopsies

Methodology:

Sampling method/Sample size
Convenient sampling

Sample size:
Sample size was calculated with the formula, $\mathbf{n=4PQ/L^2}$,error was kept at 15%.The sample size came out to be **n=1092** which was rounded off to 1100

ELIGIBILITY CRITERIA:

Inclusion criteria:

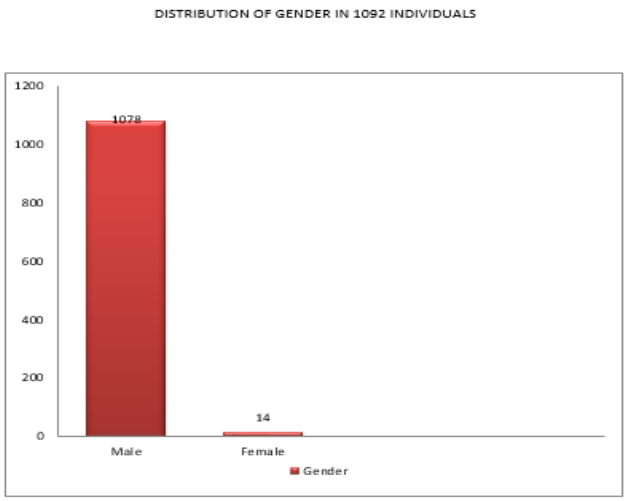
1. Individuals giving the history of habits of tobacco
2. Individuals giving the history of habits of alcohol
3. Individuals giving the history of habits of both tobacco and alcohol

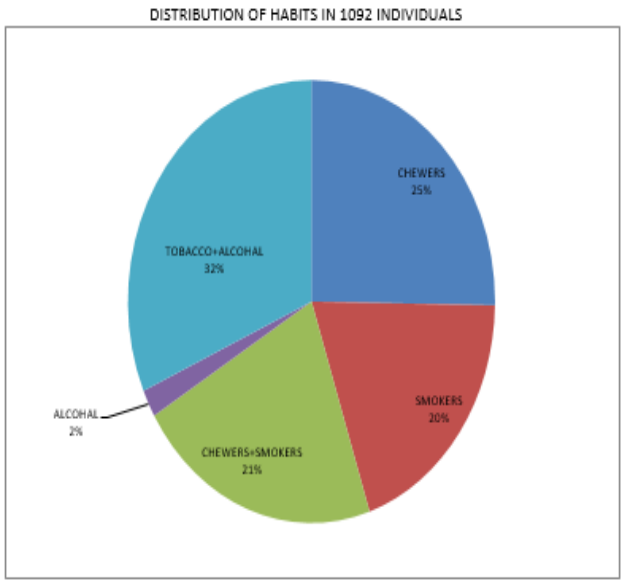
Exclusion criteria:

1. Individuals without any habits of tobacco and alcohol
2. Pregnant women
3. Patients not willing to give complete history/uncooperative patients

RESULT

The total survey of 1092 habit positive individuals was done during this period. Out of 1092 habit positive individuals 780 individuals were selected from OPD of Kothiwal Dental College and Research Centre , Moradabad and remaining 312 were from 2 Oral Cancer Detection Camps during this period .In 1092 habit positive individuals 1078 were males and 14 were females(Fig :2).





Habits were divided into Chewers (C) , Smoker (S) , Chewers +Smoker (CS) ,Alcohol drinkers (AD) and Tobacco with Alcohol users (TA) . Out of 1092 individuals it was found that 276individuals were chewers (25.27%) , 214 were smokers (19.59%), 235 were chewers as well as smoker (21.52%), 22 were alcohol drinkers (2.01%) and 345were tobacco users with alcohol drinkers (31.60%)(Fig: 3)

The age groups with gender distribution and habits were also recorded in 1092 individuals.

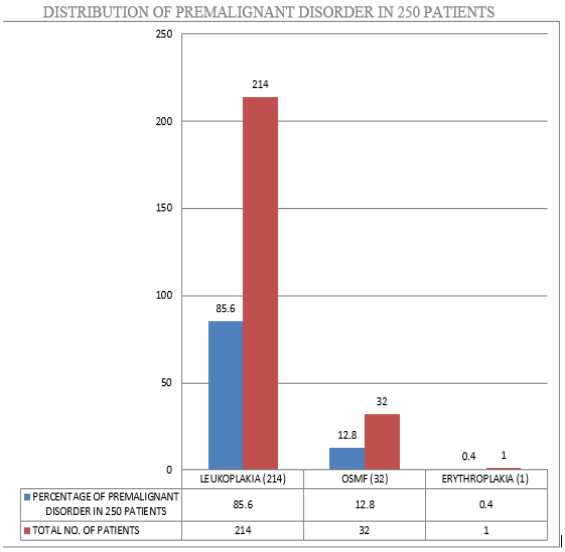
Amongst 1092 habit positive individual Oral lesion (Leukoplakia , OSMF, Erythroplakia) were seen in 250 patients .Amongst 250 patients 241 patients were males and 9 patients were females . 223 patients were identified from OPD of Kothiwal Dental College and Research Centre , Moradabad and 27 patients from Oral Cancer Detection camps.

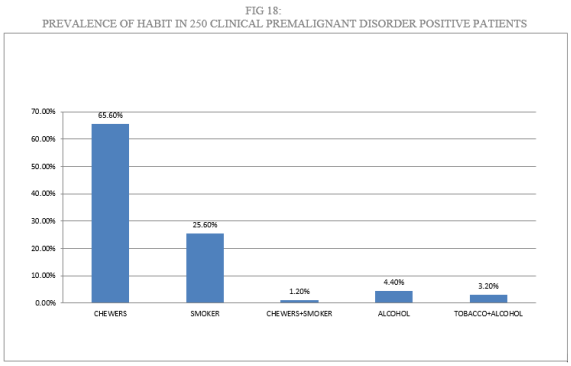
Fig 4: Clinical photograph showing Leukoplakia

Fig 5: clinical photograph showing oral sub mucous fibrosis

Fig: 6 Clinical Photograph Showing Reduced Mouth Opening

Fig:7 clinical photograph showing erythroplakia

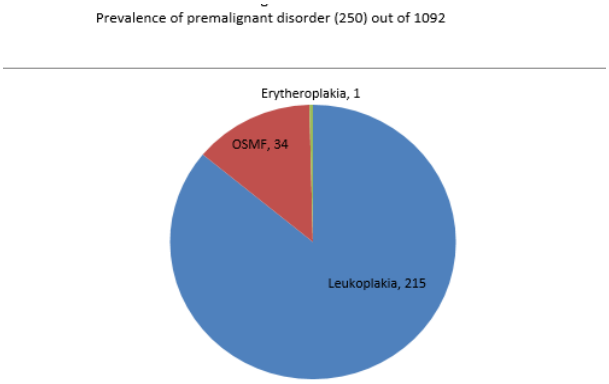




In 250 patients the 215 patients were of leukoplakia (86%) , 34 patients were of OSMF(13.6%) , 1 patient with erythroplakia (0.40%) and number of habits were C 163 (65.20%), S 64 (25.60%), CS 3 (1.20%) , AD 11(4.40%) and TA 9(3.20%) (Fig 8,9).

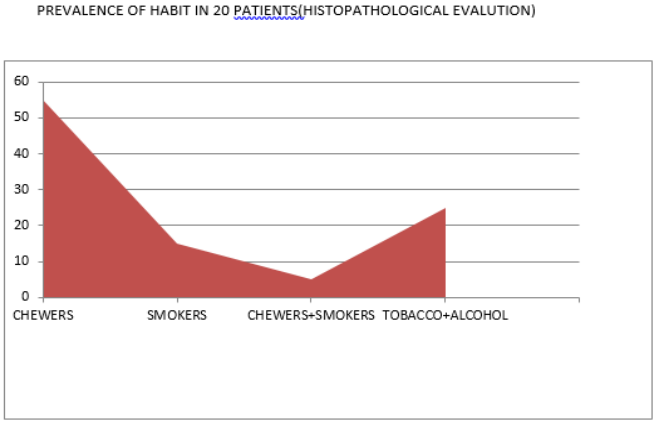
AGE GROUP (in years) & TOTAL NO. OF PATIENTS (OUT OF 250)	GENDER DISTRIBUTION (MALE =M, FEMALE=F)	PREMALIGNANT DISORDER IN MALE AND FEMALE
16-25 (37)	M=34 F=3	LEUKOPLAKIA =35 (M=32, F=3) OSMF=2
26-35 (48)	M=46 F=2	LEUKOPLAKIA =40 (M=38, F=2) OSMF=8
36-45 (83)	M=81 F=2	LEUKOPLAKIA =73 (M=71, F=2) OSMF=9 ERYTHROPLAKIA =1
46-55 (69)	M=68 F=1	LEUKOPLAKIA =60 OSMF=9
56-65 (10)	M=10 F=0	LEUKOPLAKIA =6 OSMF=-4
ABOVE 65 (3)	M=3 F=0	LEUKOPLAKIA =1 OSMF=2

The age groups, gender, and their relation with premalignant disorders were also recorded. (Table :1).



The prevalence rate of premalignant disorder was also establish out of total sample size as follows Leukoplakia (215) was 19.6% OSMF (34) 3.11%, and Erythroplakia (1) 0.91% found (Fig 10).

HABIT IN 250 PATIENTS				
HABIT	DURATION (in years)	LEUKOPLAKIA	OSMF	ERYTHROPLAKIA
CHEWERS				
	0-5	67	5	0
	6-10	60	6	0
	11-15	15	6	1
	16-20	0	3	0
TOTAL		142	20	1
SMOKERS				
	0-5	10	0	0
	6-10	17	1	0
	11-15	27	9	0
	16-20	0	0	0
TOTAL		54	10	0
CHEWERS+SMOKERS				
	0-5	0	0	0
	6-10	0	0	0
	11-15	2	0	0
	16-20	1	0	0
TOTAL		3	0	0
TPBACCO+ALCOHOL				
	0-5	0	0	0
	6-10	0	0	0
	11-15	0	1	0
	16-20	5	3	0
TOTAL		5	4	0
ALCOHOL				
	0-5	7	0	0
	6-10	4	0	0
	11-15	0	0	0
	16-20	0	0	0
TOTAL		11	0	0



Out of 250 only 20 patients consented or agreed for biopsy Amongst 20 patients 11 patients were C (55.0%) , 3 S (15.0%) ,1 was CS (5.0%)and 5 patient were TA (25.0%) (Fig 11).

The histopathological findings were further correlated with type & duration of habit and clinical presentation of lesion.

In C with 0-5 years of duration 67 out of 250 patients were found in which Histopathological correlation of 2 patients (2.98%) were noted . Out of 2 patients 1 was mild epithelial dysplasia (50%) , 1 moderate epithelial dysplasia (50%) was diagnosed. But with 6-10 years of duration 60 patients of leukoplakia in which histopathological correlation of 2 patients (3.33%) was noted. Out of 2 patients 2 was moderate epithelial dysplasia (100%)was diagnosed. In 15 patients of leukoplakia with 11-15 years of duration only 1 carcinoma in situ (7.142%) was diagnosed.

In S with 0-5 years of duration 10 patients of leukoplakia were evaluated out of them 1 with epithelial hyperplasia (50%) and 1 with hyperorthrokeratinization (50%) (total 2 (20%)) were diagnosed. But in 27 patients with 11-15 years of duration only 1(3.7037%) was diagnosed as moderate epithelial dysplasia (100%).

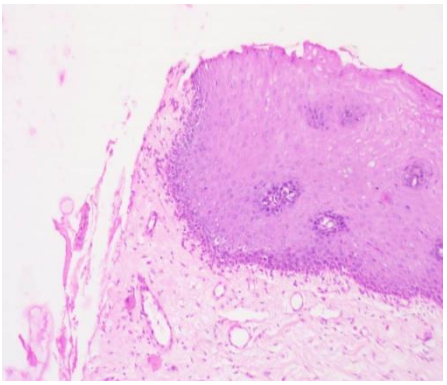


Fig 12 showing Moderate Epithelial Dysplasia

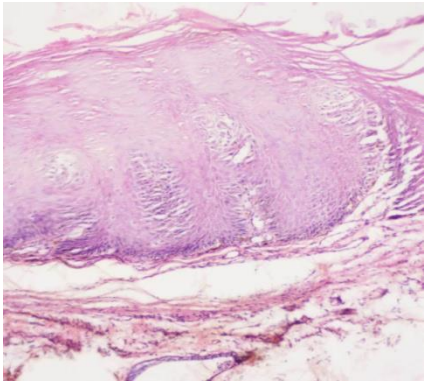


Fig 13 Showing Mild Epithelial Dysplasia

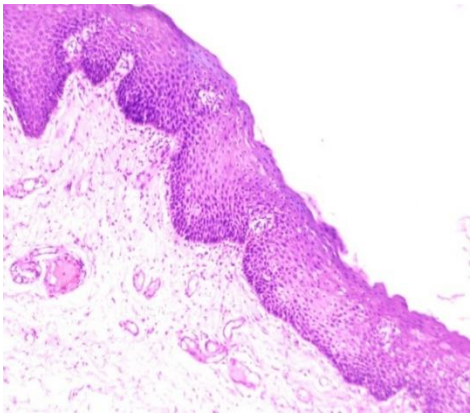


Fig 14 Showing Severe Epithelial Dysplasia

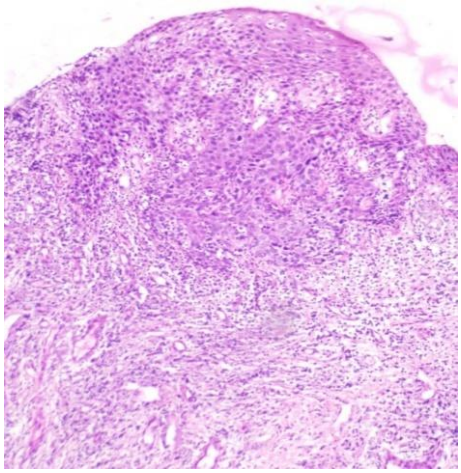


Fig 15 Showing Carcinoma In situ

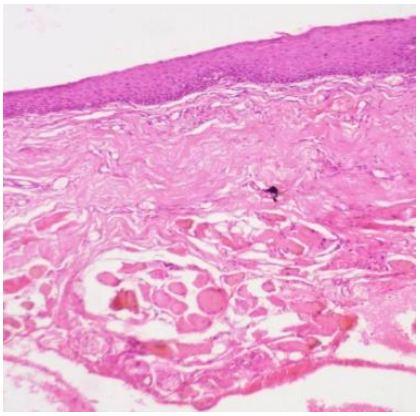


Fig 16 Showing OSMF With Moderate Dysplasia

SUMMARY

The Endeavour of present survey in Moradabad of Oral Precancerous Disorders in Tobacco users and Alcohal Drinkers with Special Emphasis on Epidemiology,Clinical and Histopathological correlation with Habits.
The aims and objectives of the study were to investigate the prevalence of premalignant disorders in Moradabad population caused in tobacco users, alcohol drinkers and gave special emphasis on:

Epidemiology correlation

Clinical correlation and

Histopathological correlation

All the patients reported to OPD of Kothiwal Dental College and Research centre were questioned for the type and nature of oral habits by the BDS final year students posted in the Department of Oral Medicine. The habit positive patients were segregated and further examined for the presence of any oral lesion by posted interns in the same department. After that the clinically positive premalignant disorder cases were further examined by me under the supervision of faculty members in Department Of Oral Pathology and Microbiology. After taking written consent from the patients the biopsy was performed and the tissues were processed, sections obtained and stained with H&E for their histopathological correlation. After completing all the Aims and Objectives the following results were achived:

CONCLUSION

From the foresaid study the following conclusions are obtained:

1. The most commonly affected age was third and fourth decade of life. Males were seen to be more commonly affected than the females.
2. Premalignant disorders were closely related to the deleterious habits such as tobacco chewing.

Tobacco and Alcohal drinking together was also considered as a risk factor for such lesions

3. As the duration of habits increased, the precancerous disorders became more dysplastic.

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REVIEW ARTICLE

A Deep Dive into Longitudinal Tooth Fractures: Challenges and Strategies

Yashmin Parveen Karishma[1], Sakshi Saumya[1], Sudhanshu Shekhar[1], Ria Sharma[1]

Introduction: *Tooth fractures are a common and frustrating issue in dentistry, especially longitudinal fractures that run along the crown and root. This review explores the characteristics, diagnosis, and management of these fractures, which often present vague symptoms that can lead to misdiagnosis and delays in treatment. With a high prevalence among those over 40, especially in mandibular second molars, understanding these fractures is crucial.*

We classify longitudinal fractures into five types, from minor craze lines to serious vertical root fractures, detailing their unique features and diagnostic challenges. Effective treatment hinges on recognizing these fractures early to prevent complications.

In conclusion, a thorough approach to identifying and managing longitudinal fractures is essential for improving patient outcomes. By enhancing dental professionals' understanding, we can better tackle these complex cases and support overall oral health.

Keyword: Craze lines, Longitudinal fractures, Split tooth

Introduction

Tooth fractures can be the most frustrating aspects of endodontic and restorative dentistry. Fractures can occur in vertical as well as horizontal plane, when it occurs in the vertical direction that is on the long axis of the crown and/or root it is called longitudinal fracture.[1] Symptoms and signs can be either vague or specific, present for several months before an accurate diagnosis is made, due to variable symptoms the diagnosis has been challenging for dentist and appropriate treatment in this regard is not delivered.[2] With all these considerations, this review brings all the aspects of longitudinal fracture starting from mechanism to treatment.[3-5]

According to 2016 version of the American association of endodontics glossary of endodontic term
"Longitudinal tooth fractures are characterized by an incomplete or complete fracture line that extends through the long axis of the tooth."[6]
The term longitudinal fracture is used because it typically represents vertical extensions of fractures over distance and time.[5]

- They are common and challenging
- They tend to grow and change over time.

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Challenge in longitudinal fracture!

Amongst various types of longitudinal fractures, the most devastating and controversial to treat is the split tooth involving the pulp chamber, and cases with incomplete longitudinal fractures might remain undetectable.[7]

What is the Incidence and prevalence of fractures?
The prevalence of cracked teeth is around 80% in patients over 40 years of age. Most common age groups which are affected are between 30 to 50 yrs and is equal for both male and female.[5]

Etiology of fracture

Etiology of longitudinal fracture is multi-factorial.[8-9]
Inadequate design features
Deep cusp–fossa relationships due to over-carving of restorations
Stress concentration
Masticatory force
Parafunctional habits
Damaging horizontal forces
Thermal cycling
Age changes in tooth structure
Endodontic treated teeth
Dental instrumentation
Root canal anatomy

Types of Longitudinal Fractures

Based on separation of fragments[10-13]

- **Incomplete:**
  It occurs when the entire fracture is seen and fractured parts can be moved without anydependence.
- **Complete:**
  It occurs when the entire fracture is not seen and fractured parts can be separated byinstruments.

Longitudinal fractures are classified into five different types by the American Association ofEndodontics.
On the basis of severity of the fracture from the *mildest* to the most e*xtensive* type.[14-18]

(1) Craze line (Fig 1)
(2) Fractured cusp (Fig 2)
(3) Cracked toot (Fig 3)
(4) Split tooth (Fig 4)
(5) Vertical root fracture (Fig 5)

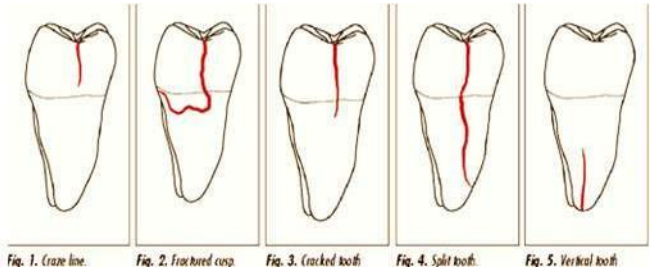


Fig 1-5: Types of Fractures[14-18]

TABLE 1: Categories of Longitudinal Fractures That Have Been Devised To Provide GlobalDefinitions. [19-23]

CLASSIFICATION OF LONGITUDINAL TOOTH FRACTURES					
	LOCATION	SIGNS AND SYMPTOMS	IDENTIFICATION AND DIAGNOSTIC TESTS	TREATMENT	PROGNOSIS
CRAZE LINE	Enamel only, Common on marginal ridges, Occlusal gingival	Asymptomatic	Direct visualization, transillumination	No treatment needed, aesthetic	Very good
FRACTURED CUSPS	Crown and cervical margin of root, Mesiodistal and labiolingual	Sharp pain with mastication and with cold	Visualize, remove restoration Visible fractures of cusps, biting test, transillumination	Remove cusp and/or restore	Very good
CRACKED TOOTH	Crown only or crown to root extension (depth varies)	Highly variable	Biting, remove restoration, Transillumination, staining wedge segments (unseparable), isolated/narrow probing, magnification	Root canal treatment depends on pulpal and periapical diagnosis; restore with full cuspal coverage	Always questionable topoor
SPLIT TOOTH	Crown and root extension to proximal surfaces, Mesiodistal	Pain with mastication, Separable segments, periodontal abscess	Remove restoration Wedge segments (separable)	Variable, must remove one segment, restore or extract	Hopeless (if maintain intact) Variable (if remove segment)
VERTICAL ROOT FRACTURE	Root only; olingual Root (any level)	None to slight	Reflect flap and transilluminate	Remove tooth or fractured root; consider fixed and/or removable bridge, or implant	Hopeless for fractured root

Craze Lines:
Craze lines are the least complicated type of fractures, a non-serious longitudinal fracture

- **Incidence** –
These are common in adults.
- **Location**-
Craze line originate on the occlusal surface and extends on any surface buccally or lingually running through the marginal ridges. It generally affects only the enamel. (Fig- 6)

Fig 6: Craze Line Affecting Enamel[24]

Clinical features
Generally Asymptomatic.

- **Causes**[25-26]
Typically, from occlusal forces like masticatory forces and parafunctional habits or temperatures in the mouth.
- **Diagnosis**
  - Direct visualization
  - Transillumination

Fractured Cusp:
A fractured cusp is defined as a complete or incomplete fracture initiated from the crown of the tooth and extending sub-gingivally, usually directed both mesiodistally and buccolingually.

FIG 7: Fractured cusp[25]

- **Incidence**
  These are the most common type of longitudinal fracture and least devastating and easiest tomanage.
- **Pathogenesis** [19, 26-27]
  A frequent cause of fractured cusps is inadequate dentin support of cusps from extensive caries or large restorations.
- **Clinical feature-**
  Asymptomatic to symptomatic like localized cold hypersensitivity or sharp pain on mastication or with temperature.
- **Diagnosis-**
  Direct Visualize
  A 'bite test' - ('Fracfinder' or 'Tooth Slooth') (Fig. 8)

Fig 8- Bite Test[28]

Transillumination and staining

- **Radiographic findings**
  Cusp fractures are not usually visible radiographically. If the entire cusp is missing, there may be a 'ghost' appearance on the radiograph.

Cracked Tooth:
A cracked tooth is defined as an incomplete fracture initiated from the crown and extending sub-gingivally, usually directed mesiodistally. A cracked tooth is when a crack extends from the crown of the tooth toward the root, though the toothis not split into pieces.

- **Incidence-**
  Can occur at any age predominately in older. The teeth usually involved are mandibular second molars, followed closely by mandibular first molars and then by either maxillary second molars or maxillary premolars. Class I restored teeth fracture as often as Class II restored teeth.[21]
- **Pathogenesis-**
  Masticatory forces, occlusal anatomy (deep fissures or prominent or functional cusps) and occlusal dysfunction might render a tooth more susceptible to cracking.
- **Causes** –
  - Parafunctional habits like, teeth grinding, and chewing in hard.
  - The restorations associated with wide Class II restorations are more likely to be cuspfractures.
  - Retentive pin placement with twist drills can produce high installation stresses
  - Thermal stresses as a result of differential expansion/contraction between a restoration and the surrounding tooth structure and thermocycling of the restorative material.
- **Location-**
  Crown only or crown to root or extends sub-gingivally, runs in mesiodistal direction and originates from occlusal surface. Crosses one or both marginal ridges. They generally shear toward the facial or lingual side toward a root surface, usually lingual.
- **Clinical feature-**
  Acute pain on mastication (pressure or release) or cold or slight to very severe spontaneous pain consistent with irreversible pulpitis, pulp necrosis, or apical periodontitis, once the fracture has extended and exposed the pulp, severe pulp and/or periapical pathosis like acute apical abscess or chronic endodontic abscess, with or without swelling or a draining sinus tract can occur. And if extends to below the gingival margin, a periodontal pocket can develop.
- **Radiographic findings**
  Mesio-distal direction of the fracture make it invisible radiographically. Although loss of proximal (horizontal, vertical, or furcal) bone is related to the fracture; bone loss increases as the severity of the crack increases.
- **Diagnosis-**
  Bite test, removal of restoration and direct visualization, transillumination, staining, wedge segments (inseparable), isolated/narrow perio-probing, magnification, CBCT

***Differentiation between crack and fractured cusp*?**
If a crack can be detected, use wedging to test for movement of the segments to differentiate a cracked tooth from a fractured cusp. No movement with wedging forces implies a cracked tooth. A fractured cusp may break off under slight pressure with no further mobility.

Split Tooth:
A split tooth is defined as a complete fracture initiated from the crown and extending sub-gingivally, usually directed mesiodistally through both of the marginal ridges and the proximal surfaces.
This is usually the result of an untreated cracked tooth, as the fracture extends over time. A split tooth is the evolution (end result) of a cracked tooth; the fracture is now completeand extends to a surface in all areas.[23]

- **Causes-**
Damaging habits- The split may occur suddenly, but it more likely results from long-term growth of an incomplete cracked tooth or the progression of crack tooth to split tooth. Split tooth is more common in root canal treated teeth.
- **Location**
The fracture originates from occlusal surface and directed in mesiodistal direction it is located coronally and extends from the crown to root or proximal surface. If root surface involved is in the middle or apical third, usually extending toward the lingual.

- **Clinical feature**
Pain with mastication is the main symptom. The presentation is usually with mobility of one or both fragments, or the segments are separable. Periodontal loss of attachment at the fracture site or possibly developing suppuration as a periodontal abscess.

- **Radiographic findings-**
Often there is marked horizontal loss of interproximal or interradicular bone; this may have the appearance of a "U-shaped" furcation lesion.

- **Diagnosis-**
Direct visualisation or by removal of the restoration to visualise the split segments. Wedging to determine whether segments are separable or not. On periodontal probing generally shows deep defects; and tend to be adjacent to the fracture. And surgical microscope can be useful aid.

Vertical fracture-
Root-originated fractures, traditionally termed "vertical root fractures,"
A vertical root fracture (VRF) is a longitudinally oriented complete or incomplete fracture initiated in the root at any level and is usually directed buccolingually.[29]

- **Location**
Root only, may develop in a corono-apical or apico-coronal direction. VRFS are typically detected in the bucco-lingual plane of the tooth, and less commonly in the mesio-distal plane. Occurs cervically and apically at approximately the same frequency.

- **Incidence**
More common in endontically treated teeth, tooth groups most commonly affected are the maxillary and mandibular premolars, the mesial roots of the mandibular molars, the mesio-buccal roots of the maxillary molars, and the mandibular incisors.

- **Cause-**
Parafunctional habits, extensively restored tooth, Excessive canal shaping, Roots with narrow mesiodistal diameter and roots with curvature, Overzealous widening of the root canal space for post placement.

- **Clinical feature**
VRF can cause a severe, shooting and throbbing pain on mastication, most common clinical finding is the presence of multiple sinus tract, presence of deep narrow pocket, appearances of deep narrow pocket.
Radiographic diagnosis- Presence of radiographic halo involving the entire root, bone resorptive patterns can be angular pattern or horizontal, "J-shaped" radiolucency is present or "halo" pattern or "hanging drop" appearance.

Methods of detection-
- Visual or clinical Examination
- Exploratory examination
- Percussion test
- Patient history
- Bite test
- Transillumination
- Staining with dye
- Magnification
- Periodontal assessment
- Wedging test
- Conventional radiography
- Cone beam computed tomography
- Surgical exploration

Other advances in diagnosis

Swept-source optical coherence tomography
Near infrared transillumination
Ultrasonic System
Infrared Thermography

What are the KEYS OF SAVING!!

The keys to saving these teeth are to know:

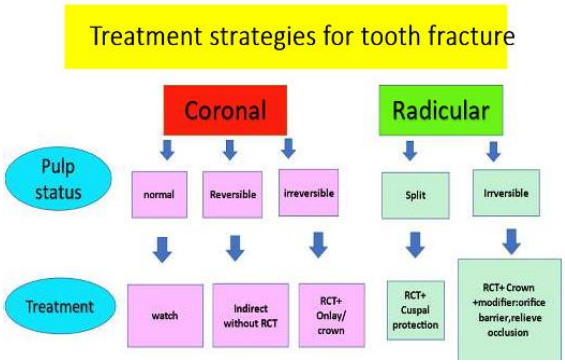
1. How to identify and classify cracks
2. The characteristic signs and symptoms
3. How to detect the crack as early in its development as possible

Clinical considerations to treat longitudinal fractures

Patients must be informed of six important considerations:

(1) Fractures occur from excessive forces, usually long term.
(2) They may be difficult or impossible to visualize, and not demonstrable until growth and/or expansion. Also, they may be under bone and gingiva and difficult to see, even after flap reflection.
(3) Fracture spaces tend to acquire stains, making them more visible with time.
(4) A small fracture tends to grow with time. An analogy is a small crack in a windshield which often lengthens over months or years.
(5) Clinical signs and symptoms often are not present early, but may manifest after months, years, or decades after fracture initiation.
(6) Longitudinal fractures are not diagnosis, they are findings. Pulpal and periapical tissues are usually not affected by longitudinal fractures that do not communicate with the pulp. However, longitudinal fractures with pulpal communication allow bacterial contamination of the pulpal.

Longitudinal Fracture Treatment.



Conclusion-

The treatment planning of cases with fractures should not rely on hypothesis, but should alwaysrely on multiple diagnosistic aids or the combination of various technique together like microscopic diagnosis, CBCT scanning and proper history, sign and symptoms documentation.

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REVIEW ARTICLE

Viral Trends, Dental Health: Unpacking the Connection Between Social Media and Oral Hygiene

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ABSTRACT

Science and information technology have been a bliss to the changing lifestyle. Dental field however, is related to the aspects which have their roots endorsed with day to day lives and social media. In paediatric dentistry, patient's communication is an important factor which provides a complete outlook of a patient. The social networking sites and new technology has kept the people hooked up and created a great influence over the sector of oral health in the people residing in developing countries and rural areas. Oral health education by the means of social networking is a need of an hour to uplift the mindset of parents as well as the children. Thus, this review ponders the points which illustrates the complete outcome of the social media over the oral health of people.

KEYWORDS: Social media, Oral health, Science and information technology, Patient's communication.

INTRODUCTION

The oral health of children plays a pivotal role in various aspects of their lives including eating behaviours, speech progression, sleep routines, overall growth, well-being and quality of life.[1] Research indicates a clear correlation between inadequate oral health in children and a range of physical, psychological, and social issues. For instance, physical aspects like low birth weight, premature birth, and iron deficiency have been associated with oral health challenges. Furthermore, poor oral health can impact psychological well-being, manifesting in difficulties with learning, self-esteem, and increased school absenteeism. Thus, it is evident that the oral health of children is intricately linked to their overall health and quality of life.[2]

Parents are crucial in instilling and fostering good oral healthcare habits in their children. This includes teaching practices like brushing teeth, using mouthwash, and flossing regularly. By actively engaging in these routines with their children, parents play a pivotal role in promoting oral hygiene and preventing dental issues.[3]

One of the primary reasons is the lack of awareness among parents and children. Social media tools are effective solutions to combat this issue. Social media has become an integral part of everyone's daily life throughout the world. It is a web-based tool that can be used to curb this evil.[4] In today's life, social media has become a dynamic and versatile platform which however, educates the mother as well as the child

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Digital technologies and the new approaches increase the availability and access to oral and dental care services.[5] Information and communication technologies have an easy access to oral health solutions which improvises the oral health of a child.[6]

The chief role is of the policymakers, dental care providers and paediatric dentists who identify the types of applications and interventions which are digitally based. This however, creates a good impact and provides advantage of digital health technology on the children. It gives a familiar atmosphere to children and infact reduces the dental anxiety and fear.[7]

CREATING AWARENESS WITH SOCIAL MEDIA

Social media is used to study, disseminate, and record different aspects of oral health status. It can be in the form of Google Search, blogs, podcasts, YouTube, WhatsApp, Twitter, Facebook, and Instagram.[8]

One effective tool utilized in oral health education for children is interactive games designed to teach them about fighting germs that can harm their teeth and making healthier food choices to prevent decay. These games aim to engage children in a fun and entertaining manner while imparting important oral health knowledge.[1,8]

Among the diverse array of social media platforms, Instagram stands out as favourite, particularly among younger group of people. Its features like stories and reels add an element of excitement and dynamism to the platform, making it highly engaging for users. The interactive nature of Instagram, where users can like, comment, and share content, serves as a form of reward for both content creators and their followers.[9]

YouTube videos focusing on topics such as "flossing and brushing teeth," "visiting the dentist," and "taking care of milk teeth" serve as valuable educational resources for children. These videos provide visual demonstrations and explanations that help kids better understand the importance of oral hygiene practices and dental care routines. In particular, content featuring beloved characters like Peppa Pig at the dentist can significantly alleviate anxiety in

children about dental visits. When kids see their favourite characters going through similar experiences, they are more likely to feel reassured and motivated to follow instructions given by the dentist. These videos not only entertain children but also serve as effective tools for teaching and reinforcing positive dental habits.[4]

The popular video of "David after dentist" demonstrating the 8-year-old David DeVore's now-famous post-sedation tirade on his ride home from a visit to the dentist. This video is referred to as "viral" because of the widespread Internet sharing it experienced, spreading in a manner similar to a virus. After being uploaded to Facebook and YouTube, it attracted millions of viewers. The publicity this video has gained is in part due to its open public accessibility, as most user-generated content is, with no cost and with the ability to travel simultaneously from one user to multiple users in the social media.[10]

Increasing use and growing technologies of social media can change communication patterns on health care topics around the country which is very well followed and evaluated by the medical community. Recently, in dentistry, knowledge about oral cancer awareness was made using social media coupled with people's fascination with celebrities in an attempt to have positive influence on oral health. Actor Jack Klugman stars in one educational YouTube video describing the benefit of regular oral cancer screenings as he shares his personal history with the disease. In another example, on the talk show The View, Whoopi Goldberg shared her personal story of periodontal disease determining the fact that strongly endorses the point that oral health is linked to overall systemic health which led to the result that clinics experienced an increase in dental patients showing concern for their periodontal health. These two examples demonstrate the impact celebrities can have on the health care-related topics.[10]

Hence, this determines that the social media through various platforms has the ability to reach millions of individuals with just one click that can easily utilize the opinions of admired individuals for the benefit of the dental health mission.

SOCIAL MEDIA AND PEDIATRIC DENTISTRY

The use of Internet for health information has notably risen in recent times, especially among younger adults and children.

Parents or guardians play a crucial role in fostering oral health behaviours in children, with numerous studies exploring the link between parental knowledge and attitudes towards oral health and their children's habits.[10] Failure to improve these habits can elevate the risk of early childhood caries.[3] It falls upon oral healthcare providers to address parents negative beliefs and perceptions to enhance their children's oral health.[11] Educational programs are pivotal in achieving these goals, often involving hands-on demonstrations of oral hygiene practices and the use of animated educational videos. Research indicates the effectiveness of such videos in improving children's oral health behaviours, as demonstrated by Al-Saffan et al. (2017) in their study, which showed significant knowledge improvement following an oral health education program utilizing videos.[12]

In addition, schools play a significant role in disseminating oral health knowledge to children, given the considerable time they spend there.[13] Hence, it is prudent to incorporate social media education interventions into the school curriculum, both in rural and urban areas. Research has demonstrated the positive impact of school-based education programs on improving oral health behaviours among children. For instance, a study conducted by the King Salman Centre for Children's Health (KSCCH) and Riyadh Elm University in Riyadh city implemented extensive school educational programs aimed at enhancing the oral health knowledge of Riyadh school children.[4]

In today's scenario, adolescents heavily engage with social media as a primary activity. Digital platforms serve as crucial channels for both receiving and sharing information.[14] There are discernible differences in social media usage behaviours across age groups, with adolescents often utilizing it for health-related purposes as a supplement to professional healthcare and for seeking social support to address unmet health needs. However, health-related information isn't always their primary focus, and they tend to favour social networking over blogging or other online support groups. Therefore, it is imperative to engage these young individuals using clear and straightforward language tailored to their preferences, creating a supportive and relatable environment.[4]

Several studies have investigated the impact of social media educational interventions on children's behaviour, confirming that animations and presentations are more effectively absorbed by children's minds compared to written or verbal information. This has been demonstrated in various research studies utilizing pre-and post-tests to assess improvement.[15] According to social learning behavioural theory, behaviour is learned through observation of the environment. Building on this concept, imagery content on social media platforms has the potential to influence oral health behaviour not only in children but also in adolescents.[16]

There are various comprehensive reviews that have highlighted the effectiveness of internet-based interventions as tools for oral health promotion. These interventions have shown promise in various areas, including managing dental anxiety, enhancing oral hygiene practices, increasing acceptance of orthodontic treatment, and improving knowledge about maternal caries transmission and the impact of dental caries on children's oral health.[4]

Pediatric dentistry also includes Teledentistry which uses social media as a platform to provide information about children's dental health, including tooth eruption, deciduous teeth, pulpectomy, enamel hypoplasia, tooth radiography, and dental restorations.[7] The advantage of teledentistry includes providing patient/parents education, preventive care monitoring, post-treatment follow-up, and dental development assessment. Hence, it can reduce the oral healthcare inequalities that may be caused by the lack of

access to specialists and timely oral and dental care services.[17]

Various studies are conducted that compare a variety of digital technology-based interventions outcomes on children's oral health. Conducting a telephone consultation for children and their parents, decreases the unnecessary face-to face appointments and the waiting lists were also decreased.[18] Hence, this led to the positive attitudes of caregivers and dentists. The positive attitude of paediatric patient is influenced more by communication through mass medias and internet-based interventions. Enhancing dental knowledge and oral hygiene leads to better compliance and reduces dental anxiety. Nonetheless, the internet also spreads health information, linking unhealthy lifestyle choices and dietary habits among children.

SOCIAL MEDIA AS "BANE"

Excessive use of social media can adversely affect both general and oral health. Overuse of social media may lead to poor oral health habits and unhealthy lifestyles, resulting in increased oral symptoms such as toothaches, bleeding gums, and a negative perception of one's oral health and self-esteem. Numerous studies have demonstrated a higher prevalence of dental caries and untreated cavities among children who extensively use social media, as indicated by their Oral Hygiene Index scores. Additionally, evidence-based literature suggests that excessive social media use among adolescents is linked to unhealthy dietary patterns, including high consumption of sugary drinks and snacks, as well as inadequate oral hygiene practices such as infrequent tooth brushing.[4]

Maximum usage of social media can lead to two issues- One is related to the content of what is posted, while the other is related to who has access to that content. Defining professional or unprofessional content can be complicated.[19] Although students uniformly agreed that the posting of patient's pictures or any other identifiable information is a violation of privacy, many could not agree on whether it was appropriate to post pictures depicting intoxication and sexually suggestive material. Some medical students felt having a Facebook page is "not by choice," stating that without an active account, they "would have no communication whatsoever" in the social forum. In the busy and stressful academic environment, some students feel that this forum is their only social outlet.[20]

Hence, it is emphasized that internet-based social media should be accompanied by strict preventive measures to encourage a constructive and positive utilization of social media, with the goal of mitigating its negative impacts and promoting healthier online behaviours.

CONCLUSION

Hence, the widespread use and the impact of social media among the applicant and student population can act as a strong motivator to initiate action which would expand the use of social networking in oral health education and engage the dentists and dental students in developing the desired knowledge. Therefore, the time has come for dentists to embrace social networking, because if they don't, they will risk losing an invaluable tool of viral proportions. Thus, this will help dental professionals to transitioning from a private online user to a professional one who uses social media for public outreach to patients in his or her role as community leader and promotes the oral health.

So, it can be concluded that, Oral health promotion programmes using digital media have great potential to cost-effectively and quickly meet the complex needs of diverse and often underserved populations living with or at increased risk of oral diseases.

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CASE REPORT

Occurrence of Keratocystic Odontogenic Tumor in the maxillary antrum- An unusual site!

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ABSTRACT-

Keratocystic Odontogenic Tumor (KCOT) is a benign intraosseous neoplasm of the jaw, commonly reported in the second and third decades of life with slight male predilection. Radiographically, KCOTs present as well defined radiolucent lesions with smooth and usually corticated margins. The histological features consists of keratinized stratified squamous epithelium which is about 6–8 cell layers thick and without rete ridges. The parakeratotic layers often have a corrugated surface. The basal epithelial layer is composed of a palisaded layer of cuboidal or columnar epithelial cells, which are often hyperchromatic. Small satellite cysts, cords, or islands of odontogenic epithelium may be seen within the fibrous wall. KCOT are most commonly encountered in the mandibular molar region. However, it's occurrence in the maxillary antrum is unusual and rare. Therefore we report a case of KCOT in the left maxillary antrum associated with unerupted maxillary third molar in a young boy.

Key words- *Keratocystic odontogenic tumor, maxillary antrum, neoplasm.*

INTRODUCTION

Odontogenic Keratocyst (OKC) was previously known as 'primordial cyst'. Robinson (1945) first used the term 'primordial cyst' to describe a cyst of the jaw that he suggested was derived from the enamel organ in its early stages of development by degeneration of the stellate reticulum before any calcified structures had been laid down. He also stated that primordial cysts may occur in single or multiple form arising either from an enamel organ of a single tooth of the regular series or from numerous aberrant dental anlage which become cystic.[1] Phillipsen in 1956 first described it, and stated that it differs from other cysts; as it shows more aggressive clinical behavior including a high recurrence rate and demonstrates a high mitotic count and high epithelial turn over rate. Because of these neoplastic features the term "Odontogenic Keratocyst" was changed to "Keratocystic Odontogenic Tumor" in the WHO classification of head and neck tumors in 2005.[2]

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Mandibular molar region is the most common site for KCOT,[2] unusual locations have also been reported, such as the anterior portion of the maxilla, maxillary sinus, and the maxillary third molar area.[3]

Radiographically, KCOTs present as well defined radiolucent lesions with smooth and usually corticated margins. They may be either multilocular or unilocular. An unerupted tooth is involved in the lesion in 25% to 40% of cases.[2]

The histological feature consists of 5–8 cell layer thick stratified squamous epithelium with surface corrugation and without rete ridges. Basal layer is palisaded consisting of columnar or cuboidal cells or a mixture of both. The nuclei of the columnar basal cells show hyperchromatism & reverse polarity. The form of keratinisation is exclusively parakeratotic in about 80–90% of cases, but is sometimes orthokeratotic.[1]

Malignant transformation in KCOTs seem to be quite low.[4] This tumor is of great interest in terms of its high recurrence potential.[5]
The following case is therefore presented in order to compare the reported findings and to overview its maxillary antrum involvement.

CASE REPORT

A 15-year-old boy (Fig.1) reported to the Department of Oral Pathology and Microbiology, with the chief complaint of swelling and discharge in the upper left back tooth region

since 25 days. On extraoral examination (Fig.2) a swelling was revealed with anteroposterior extension from the ala of nose to the malar process and superoinferior extension from the lower eyelid to the malar process on the left side of face. This swelling appeared diffuse, smooth & firm in consistency. On intraoral examination (Fig.3) a firm swelling was revealed in relation to 23 to 26 region with purulent discharge.

Radiographically, orthopantomograph (OPG) (Fig 4) and Paranasal sinus (PNS) (Fig.5) revealed a unilocular radiolucency associated with unerupted maxillary left 3rd molar with well defined margins. The contents of the swelling were aspirated (Fig.6) and soluble protein content (2.5g/100ml) was investigated, which was consistent with the diagnosis of OKC. So, in order to further reach a confirmatory diagnosis surgery was planned. Prior to surgery, routine blood and urine examination were advised; the results obtained were with in the normal limits. Surgery was done using general anesthesia and under antibiotic cover. The treatment consisted of extraction of left maxillary third molar, along with enucleation of the cyst (Fig.7). Surgically enucleated formalin fixed soft tissue with tooth (Fig.8) were processed for routine H&E staining, which showed entirely different picture of what was expected. The H&E stained sections revealed the presence of parakeratinized stratified squamous epithelium overlying fibrocellular connective tissue stroma. The epithelium was 6-8 layers in thickness with focal areas of increase thickness and surface corrugation. The basal layer of cells were tall columnar with palisaded, polarized hyperchromatic nuclei. The epithelium connective tissue interphase was almost flat. The underlying connective tissue stroma revealed collagen fiber bundles, fibroblasts, chronic inflammatory cells chiefly lymphocytes and endothelium lined blood vessels with extravasated RBCs (Fig.9).

Based on the above findings a diagnosis of Keratocystic Odontogenic tumor (KCOT) associated with unerupted maxillary left 3rd molar was made. Patient is under follow up for any recurrence.

DISCUSSION

Evidence points to two main sources of the epithelium from which the cyst is derived: the dental lamina or its remnants and secondly extensions of basal cells from the overlying oral epithelium.[1]

Cysts and tumors arise from odontogenic remnants most commonly present in the gingivae (cell rests of Serres), periodontal ligament (cell rests of Malassez) and in the third molar region (rests of dental lamina).[6] KCOT is a benign uni- or multicystic, intraosseous tumor of odontogenic origin that has a slight male predilection and commonly occurs in the second and third decades of life.[2] However, in a 19-year retrospective institutional review of OKCs in a paediatric population identified 11 children with this histologically confirmed lesion. Their ages ranged from 8 to 18 years.[1] The most common location is the posterior portion of the mandible or the mandibular ramus, unusual locations have also been reported, such as the anterior portion of the maxilla, maxillary sinus, and the maxillary third molar area.[3] The literature suggests that less than 1% of all cases of KCOT occur in maxilla and exhibit sinus involvement.[2] In the present case, KCOT occurred in the maxillary antrum of 15 year-old-boy.

Myoung H et al (2001) reported various clinical signs and symptoms at the time of admission. 118 of the 256 patients (46.1%) had swelling at the first admission, 51 patients (19.9%) reported pain, and 42 patients (16.4%) had swelling and pain simultaneously. A total of 82.4% of patients had swelling, pain, or both. Purulent discharge was evident in 17 patients (6.6%), discomfort was evident in 12 patients (4.7%), and paresthesia was evident in 2 patients (0.8%). Fourteen patients (5.5%) had no symptoms; their lesions were found incidentally during radiography for other dental conditions.[7] In our case also patient complains of swelling along with discharge but had no pain and paresthesia.

KCOTs appeared radiographically as well-defined unilocular or multilocular radiolucencies. The unerupted tooth most frequently associated with the KCOT was the third molar, and this was the only unerupted tooth associated with a KCOT in the maxilla.[8] Since KCOT can be associated with the crown of an involved tooth, the lesion must be distinguished from a dentigerous cyst(on radiography). Other cystic and neoplastic disesases such as traumatic bone cyst, lateral periodontal cyst, central giant cell granuloma, fissural cyst, minimally calcifying odontogenic cyst, radicular cyst, arteriovenous malformation, benign bone tumor, ameloblastoma, adenomatoid odontogenic tumor, ameloblastic fibroma, and plasmacytoma can also present with the same radiologic features.[2] In the present case also KCOT was associated with the crown of an unerupted maxillary 3rd molar.

Histologically, the findings of KCOT [9] were also consistent. Treatment includes a variety of surgical approaches depending on the size and extent of the lesions and the interventions used include decompression, curettage, marsupialization, enucleation or resection. Although enucleation has been the most popular surgical procedure for KCOT, it remains unclear whether this procedure is the appropriate method for treatment of all KCOTs.[5] In recurrent KCOT lesion resection is the treatment of choice.[10] Unlike other odontogenic cysts, the odontogenic keratocyst has local aggressive behaviour producing a high rate of recurrence up to 62.5%. Immunohistochemical studies suggest the hypothesis that odontogenic keratocysts represent a low-grade neoplasm. Furthermore, genomic

studies of odontogenic keratocysts reveal DNA mutation, supporting the neoplastic theory, rather than a developmental origin.[11] Cases of squamous cell carcinoma (SCCs) arising from KCOTs in patients with Gorlin syndrome have been described by Ramsden and Barrett as well as Moos and Rennie.[4]

CONCLUSION

KCOT is a distinct entity that deserves special attention due to its aggressive clinical behaviour and high rate of recurrence. KCOTs are relatively rare in the maxillary sinus, its radiographic image in such situation may be misinterpreted. KCOT has clinical diagnostic difficulties due to relative lack of specific clinical and radiographic characteristics, a definitive diagnosis must be made histologically.

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Figure 1- 15 yr old boy

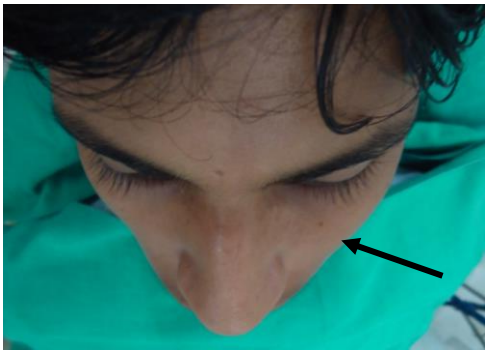


Figure 2- Extraoral swelling on left side (arrow)

Figure 3- Intraoral swelling (Circle)

Figure 4-OPG revealed a unilocular radiolucency (yellow arrow) associated with unerupted maxillary left 3rd molar (red arrow)

Figure 5-PNS View of unerupted tooth (red arrow), unilocular radiolucency (yellow arrow)

Figure 6-Aspirated content

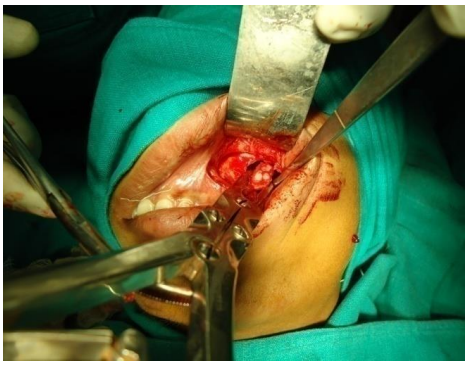


Figure 7- Extraction of left maxillary

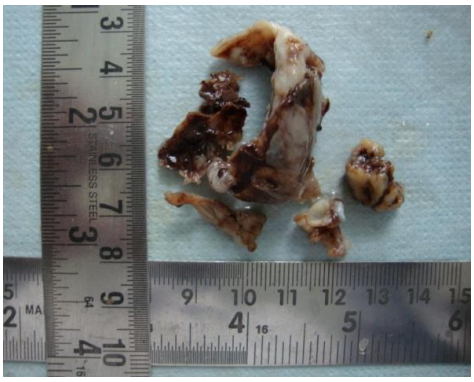
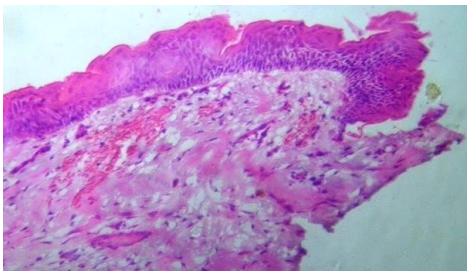


Figure 8- Enucleated tissue third molar, along with enucleation of the cyst



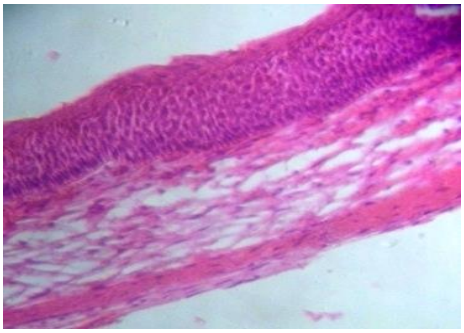


Figure 9- Histopathological pictures

CASE REPORT

Clinical Insights into Fiber Post Applications: A Case Report

Sakshi Saumya[1], Nikhil r. Yadav[1], Shubham[1], Jyoti Shankar Jha[1]

Abstract:

Restoring teeth that have undergone endodontic treatment and experienced significant loss of coronal structure can be challenging. This case series emphasizes the advantages of using fiber posts, which provide strong support and lower the risk of fractures due to their elastic properties that help distribute stress effectively. An assessment of cases involving fiber post restorations revealed high levels of patient satisfaction regarding both aesthetics and functionality. Overall, this series demonstrates that fiber posts are an excellent choice for reinforcing compromised teeth and enhancing outcomes in restorative dentistry.

Keywords: Crown Lengthening, Fiber post, Restorative dentistry

INTRODUCTION:

Teeth that have undergone endodontic treatment and show significant loss of coronal structure typically require extensive restorations. Endodontically treated tooth fractures are mainly attributed to alterations in the tooth's structural integrity. Access preparation can lead to a loss of this integrity and increased cuspal deflection, which in turn heightens the risk of microleakage at the margins of restorations and contributes to tooth fractures. This process usually involves using a post and core system, followed by the placement of a prosthetic crown.[1-3]

There are two primary types of post and core systems:

1. Prefabricated Posts
2. Custom-Made Posts[4]

However, Custom-Made Posts can lead to complications such as fractures. These may manifest as oblique or horizontal fractures in the middle third of the root, or as vertical fractures in the apical third.[5] Such issues often result from the stress placed on the post area and the differing modulus of elasticity between the metal post and the surrounding dentin.[6]

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Advantages of FRP over metallic posts include-

Superior esthetics, Lower risk of fracture (Modulus of elasticity similar to dentin), decreased chair-side time as they are ready to use. The patient was healthy, without any history of systemic condition or drugs.

Case Description

A 45- year- old woman patient visited Department of Conservative Dentistry and Endodontics, Kothiwal Dental College and Research Centre, Mordabad (U.P) with chief complain of fractured tooth w.r.t 24. Endodontically treatment done 3 years back. On clinical examination, no endodontic intervention was recquired as tooth was asymptomatic and non-tender on palpation. At first, the quantity and quality of remaining tooth structure was examined. This was done to ensure the possibility of a ferrule. But due to inadequate clinical crown, crown lengthening was indicated (Fig 1 and 2). On radiographic evaluation mulberry teeth was seen w.r.t 23.

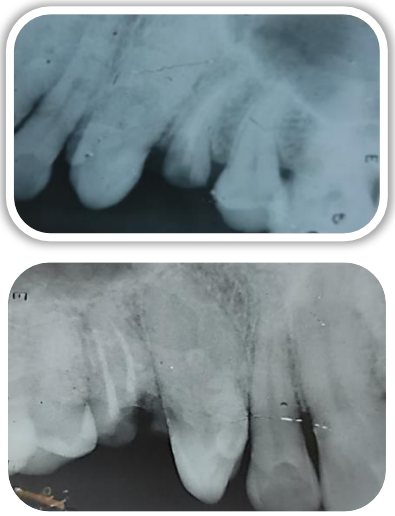

FIG 1 and 2- Pre-operative image

FIG 3 and 4- Pre-operative clinical image

Crown lengthening prior to fiber post was planned with patient written consent. Under local anaesthesia, conventional surgical crown lengthening was done with internal bevel gingivectomy with osteotomy to maintain the biological width of the periodontium i.e. **2.04 mm**. Minimum of **3 mm** of sound tooth structure **above the alveolar process** is necessary. Violation of the biologic width may result in inflammation and bone resorption. Initial height was 3mm from base of the sulcus and 5mm from crest of the alveolar bone

The pocket was marked with a pocket marker to form a bleeding point, then incised using a scalpel with a blade number 15 c following the bleeding point internal bevel incision at 2mm from gingival zenith. Sulcular or Crevicular incision was given to raise the mucoperiosteum flap. 2mm reduction of the alveolar bone was done.

FIG 5 and 6- Osteotomy and Curettage

FIG 7- Kirkland's knife and Orban's knife

Osteotomy was performed and was irrigated with adequate saline solution to avoid bone necrosis. (Fig 5 and 6) The Gracey-curette #5-6 was used to carry out the root planning of the exposed root surfaces. Extraction of Mulberry teeth was done. After contouring the gingiva, bleeding was controlled by pressing sterile gauze for 3-5 minutes. The entire surgical area was irrigated with saline solution, followed by applying a resorbable periodontal dressing. Suture was done using 4-0 silk suture and intermittent type of suture was given. Total crown lengthening was done of 5mm i.e. 2mm+ 3mm (soft tissue + alveolar bone). The patient was prescribed an antibiotic (Amoxicillin 500 mg) every 8 hours for five days, the analgesic orally if necessary. The antimicrobial mouthwash Chlorhexidine 0.12% twice a day for two weeks starting after the periodontal dressing was absorbed to take care personal oral hygiene status. Patients were evaluated at one week and two weeks post-operatively to be irrigated with saline solution and given the motivation to maintain oral hygiene. (Fig 8 and 9)

Fig 8 and 9- Intermittent Suture Placement and Periodontal pack

On a one-month follow-up, there was no recurrence of gingival excess and without any sign of inflammation. The patient was then ready to begin restorative treatment.

Fig 10- Post space preparation

Post space preparation (Fig 10)

- Gutta percha was removed with #2 largo peeso reamer of the system and apical sealing was preserved.
- Then the post space was prepared by #3 post drill.
- **5mm of gutta percha** was preserved apically.

Fibre post selection and preparation for adhesive luting

- After gutta percha removal and root canal preparation, a radiograph was taken to check the quality of preparation.
- The selected fibre post was demarcated and cleaned with alcohol**.**
- Then it was completely wetted by one coat self - etching bond (Coltene) mixture bonding system and the solvent was removed by a gentle blow with air syringe for 10 seconds.
- The x post was protected from light until the cementation procedure.

Root canal adhesive procedures.

- The root canal dentin walls were carefully dried with absorbent paper points before bonding.
- One coat self-etching bonding system, (Coltene) was actively applied on to root canal walls for 20 seconds.
- Solvent was evaporated by gentle air blow for 10 seconds.

Fig 11- Fiber post placement

Fibre post cementation and core build up.

- Dual cure composite resin (Clearfil) was directly injected into the canal and pulp chamber and the fibre post was immediately placed into the final position and stabilized.
- It was light cured for 40 seconds.
- The same material was used to build up the core.
- Then the excess material was removed by diamond bur and peri-apical radiograph was taken to confirm the adaptation of fibre post.

Fig 12- Post-operative image after fiber post placement and core build up

Discussion

The restoration of endodontically treated teeth, particularly when significant coronal structure is lost, poses various challenges. A recent case report examined the effectiveness of fiber posts in enhancing the structural integrity of these compromised teeth. Fiber posts have gained popularity due to their favorable mechanical properties, notably a modulus of elasticity that closely resembles that of dentin. This similarity aids in distributing stress more evenly across the tooth, significantly reducing the risk of fractures often associated with traditional metal posts.[7-8]

In this case, a patient presented with a fractured tooth that had previously undergone endodontic treatment. The initial assessment revealed inadequate coronal structure, necessitating crown lengthening to create a suitable foundation for restoration. This procedure was conducted with careful attention to biological width, emphasizing the importance of maintaining periodontal health during restorative procedures.[9-10] Disregarding biological width can result in inflammation and bone resorption, ultimately jeopardizing restoration success.[11]

The incorporation of fiber posts not only addressed structural deficiencies but also enhanced aesthetic outcomes, a critical factor for patient satisfaction. In this series, patients reported high satisfaction levels regarding both the functionality and appearance of their restorations. This

aligns with literature suggesting that fiber posts offer superior aesthetics compared to metal alternatives, as they can be more effectively matched to the natural colour of teeth.[12-13]

Another significant advantage of fiber-reinforced posts is the reduced chair-side time required for preparation and application, promoting efficiency in clinical practice and improving patient experiences. The bonding techniques employed with fiber posts, including self-etching adhesives, facilitate a reliable bond with dentin, further enhancing the longevity of the restoration.[14-15]

Despite these advantages, it is essential to consider potential complications associated with post and core restorations. While fiber posts lower the risk of fracture, careful selection and preparation are critical for achieving optimal outcomes. The cases presented underscore the necessity for thorough pre-operative assessments, including radiographic evaluations and meticulous planning, to avoid complications and ensure successful restorations

Conclusion:

This case report reinforces the notion that fiber posts are an excellent choice for restoring endodontically treated teeth with significant coronal loss. Their ability to provide structural support, aesthetic benefits, and ease of use positions them as a valuable option in restorative dentistry. Future studies should continue to explore long-term outcomes and compare the effectiveness of fiber posts with other restorative materials to further validate their use in clinical practice.

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Review Article

Perio-Endo Lesions Simplified

Dr. Abhinav,[1] Swati Agarwal,[2] Ellora Madan[3]

Abstract

Perio-endo lesions, which involve the concurrent presence of periodontal and endodontic pathologies, present a unique challenge in dental diagnosis and treatment.[1] This review aims to explore the etiology, classification, diagnostic methods, treatment options, and outcomes associated with perio-endo lesions, highlighting the importance of a multidisciplinary approach in managing these complex conditions.

Introduction

Perio-endo lesions are characterized by simultaneous inflammatory processes in the periodontal and endodontic tissues, complicating the diagnosis and management of dental infections. Understanding the interplay between the periodontal and pulpal systems is essential for effective treatment and successful outcomes. This article reviews the current literature regarding the etiology, classification, diagnostic techniques, and treatment strategies for perio-endo lesions.

Etiology

Perio-endo lesions arise from various etiological factors, including:

1. **Infection**: Bacterial invasion from periodontal pockets can lead to pulp necrosis, while pulpal infections may extend apically, affecting the periodontal tissues.[2]
2. **Trauma**: Dental trauma can disrupt both pulpal and periodontal health, creating a conducive environment for infection.
3. **Systemic Conditions**: Conditions such as diabetes mellitus can predispose patients to both periodontal disease and pulpal infections.

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Classification

The classification of perio-endo lesions is crucial for treatment planning. A common approach is based on the origin of the disease:

1. **Primary Endodontic Lesion**: An endodontic infection that has secondary involvement of the periodontal tissue.
2. **Primary Periodontal Lesion**: A periodontal infection that leads to pulp necrosis.
3. **True Combined Lesion**: Simultaneous and independent pathologies in both the pulp and periodontal tissues.

Diagnosis

Accurate diagnosis of perio-endo lesions is essential for appropriate treatment. Diagnostic tools include:[3]

1. **Clinical Examination**: Evaluating pocket depth, tooth mobility, and presence of furcation involvement.
2. **Radiographic Assessment**: Periapical and panoramic radiographs help visualize bone loss patterns and differentiate between endodontic and periodontal lesions.
3. **Vitality Testing**: Pulp vitality tests (thermal, electric) help assess pulpal health.

Treatment Options

The management of perio-endo lesions often requires a multidisciplinary approach. Treatment options may include:

1. **Endodontic Treatment**: Root canal therapy to address pulp pathology.
2. **Periodontal Therapy**: Scaling and root planing, flap surgery, or regenerative procedures depending on the severity of periodontal involvement.
3. **Combination Therapy**: In cases of true combined lesions, a sequential approach may be required, addressing the endodontic infection first followed by periodontal therapy.

Outcomes

The outcomes of treating perio-endo lesions are generally favorable, although dependent on various factors, including the extent of bone loss, patient's systemic health, and adherence to oral hygiene practices. Studies have shown that successful treatment can lead to resolution of symptoms, restoration of periodontal health, and improved tooth prognosis.

Conclusion

Perio-endo lesions pose a complex challenge in dental practice, requiring careful diagnosis and an integrated treatment approach. Understanding the etiology, classification, and management strategies is vital for improving patient outcomes. Future research should focus on the long-term effectiveness of different treatment modalities and the development of new diagnostic tools to better differentiate between these lesions.

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CASE REPORT

Aneurysmal Bone Cyst: A Case Report and Review of Literature

Manpreet Singh1, Gagandeep Kaur[2], Gaurav Verma[3], Pavansh Bhatia[4]

Abstract:

Aneurysmal bone cyst (ABC) is considered as benign lesion of the long bones and vertebral column. However, it occurs less frequently in relation to jaw bones. We are presenting a case of ABC of mandible being treated by conservative curettage of the lesion along with relevant review of literature.

Key Words: Aneurysmal bone cyst; Benign; Pseudocyst; Mandible; Jaw; Bone

Introduction

In 1893, Van Arsdale firstly described aneurysmal bone cyst (ABC) as an ossifying hematoma.[1] Jaffe and Lichtenstein recognized that ABC is chiefly an intraosseous destructive lesion chiefly involving vertebrae and long bones metaphysis. In 1958, Bernier and Bhaskar described the first case of ABC involving the jaw.[2,3] The ABC is chiefly a benign cystic lesion and is characterized by blood filled vascular sinusoidal spaces separated by connective tissue septa. Additionally, the lesion also presents with osteoclast type giant cells and formation of reactive bone.[4]

Majority of cases of ABC were reported in relation to long bones (50%) and vertebral column (20%). Among non-odontogenic cysts of the mandible ABC accounts for 1.5% only.[5] When jaw bones were considered, the involvement of mandible is more common as compared to maxilla (3:1 ratio). The involvement of body, angle and ramus of mandible is more common as compared to other sites. The ABC mostly affects younger age group individuals as compared to older adults.[5,6]

The three types of ABC can be described as follows: The conventional or vascular type is most common and accounts for 95% of the cases and it manifests as fast growing destructive lesion invading the adjoining soft tissues by perforation of cortices.

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The less common solid type (5% of the cases) usually presented as relatively small asymptomatic lesion and appear as radiolucent lesion on routine radiographs.[7,8] A third form is the mixed variant of ABC presented with combined features of both types. It is considered to be the transitional stage of the lesion and represents sudden activation of a stable lesion leading to rapid enlargement.[8]

Case Report

A 32 years old female patient presented to our department with the chief complaint of asymmetry of face and swelling involving the left side of the lower jaw. The patient was apparently well 3 years back when she first noticed a small swelling involving lower jaw which gradually increases over a period of 2 years to that of present size. The swelling was asymptomatic and was associated with only mild discomfort occasionally. On extraoral examination, there was gross facial asymmetry with diffuse swelling involving left side of the mandible. The swelling was approximately 5 x 1.5 cm in size approximately **(Figure 1)**. The swelling was firm, non-fluctuant and non-tender. There was expansion of lower border of mandible. The overlying skin was normal in color, consistency and texture. The temperature of overlying skin was normal.

Figure 1: Extraoral examination showing gross facial asymmetry with swelling involving left side of the mandible.

On intraoral examination, there was no gross abnormality detected on inspection. On palpation there was slight expansion of buccal cortex leading to obliteration of labial and buccal sulcus extending from midline to distal surface of mandibular first molar on left side. The adjoining gingival and vestibular mucosa appears normal in color, consistency and texture **(Figure 2)**.

Figure 2: Intraoral examination showing no gross abnormality.

The orthopantomograph (OPG) revealed a multi-locular lesion extending from midline to distal surface of left mandibular first molar, having mixed soap bubble and honey comb type of appearances. There was expansion of lower border of mandible in relation to the lesion **(Figure 3)**.

Figure 3: OPG examination of the lesion.

The aspiration of the lesion revealed presence of only minute drops of blood. Considering the age of the patient and aspiration of blood, provisional diagnosis of low flow vascular lesions such as ABC and central giant cell granuloma (CGCG) was made with other multilocular lesions into consideration as differential diagnosis. Incisional biopsy was done to assess the true nature of the lesion. On clinical exploration of the lesion, there was cavitational (cystic) defect in the mandible. There was absence of any definitive epithelial lining and a vascular soft tissue was obtained **(Figure 4)**. The histopathological examination revealed it to be ABC.

Figure 4: Surgical exploration during incisional biopsy revealed cavitational (cystic) defect.

To check for three dimensional extension of the lesion and to formulate definitive treatment plan, computed tomographic scan (CT scan) was done. The 3- dimensional images of CT scan revealed perforation of buccal cortex (probably representing the window created at the time of incisional biopsy) and expansion of inferior border of mandible without any break in its continuity **(Figure 5)**.

Figure 5: 3- Dimensional CT Scan image showing buccal cortical perforation along with expansion of inferior border of mandible.

As the lesion was benign, relatively asymptomatic, presented with intact lower border of mandible and minimal perforation of the buccal cortex, minimally invasive treatment was advised to the patient. The lesion was treated by conservative curettage of the lesion along with removal of 2 mm of adjoining sound bone (peripheral ostectomy) followed by application of Carnoy's solution to further decrease the chances of recurrence **(Figure 6)**. The histopathological examination of the excised tissue re-confirmed that the lesion was ABC.

Figure 6: Surgical defect after conservative curettage of the lesion.

Discussion

The term aneurysmal is derived from the word "aneurysmatic" means "blow-out" effect or expansion, a typical characteristic feature of ABC in majority of the cases.[9] The ABC is a pseudocyst as it does not have a definite epithelial lining.[6,9] Among various lesions of bones of craniofacial region, ABC constitutes only 5% the lesions.[3] It mostly affects those bones which have relatively higher amount of marrow content and have increased venous pressure. This typically explains why ABC is rare in skull bones as they have low venous pressure.[5]

The etiopathogenesis of ABC is not universally accepted and is still controversial. According to Kantor & Steiner ABC can develop as primary lesion (de novo) or it can develop secondarily in a pre-existing lesion. Struthers and Shear concluded that ABC can develop as secondary phenomenon in a pre-exiting bone lesion and CGCG is the most common among such primary lesions.[1] Levy et al. proposed that ABC essentially develop from subperiosteal hematoma formation after trauma.[1] However, Tillman et al. represented 95 cases of ABC without any history of trauma.[8]

Jaffe and Lichentestein, were of the view that local hemodynamic alterations might leads to increased venous pressure leading to engorgement of vascular bed followed by resorption of bone and replacement by connective tissue.[1,8] Hernandez et al. classified an ABC as primary and secondary. Primary type originate from artero-venous malformations and can be of two types such as congenital or acquired. The congenital type is more common in children and youngsters with no history of trauma. Whereas, acquired type is seen in adults with history of trauma. It is postulated that secondary type is associated with degenerative changes in pre-existing lesions such as cyst and tumors.[1] In our case there was no history of trauma and the lesion was slow growing. It was not associated with any other pre-existing lesion and can be considered as primary (de novo).

ABC mostly involve long bones and vertebrae, whereas, involvement of jaws is very rare (1.9%).[8,9] The clinical presentation of ABC may vary from small asymptomatic lesion to rapidly growing aggressive and destructive lesion. It may be completely asymptomatic or is associated with pain, discomfort and features of nerve compression.[3] In our case although lesion was large, however, it was chiefly asymptomatic.

The ABC presented with wide variety of radiographic appearances ranging from small unilocular lesion to large multilocular lesion having soap bubble or honey comb type appearance. The eccentric ballooning of lower border of mandible (ballooning effect) is usually present. In aggressive cases there may be destruction of cortices and sometimes subperiosteal bone formation.[6] Our case typically presented as multilocular lesion with mixed soap bubble and honey comb type appearance in different areas. Additionally, ballooning of lower border a characteristic feature of ABC was also present.

The diagnosis of ABC chiefly based on radiographic features is difficult as the similar radiological features were also present in other multilocular lesions of the jaws such as ameloblastoma, odontogenic keratocyst, myxoma, CGCG and central hemangioma.[16] In our case diagnosis was not based solely on clinical and radiographical examinations, it was confirmed by histopathological examination of the lesion (incisional biopsy).

The histopathological appearance of the classical vascular type of ABC is blood filled multiple sinusoidal spaces within fibrous connective tissue stroma along with presence of multinucleated giant cells. The amount of hemosiderin and osteoid formation is variable. On the other hand, solid form represents the non-cystic variant of ABC characterized by relatively firm grey to white tissue with abundant fibroblasts and osteoblastic activity with relatively less hemorrhagic foci. Whereas, mixed variant demonstrates mixed histopathological features of both types.[9] In our case there was typical cavitational (cystic) defect in the mandible with presence of vascular type of pathological tissue with significant amount of bleeding on surgical exploration during incisional biopsy. Additionally, typical histopathological features of classical cystic type of ABC were also present.

The management of ABC is typically directed toward elimination of entire lesion. The multilocularity of lesion along with the presence of multiple bony septa make it difficult in some cases.[3] The various modalities range from conservative minimally invasive procedures to aggressive surgical excision. These treatment modalities are percutaneous sclerotherapy, systemic calcitonin therapy,

conservative curettage to aggressive resection and reconstruction.[5] Several authors have recommended aggressive resection and early reconstruction by autogenous bone grafts in cases with high degree of facial asymmetry and when there is risk of pathological fractures due to greater extension of lesion leading to perforation of inferior border of mandible.[1,6,15] However, spontaneous healing has also been reported in some cases.[17]

The recurrence rates after conservative curettage ranges from 21-50% as reported by various studies. However, Motamedi have reported that the resection on initial presentation was not mandatory as no recurrence was observed in their study involving 17 patients.[3] In our case, although lesion was large but it was predominantly extended antero-posteriorly. The integrity of inferior border of mandible was preserved. The lesion was chiefly asymptomatic and there was minimal buccal cortical perforation. As spontaneous healing and healing even after incomplete removal has been documented in literature especially in younger age groups, we opted for conservative curettage of the lesion considering all the facts. No recurrence was reported even after a follow up of 1 year.

Conclusion

ABC can occur as primary lesion (de novo) or arise secondarily in any pre-existing lesion and have variable radiological features mimicking other lesions of the jaws. Therefore, its diagnosis by histopathological examination (incisional biopsy) is must to establish the true nature of the lesion. Additionally, the treatment of ABC varies from conservative procedures to aggressive surgical excision. We recommend that conservative curettage should be the first line of treatment especially in younger individuals having less aggressive lesion. Aggressive resection and reconstruction should be reserved for aggressive cases with high risk of pathological fracture and cases with multiple recurrences.

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CASE REPORT

Pregnancy Tumor: A Case Report and Review of Literature

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Abstract

Oral Pyogenic Granuloma is hyperplastic inflammatory lesion which develops secondary to local irritation or trauma caused by plaque, calculus or foreign body. The females are most commonly affected as compared to males due to vascular effect of female sex hormones that increase at the time of puberty and pregnancy. The tissue response to these etiological factors may ranges from slight inflammation to formation of large tissue masses termed tumours. The pyogenic granuloma that attains large size during pregnancy is termed as "Pregnancy Tumour". We are presenting a case of pregnancy tumour treated by conservative surgical excision along with relevant review of literature.

Key Words: Pyogenic; Granuloma; Tumour; Pregnancy; Plaque; Gingival enlargement

Introduction:

Poncet & Dor, originally described pyogenic granuloma as a mass of vascular tissue and termed it as "Human Botryomycosis".[1] In 1904, Hartzell proposed the term "Pyogenic Granuloma" for this condition.[2] Although, term pyogenic granuloma is commonly used in clinically, it is a misnomer as the condition is neither associated with infectious process (pus) nor it represents a true granuloma.[3]

The lesion typically represents hyperplastic inflammatory response of the tissues to minimal trauma or local irritation. In oral cavity the presence of plaque, calculus and foreign body can initiate the inflammatory response and in the persistent presence of these etiological factors this inflammatory response persists and the lesion may attain large size. The pyogenic granuloma occurs more commonly in females due to the vascular effect of female sex hormones which increase during puberty and pregnancy. During pregnancy the tumours outgrowth usually develop during 2nd and 3rd trimester.[3]

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Case Report

A 30 years old pregnant female patient reported to our Department of Oral & Maxillofacial Surgery with the chief complaint of bleeding from gums. On clinical examination, there was moderate enlargement of buccal gingival tissues in relation to right maxillary premolars and first molar teeth **(Figure 1)** along with an exophytic outgrowth palatally originating from interdental papillae between maxillary second premolar and first molar **(Figure 2)**.

Figure 1: Intraoral examination showing diffuse gingival enlargement on buccal aspect.

Figure 2: Intraoral examination showing an exophytic outgrowth on palatal side.

The hemostasis was achieved with local measures and the patient was referred to the Department of Periodontics for management of gingival enlargement. As the patient was in

late stages of first trimester, it was decided to perform minimally invasive supragingival scaling. The patient was encouraged to maintain oral hygiene by brushing along with use of 0.2% chlorhexidine. The patient was advised to report back for regular follow up examinations. Unfortunately, the patient did not report back for follow up examinations. After parturition, the patient again reported to our department with chief complaint of massive outgrowth in the oral cavity. The lesion was present since the time of its first presentation which was gradually increasing in size. On clinical examination, a bi-lobed lesion was present buccally and palatally in relation to right maxillary premolars and first molar teeth connected by interdental papillae. The size of the lesion on buccal and palatal aspect is approximately 5 x 5 cm each. The colour of swelling was predominantly red with few areas of whitish membranous coating and few areas of ulcerations due to trauma **(Figure 3)**.

Figure 3: Intraoral examination showing bi-lobed pregnancy tumour.

On palpation swelling was relatively firm and rubbery in consistence. There was mild tenderness and bleeding on provocation was present. The involved premolars and first molar teeth were Grade III mobile. Aspiration of the lesion rule out any possibility of vascular lesion. Based on the relationship of the lesion with history of pregnancy in the past, a provisional diagnosis of pregnancy tumour was made and incisional biopsy was performed to establish it. After confirmation of the diagnosis the tumour was excised along with extraction of involved teeth **(Figure 4)**. The excised specimen was sent for histopathological examination **(Figure 5)**.

Figure 4: Surgical defect after excision of pregnancy tumour and extraction of involved teeth.

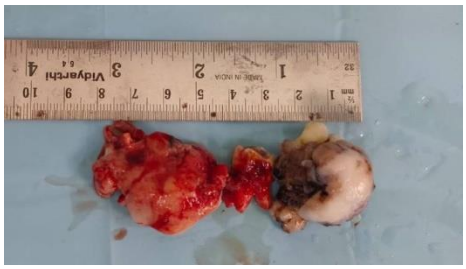

Figure 5: Excised specimen along with extracted teeth.

After recovery from pain and swelling, full mouth oral prophylaxis was performed. Patient was advised to maintain oral hygiene by regular brushing along with the use of antimicrobial mouth wash. There was no recurrence of lesion and healing was quite satisfactory **(Figure 6)**.

Figure 6: Post-operative photograph showing satisfactory healing.

Discussion

Pyogenic granuloma is considered to be an inflammatory hyperplasia of skin or mucous membrane typically associated with chronic irritation or trauma. In oral cavity the involvement of gingival tissue is more common as compared to other sites as poor oral hygiene favour greater accumulation of plaque and calculus predisposing to irritation of gingival tissues.[4] During puberty and pregnancy, the level of sex hormones increases which modify the host response to local irritation by alteration in vascularity of tissues. During pregnancy the response of tissue to irritants may ranges from gingivitis to formation of large pregnancy tumours. Although term pregnancy tumour is used, they clinically and histologically are similar to pyogenic granuloma of oral cavity present in males and non-pregnant females.[5-7] In our case there was a massive pyogenic granuloma typically associated with gingival tissues and has strong co-relation with pregnancy (pregnancy tumour).

Clinically pyogenic granuloma usually appears as a smooth lobulated sessile or pedunculated exophytic growth arising from gingival tissues. The colour of the lesion may range from pink to red based on the vascularity. Generally, the lesion is asymptomatic, however, few patients may complaint of ulceration and bleeding on traumatization.[6,8-10]

At the time of pregnancy and second presentation after parturition, our patient was presented with similar clinical features.

In majority of cases pyogenic granuloma did not lead to any radiographic changes. However, in some cases there may be slight resorption of superficial bone and mobility of teeth due to periodontal bone loss mimicking aggressive tumour.[6] In our case there was periodontal involvement of premolars and molars leading to mobility, thus requiring extraction.

Histologically, pyogenic granuloma is characterized by presence of large vascular spaces lined by endothelial cells in a loose fibrillar connective tissue matrix. The presence of inflammatory infiltrate is almost universal. The chronic inflammatory cells are always present along with polymorphonuclear leucocytes (PMNs).[3]

Once the diagnosis of pregnancy tumour is established, the treatment of choice is surgical excision of the lesion to the level of periosteum along with elimination of predisposing factors such as plaque, calculus and foreign bodies. After surgical excision, recurrence is less common (5%).[10] Few authors recommend wait and watch policy for self-resolution of gingival enlargement after parturition. This is not always possible especially when the size of exophytic growth is large which make oral hygiene difficult leading to persistence of etiological factor. Therefore, we excised the pregnancy tumour followed by oral hygiene maintenance.

Conclusion

Pregnancy tumour is a common clinical entity and its prevalence increases during pregnancy due to poor oral hygiene. The management of any lesion requiring surgery is relatively difficult during pregnancy as compared to other individuals. If possible, the surgical procedures are usually postponed till parturition to eliminate stress of surgery and to avoid use of drugs required peri-operatively to avoid their possible deleterious effect on developing baby. It is always said that prevention is better than cure. Therefore, we recommend close collaboration between dental and gynaecological professionals especially in context to pregnant patients and females planning for it. These patients should be encouraged to maintain good oral hygiene for regular plaque control. If required oral prophylaxis by dental professionals should be done before pregnancy or during second trimester (safest trimester during pregnancy). Along with oral prophylaxis (mechanical plaque control), plaque control by use of antimicrobial mouth wash (chemical plaque control) is highly encouraged. In the absence of preventive measures, if a pregnant patient develop pregnancy tumour, the patient should be regularly monitored to look for size of lesion and the tumour should be excised at the safest trimester along with use of preventive measures to decrease the chances of its recurrence.

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