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# TAPER

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# **TAPER**

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Editor:

**Dr.Prameetha George Ittycheria**

BDS, MDS

Pushpagiri College of Dental Sciences

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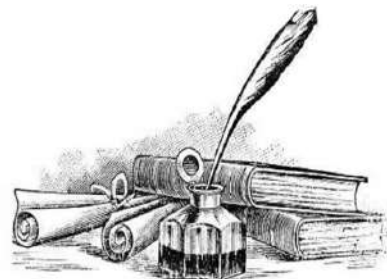
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## Editorial



Greetings to all members of the Association



The famous American Author Helen Keller rightly says that the world is moved not only by the mighty shoves of its heroes, but also by the aggregate of the tiny pushes of each honest worker. This magazine is the sum up of sincere, hard work by members of IDA Thiruvalla, and the cooperation of the sponsors. This magazine is also an example for the old proverb 'Unity is strength'. It holds as true in the current times, and good in almost every sphere of life, be it a person's professional life, relationships or the society as a whole. It gives me immense pleasure to ensure that this magazine has successfully accomplished its objective. The reflection of our beloved members' creativity and achievements is the epitome of the magazine.

I take this opportunity to thank The God Almighty for the blessings, to fulfill the editing of this magazine, I am thankful to all our beloved IDA Thiruvalla branch office bearers and all members for entrusting me with the responsibility as an editor. I also thank all the sponsors for their valuable cooperation. I heartily wish all the readers my best wish and hope the magazine will enjoy your critical acclaim and prove itself for enlightens our academic knowledge.

Thankyou all.

**Dr.Prameetha George Ittycheria**  
Editor

*Presidents Message*



Greetings !



It is with great pride and immense pleasure I write these words for the third annual issue of our journal TAPER. I would like to congratulate our editor Dr. Prameetha George for her dedication and perseverance in bringing out the current issue .we sincerely hope that the quality and content of the journal has improved as compared to previous years.

The Strength of any Association is not in its membership strength but how many of them are participating in the branch activities.I feel privileged to be associated with such an active branch and would like to thank all the executive committee members and other branch members for the faith and support they have given me.At the same time I would also like to remind my members about the Red Queen effect."you have to run fast to stay where you are ,twice as fast to get ahead."

We should keep in mind that Complacency and negligence can wither away what we have achieved so far through teamwork.

I hope and pray that we will be able to sustain the enthusiasm and momentum we have gained in the past few years and carry forward our branch activities in a vibrant and fruitful manner for the years to come

Jai Hind Jai IDA

Thank you

Dr Akhilesh Prathap  
MDS, MBA, Fellow; IBOMS



*Secretary's Message*



As G V Black says "The professional man has no right to be other than a continuous student", the process of learning never comes to an end even after obtaining a degree or post graduation for any practitioner. The journals provide a platform for acquiring and sharing knowledge and improving the quality of the treatment.

The Journal of Indian Dental Association Thiruvalla aims at providing original research articles, case discussions and quality reviews. This journal is a peer reviewed scientific journal for clinical practitioners. I am happy and proud to be a part of this journal. A lot of effort has been put by the team of editorial especially Dr. Pameetha, our journal editor, reviewers and authors for the success of this journal. I take this opportunity to congratulate the team and I am highly optimistic that the same enthusiasm continues to take the association to greater heights in the future.

Wishing you all a great time ahead

With warm regards

Dr Thomas Jacob

Hon: Secretary



# ABNORMAL TOOTH MOBILITY DUE TO CARCINOMA OF THE GINGIVA AND UNDERLYING ALVEOLAR BONE - A CASE REPORT

Dr. Annie Kitty George Associate Professor Department of Periodontics Pushpagiri College of Dental Sciences.

## Introduction

Oral cancer accounts for more than 50% of all cancer cases in India.<sup>1</sup> Squamous cell carcinoma (SCC) is the most common of all oral malignancies.<sup>2</sup> Martin reported that approximately 10% of all malignant tumors of the oral cavity occur on the gingiva.<sup>3</sup> Clinical presentations of SCCs of the gingiva can be quite variable, presenting as an area of ulceration or as an exophytic, granular, or verruciform growth. They can easily be misdiagnosed as benign tumors or other inflammatory responses due to their variable clinical presentations. This case presented as an area of ulceration and erosion involving the attached gingiva and buccal vestibule. Patient was asymptomatic except for mobility of his lower molars. The lesion was spotted at a routine scaling appointment. It is of paramount importance that such lesions should be diagnosed early to initiate treatment, prevent metastasis, and thereby improve the prognosis.

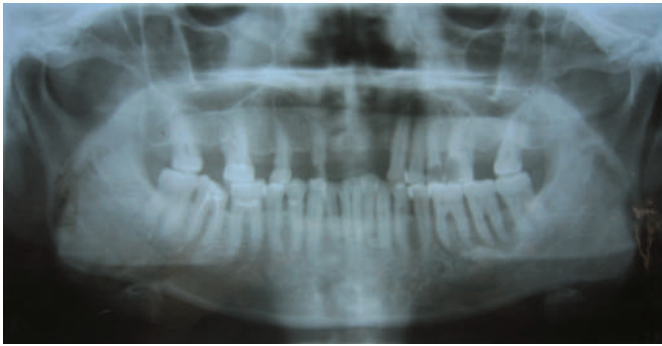
**Case Report** A 59 year old male patient reported to the Dept. of Periodontics, Pushpagiri College of Dental Sciences, with chief complaint of mobility of teeth in the left lower jaw since two months. Medical history revealed that he was a diabetic on medication since six years. Patient gave history of pan-chewing since six years and that he had stopped the habit since two months. The patient gave a dental history of oral prophylaxis and flap surgery at a local clinic four years back. Patient reported that flap surgery was performed in lower left quadrant. Extra oral examination did not reveal any tenderness or swelling over the left cheek region. Intra-oral examination revealed an area of ulceration and erosion involving the attached gingiva of mandibular left first and second molars. Size of the lesion is 2x2.5cm in diameter. Anteriorly the lesion extended from the distal aspect of left mandibular first molar and posteriorly to the mesial aspect of left lower third molar. The lesion extended into the buccal vestibule. Attached gingiva appeared "torn off". [Figure 1] There was erosion of the buccal cortical plate and roots of teeth were exposed buccally to the apical third. The lingual aspect was spared. Mild tenderness and induration was elicited on palpation. Left mandibular first and second molars were grade II mobile. Lymph nodes were not palpable.

Orthopantomograph showed irregular radiolucency encircling the roots of lower first and second molars in a scooped out pattern. [Figure 2] A tentative diagnosis of squamous cell carcinoma of gingiva and alveolus was made. An incisional biopsy of the lesion was done. The section showed islands of epithelial cells invading the connective tissue in a vigorous pattern. These epithelial cell islands showed presence of individual cell keratinisation, formation of numerous keratin pearls of varying sizes, cellular pleomorphism, nuclear hyperchromatism and enlarged nucleoli. Scanty connective tissue stroma in between showed dense inflammatory cell infiltration. Areas of haemorrhage were also noted. [Figure 3]

Diagnosis was compatible with moderate to well differentiated squamous cell carcinoma. The patient was then referred to the Regional cancer centre. Clinical staging of the lesion as diagnosed at RCC was T<sub>4</sub>N<sub>0</sub>M<sub>0</sub>. Chest X-ray was done to rule out metastasis at RCC. The patient reported back to our college and underwent extractions and oral prophylaxis as advised from RCC. Both radiotherapy and surgical managements were carried out at RCC. Segmental resection of the mandible and a microvascular free fibula flap mandibular reconstruction were carried out at the centre. The patient reported to our department two months after surgery. Six



Initial Presentation

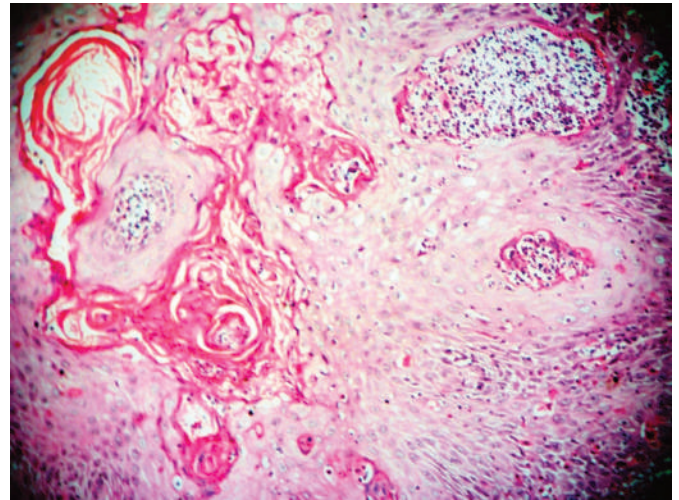


OPG Showing radiolucent area encircling 36 & 37

months after treatment, the patient is asymptomatic. [Figure 4] He is advised regular recall visits at our department and also at RCC.

**Discussion:** Squamous cell carcinoma is defined as a malignant epithelial neoplasm exhibiting squamous differentiation characterized by the formation of keratin and/or the presence of intercellular bridges.<sup>4</sup> The most common etiologic factors associated with SCC are smoking, smokeless tobacco use, pan chewing, consumption of alcohol, syphilis, phenol use, exposure to ultraviolet radiation, iron deficiency, candidal infections, oncogenic viruses, and immunosuppression.<sup>5</sup>

Our patient had the habits of pan chewing for over ten years and had discontinued the habit since two months. This history of pan chewing alerted us to the possibility of him developing a malignant lesion. Pan chewers commonly hold the betel quid in the buccal vestibular area for long periods, and that increases the risk of developing oral cancer, especially of the buccal mucosa and gingiva.<sup>6</sup> Betel nut chewing has long been a social habit in India and other tropical countries. It can be chewed alone but is most commonly used with other ingredients and is known as the quid. A betel nut quid typically consists of 3 ingredients: the areca nut, leaf of the betel pepper, and slaked lime paste obtained from shells, coral, or limestone.<sup>7</sup> This combination of ingredients is more carcinogenic than betel nut used alone. Gingiva being a common site of calculus formation and microorganism collection is the most susceptible site for long-term chronic irritation and inflammation. Simiantonaki et al<sup>8</sup> from their findings indicated that proinflammatory stimuli of bacteria may play a crucial role in tumor metastasis. Thus, poor oral hygiene associated with chronic inflammation may promote the development and invasiveness of oral cancers.



Island of well differentiated epithelial tumor

SCC is often asymptomatic, and the initial symptoms are usually an intraoral mass or swelling, ulceration, pain, ill-fitting dentures, mobility of teeth, or unhealed extraction wounds. These tumors frequently resemble inflammatory lesions affecting the periodontium like pyogenic granuloma, gingivitis, periodontitis, and benign conditions like verrucous xanthoma. In early stages, the lesion often closely simulates advanced periodontitis, associated with minimal pain, and may lead to a delay in diagnosis and prompt treatment<sup>9</sup>. Our patient gave a history of having underwent periodontal flap surgery in the same quadrant two years before. Whether this case represents a case of misdiagnosis is of grave concern. We believe that this case should be an eye opener for any general practitioner or periodontist. Because of the proximity of the underlying alveolus, early bone invasion is a frequent occurrence. Our case presented as an ulcerated and eroded area with invasion into the underlying alveolus. The differential diagnosis was chronic traumatic ulcer. SCC of the gingiva more frequently involves the mandible than the maxilla<sup>10</sup> and is mainly observed in female older than 50 years.<sup>11</sup> However, some investigators have reported a higher incidence in male.<sup>12</sup> Although gingival SCC is more common in patients more than fifty years of age, gingival SCC has been reported in younger patients.<sup>13,14,15</sup> Total diagnostic delay in oral cancer is defined as the time from the first onset of signs and symptoms up to the definitive diagnosis. Juan Seoane et al. in 2006, reported that diagnostic delay for GSCC was quantified as <1.5 months for 75% of the cases and >1.5 months for the rest of 25% cases of GSCC. This delay was frequently found to be associated with invasion of adjacent structures by the SCC

than other oral cancers. <sup>9</sup> Early detection of SCC is vital as the prognosis is directly related to the size of the lesion. The overall survival rate for GSCC is about 54%. <sup>16</sup>

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# “AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE”

-Benjamin Franklin

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**Dr. Elizabeth Joseph.** Professor and Head of Dept. of Pedodontics, Pushpagiri College of Dental Sciences.



Dental Caries is a microbial disease preventable by averting the onset, and manageable by implementing interventions, that may halt the progression of enamel demineralisation to frank cavitation. According to last National Oral Health survey conducted in 2002-2003, the DMFT scores for Indian children was between 48.1% to 62.02% in 5-15 years of age group respectively.<sup>2</sup> The prevalence of dental caries among 5-year-old school children in the region of Tiruvallur was found to be 41.5%.<sup>3</sup> As Dentists, preventive measures like application of pit and fissure sealants and fluoride should be well practiced among children for their better oral and general health.

## Potential Role of Pit and Fissure Sealants

Newly erupted tooth has immature enamel with high organic content and are more permeable. This along with prolonged time of eruption interferes with oral hygiene, leading to caries. Occlusal caries accounts for almost 60% of total caries experience, even though occlusal surfaces account for only 12.5% of total number of tooth surfaces exposed to cariogenic challenges.<sup>1</sup>

Preventive interventions like water fluoridation, topical application of fluoride toothpaste, varnishes and gels are effective in reducing smooth surface caries. However, pit and fissure sealants are found to have greater effect on occlusal surface caries.

## Advantages of Pit and Fissure Sealants over Fluorides:

Pit and Fissure Sealants effectively seal the anatomic grooves or pit and fissures on the occlusal surfaces of primary/permanent molars, thereby preventing the food debris being trapped and inhibiting the bacterial biofilm and hence decreases the risk of caries. Sealants can arrest or inhibit the progression of non-cavitated carious lesions.<sup>4</sup>

## How to Decide for “Pit and Fissure Sealants”?

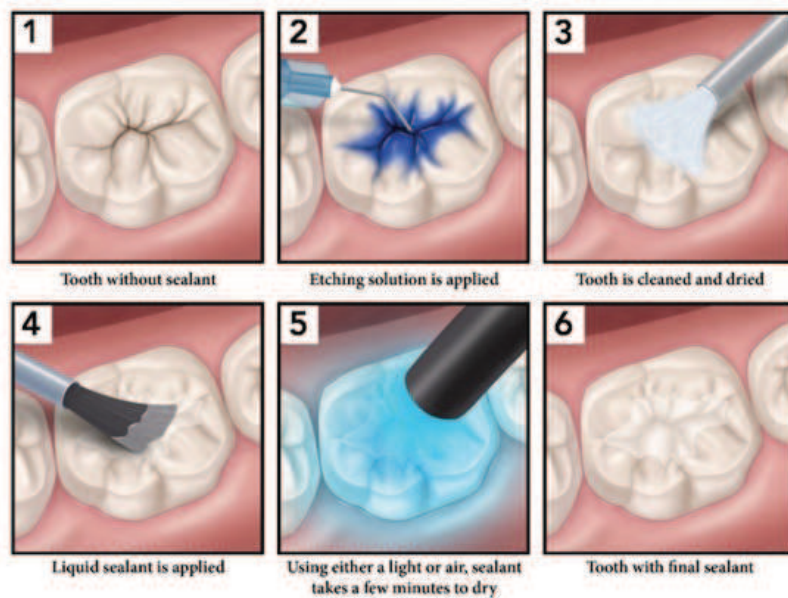
- 1) **Tooth Morphology:** Teeth with deep pit and fissures that catch an explorer are the best candidates for sealants while teeth with wide and easily cleaned grooves do not require sealing.
- 2) **Status of Occlusal Surface:** Teeth with enamel caries can be sealed, as long as the sealant remains intact, the lesion won't progress and remain arrested.
- 3) **Eruption Status:** Since adequate isolation is needed, seal a fully erupted tooth with occlusal surface caries as it is difficult to isolate a partially erupted one.
- 4) **Caries Status:** Patient's overall susceptibility to caries (if 1 or more lesions per year) should be examined and even the caries-free pit and fissures should be sealed.<sup>6</sup>
- 5) **Status of Proximal Surface:** If proximal caries is present in a non-carious occlusal surface, then it is considered to be sealed if conservative procedures for managing the inter-proximal decay are feasible.<sup>1</sup>
- 6) **Age-wise Selection:**
  - 3-4 years old: 1<sup>st</sup> and 2<sup>nd</sup> primary molar
  - 6-7 years old: 1<sup>st</sup> permanent molar
  - 11-13 years old: 2<sup>nd</sup> permanent molar and premolars.

### How are Sealants Applied?

Placement techniques for pit and fissure sealants vary based on sealant type or manufacturer or brand. Manufacturer's instructions usually detail cleaning and isolation of the occlusal surface and encourage a dry environment during sealant placement and curing. Acid etching of occlusal surfaces is required before resin-based sealant placement.<sup>1,5</sup>

According to AAPD 2016, sealant materials are classified as:

- 1) **Resin-Based Sealants:** They are urethane di-methacrylate(UDMA) or bis-phenol A-glycidyl methacrylate (bis-GMA) monomers polymerised by a chemical / light activator.
- 2) **GI Sealants:** They are based on the properties of Glass Ionomer Cement.
- 3) **Poly-Acid Modified Resin Sealants / Compomers:** It combines the properties of resin based sealants and fluoride releasing and adhesive properties of GI Sealants.
- 4) **Resin-Modified GI Sealants:** It is GI Sealants with resin components, with lesser water sensitivity compared to traditional GI Sealants.



### Various Available Sealants?



### Fluoride Releasing Sealants

## TAPER



**Sealants with ACP**



**Coloured Sealant**



**Wet bond sealants(hydrophilic) Hydrophilic fluorescent BPA free Sealant**



**Fluorescing Sealant    Pen-Handling Type Sealant**

### **What affects retention of sealants?**

It is necessary to keep recall and monitor the sealed tooth surface for loss of material, exposure of voids and caries development in the first 6 months of placement. Insufficient isolation and incomplete removal of debris mainly affects the retention of sealants. 15-year retention rates were reported for single application of sealants on permanent molars.<sup>4</sup>

The objective underlying the use of sealants is that prevention is better than treatment. As dentists are the first to see the child at all these ages, it is of prime importance to incorporate the application of pit and fissure sealants well before the occurrence of caries and thus enhance the quality of oral as well as their general health.

As dental professionals, can we make an effort to educate and inform the general public, about the effectiveness of sealants in caries prevention and the cost effectiveness of this preventive technology compared to an invasive treatment?

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## CASE REPORT ON BASALOID SQUAMOUS CELL CARCINOMA OF MAXILLA - A RARE AND AGGRESSIVE VARIANT

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### ABSTRACT:

Basaloid squamous cell carcinoma (BSCC) is an aggressive variant of oral squamous cell carcinoma. It is looked upon as a high grade tumor with increased tendency for metastasis to distant sites. It occurs in various sites of the head and neck region and is believed to have a poor prognosis. Here we discuss about a 58 year old male patient who came with a chief complaint of pain and swelling in the right upper back tooth region for the past 2 months. The patient was examined thoroughly and investigations were carried out. Based on clinical and radiographic examination, incisional biopsy of the lesion was carried out with prior patient consent and the report came as basaloid squamous cell carcinoma. Total maxillectomy with supra omohyoid neck dissection was then done on right side and reconstruction with orbital mesh and obturator. The excised specimen was sent for histopathological analysis and final report also came as Basaloid Squamous Cell Carcinoma of right maxilla. Basaloid squamous cell carcinoma is an uncommon but distinct malignant tumour considered to be very aggressive, and it often presents as an advanced stage lesion with locoregional and distant metastases. Careful histological differentiation from other tumours with overlapping features holds significance for early accurate diagnosis, treatment planning and prognosis.

**Keywords:** Basaloid Squamous cell carcinoma, Computed Tomography, High grade tumor.

### INTRODUCTION

Basaloid Squamous Cell Carcinoma (BSCC) is a rare and aggressive variant of oral squamous cell carcinoma

(OSCC). It was first recognized as a separate histopathological entity by Wain et al. in 1986.<sup>[1]</sup> In 1991 this entity was included in the revised edition of World Health Organisation (WHO) classification of head and neck tumors. However, in 2005 classification, WHO defined it as a variant of Oral Squamous cell carcinoma.<sup>[2]</sup> The histological hallmark of BSCC is its dimorphic pattern of presentation with a characteristic basal cell component associated with squamous component.<sup>[3]</sup> BSCC has a predilection for head and neck region, predominantly the upper aerodigestive tract, i.e., larynx and hypopharynx. Within the oral cavity, BSCC has a predilection for the tongue, floor of the mouth, palate, retromolar trigone, and gingival mucosa.<sup>[4,5]</sup> This article reports a case of 58 year old male patient diagnosed with Basaloid Squamous Cell Carcinoma of right maxilla.

### CASE DESCRIPTION

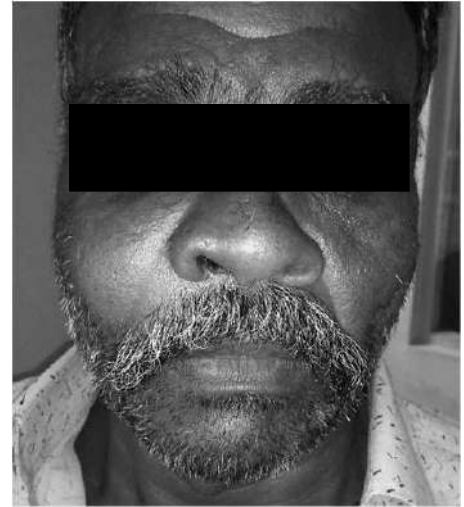
A 58 year old male patient came to the dental OP with a chief complaint of pain and swelling in the right upper back tooth region for past 2 months. History revealed patient noticed loosening of teeth in right upper back tooth region for which he had undergone extraction. From then he started to experience pain in the same region which was intermittent in nature, pricking in type, radiating to head and neck region, aggravated on chewing and relieved on medication. Patient had complained of swelling in the same region. He had habit of smoking bidi one full packet per day for past 20 years and consuming alcohol twice a week. Extra oral examination revealed diffuse swelling present on right side of the face measuring about 4 x 5 cm in size extending anteroposteriorly from ala of the nose to 4 cm away from tragus and superoinferiorly from the infraorbital

margin to upper lip. Skin over the swelling was stretched. Obliteration of the nasolabial fold was present and nose deviated to left side. Swelling was firm in consistency with tenderness present. Skin over the swelling was pinchable and paraesthesia absent [Figure 1].

On lymph node examination, right submandibular lymph node was palpable, 0.5 cm in diameter, firm in consistency, tender and fixed to underlying structure.

Intra oral examination revealed diffuse swelling on the right upper buccal vestibular region measuring about 5x3cm extending anteroposteriorly from the mesial aspect of 12 to mesial aspect of 17 with complete obliteration of the buccal vestibule. Swelling did not cross the midline. Diffuse swelling was also present on Right palatal side measuring about 2x3cm extending anteroposteriorly from distal aspect of 13 to mesial aspect of 17 and mediolaterally from alveolus to 1cm away from midpalatine raphe. Swelling was soft to firm in consistency in the buccal vestibular region with tenderness on palpation. Swelling on the palatal aspect was soft in consistency and fluctuant [Figure 2].

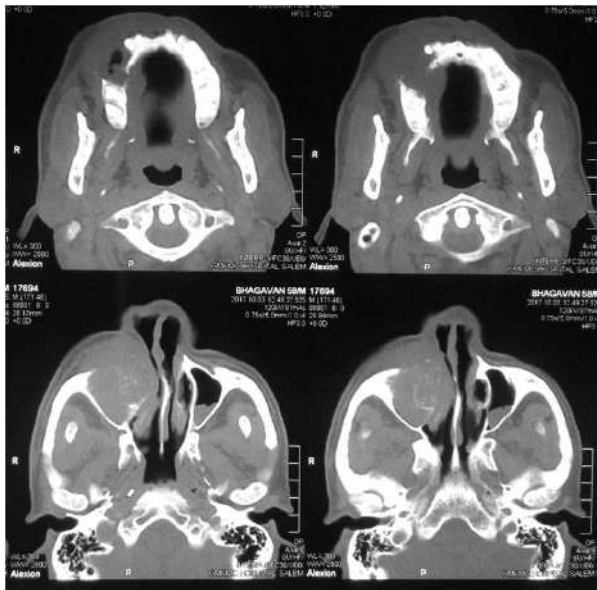
Based on the clinical features, patient was provisionally diagnosed with malignancy of the right maxilla. On radiographic examination, panoramic radiography revealed diffuse radiolucency extending from 13 to 16 region with loss of normal trabecular



**Figure 1: Extra oral view**



**Figure 2: Intra oral view**



**Figure 3: Computed Tomography - Axial Slice**

pattern of bone. After obtaining written consent from the patient, an incisional biopsy was performed under local anesthesia and sent for histopathologic examination. The histopathology report came as basaloid squamous cell carcinoma. Patient was then advised to get Computed Tomography done. CT showed diffuse expansile lesion involving right maxilla, posterior lateral wall of maxilla, floor of the orbit.[Figure 3 and 4]

Surgery was planned under general anesthesia. Supra omohyoid neck dissection with Weber Ferguson incision modification was done followed by total maxillectomy and orbital mesh was positioned [Figure 5]. Temporalis fascia along with coronoid process was sutured on nasal bone. Skin graft was harvested and sutured to buccal mucosa and obturator was placed [Figure 6]. The excised specimen was sent for histopathological examination which revealed



Figure 4: Computed Tomography - Coronal Slice  
Diffuse expansile lesion involving Right maxilla ,  
posterior lateral wall of maxilla, floor of the orbit.

Basaloid squamous cell carcinoma of right maxilla[Figure 7].

#### DISCUSSION

BSCC is a rare dimorphic variant of SCC which occurs principally in elderly men. Its incidence has been associated strongly with the use of tobacco, alcohol, exposure to benzene and HPV 16.<sup>[6]</sup> BSCC has increased risk of distant metastases, which is six-fold more than oral squamous cell carcinoma with an estimated rate of up to 64%.<sup>[7]</sup> Most BSCCs have overall poor patient survival rates because they are typically diagnosed at advanced clinical stages and its prognosis is unfavourable. Lymph node metastasis is frequently reported in BSCC of head and neck. Chaidas et al. 2012 reported a high rate of nodal involvement (64%)<sup>[8]</sup>.

The clinical presentation of BSCC is similar to conventional squamous cell carcinoma such as painless irregular mass (verrucous or smooth), firm, and may or may not be ulcerative.<sup>[9]</sup> The basaloid cells exhibit an increased nuclear/ cytoplasmic ratio, scant amphophilic cytoplasm, and oval and hyperchromatic nuclei without prominent nucleoli. Mitotic figures and nuclear pleomorphism are often observed in all cases. The basaloid components are arranged in cords, nests, islands, and lobules.<sup>[10]</sup> Tumor islands exhibit basaloid cells with areas of comedo necrosis and focal keratinization.<sup>[11]</sup> Histopathologically, a diverse arrangement of tumour cells in the form of nests, lobules, trabecular, cribriform pattern with inspissation of mucinous material or hyalinised stroma, jigsaw puzzle pattern and cystic spaces containing stellate granules or replicated basal lamina arranged in parallel stacks or globoid masses can be noted.<sup>[6,12]</sup>

BSCC has frequently been misdiagnosed as adenoid cystic carcinoma of solid type (ACC), basal cell carcinoma (BCC), small-cell undifferentiated neuroendocrine carcinoma, polymorphous low-grade adenocarcinoma, adenosquamous carcinoma (ASC), basal cell adenocarcinoma and salivary duct carcinoma.<sup>[13, 14]</sup>

In BSCC, the basaloid cells exhibit positive expression for CK17 and negative expression for vimentin, S-100, CK7, CK8 or CK20. The expression of CK-H is positive in BSCC cases.<sup>[15]</sup>

BSCC requires aggressive multimodality management, including radical surgical excision, neck dissection, radiotherapy and regular chemotherapy due to the overall high mortality rate. Though chemotherapy is recommended by certain authors due to the high incidence of distant



Figure 5: Surgical View

Figure 6: Obturator Placed



Figure 7: Histopathologic section shows parakeratinized surface epithelium. The underlying connective tissue showing large and small islands, sheets of darkly stained basophilic round epithelial cells showing increased nuclear cytoplasmic ratio, hyperchromatism, pleomorphism and mitosis. The periphery of the islands showing columnar cells. Center of islands showing comedo necrosis.

metastasis and the relatively poor prognosis<sup>[16]</sup>, a standard chemotherapy regimen for BSCC is not yet established. Furthermore, investigation of a greater number of patients is required to determine the efficacy of chemotherapy for BSCC of the head and neck. Bonner et al<sup>[17]</sup> advocated that immunotherapy elicited an improved treatment effect when compared with radiotherapy alone and resulted in a reduced mortality rate.

## CONCLUSION

Basaloid squamous cell carcinoma is an aggressive high grade variant of oral squamous cell carcinoma. It presents with dimorphic pattern with characteristic basal cell component associated with squamous component. BSCC often presents as an advanced stage lesion with loco regional and distant metastases which is six-fold more than oral squamous cell carcinoma. Careful histological differentiation from other tumours with overlapping features holds significance for early accurate diagnosis, treatment planning and prognosis.

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# **ESTHETIC MANAGEMENT OF MISSING CENTRAL INCISOR DURING ORTHODONTIC TREATMENT – A CASE REPORT**

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**Dr. Lijo John.** MDS (Consultant Orthodontics)

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## **Introduction**

When treating patients with congenitally missing maxillary incisors or extracted incisors for orthodontic treatment need, the orthodontist must decide whether to close the anterior spaces by moving adjacent teeth and esthetically contouring them to simulate missing teeth or to open the spaces and place fixed bridges or implant prosthesis.<sup>2</sup> Points favoring prosthetic replacement are maintenance of canine guidance which is ideal for long term healthy occlusion<sup>1,3</sup> and achievement of better esthetics as color, shape of adjacent teeth need not be altered<sup>4,5</sup> whereas the most evident advantage of esthetic space closure is avoidance of lifelong artificial prosthesis which means finished results are more permanent and biocompatible as tooth shade and transparency, along with gingival color, contour, and margin levels, are critical and difficult to control, particularly in the long term.<sup>6-14</sup> Another benefit is avoidance of extraction of healthy premolar tooth on the affected side in order to create space for retraction of anterior segment to treat incisor proclination. But one major issue encountered with space closure method is the period of temporary void due to absence of teeth in anterior segment during treatment that can be detrimental to patient not only esthetically but psychologically too.

The purpose of this article is to show the management of extracted central incisor tooth in a young adult patient by space closure alternative by combining techniques of esthetic dentistry and carefully detailed orthodontic treatment.

## **Diagnosis:**

A 19 year old male patient reported to the department of orthodontics with a chief complaint of forwardly placed upper front teeth. Extraoral examination revealed a mesocephalic head type, mesoprosopic face type with an oval facial form. The face was apparently symmetrical with convex facial profile and posterior facial divergence. The Mandibular plane angle was steep and the lips were incompetent with an acute nasolabial angle and deep mentolabial sulcus.

The teeth clinically present were permanent central incisors to second molars in both quadrants in upper and lower arch. Upper right central incisor had a disproportionate and bulbous ceramic crown prosthesis. The molar and canine relationship was Angle's Class I bilaterally with increased overjet and overbite. Moderate crowding of 5 mm was present in lower arch. The upper midline deviated to left and lower midline coincides to the facial midline.

OPG confirmed full complement of teeth and IOPA of tooth numbered 11 revealed blunderbuss apex with poor endodontic treatment.

Cephalometric analysis revealed it to be a case of skeletal class I with small sized and backwardly placed maxilla and mandible, vertical growth pattern, proclined and forwardly placed upper and lower incisors, convex profile with procumbent lips.

## **Treatment objectives:**

- To attend to the patient's chief complaint of forwardly placed upper front teeth.
- Extract poor endodontically treated tooth #11.
- To level, align and close all extraction spaces in upper and lower arch
- Correction of inclinations of upper and lower incisors.
- Attainment of normal overjet and overbite.
- To maintain stable buccal occlusion.
- To relieve lip strain & and improve patient's profile.

## TAPER

### Treatment Plan and Mechanics:

- Since the patient had a class I skeletal base with bimaxillary proclination and a convex profile which could be improved by dentoalveolar correction therefore extraction of all first premolar treatment plan was envisaged and since the prognosis of endodontically treated tooth #11 was poor, it was considered for extraction instead of #14.
- Esthetic recontouring of mesially relocated right lateral incisor and cuspid to a more ideal central and lateral incisor shape and size respectively, by using a combination of grinding and composite resin build-ups or porcelain laminate veneers.
- Careful correction of the crown torque of a mesially relocated lateral and cuspid to mirror the optimal central and lateral incisor crown torque, along with the provision of optimal torque for the mesially moved right maxillary first and second bicuspid.
- Individualized extrusion and intrusion during the mesial movement of the cuspids and first bicuspid, respectively, to obtain an optimum level for the marginal gingival contours of the anterior teeth.
- Increasing the width and length of mesially moved lateral incisor with composite resin build-ups and/or porcelain laminate veneers.
- Minor surgical procedures for clinical crown lengthening and gingival contouring for better esthetic finished results.

### Riding pontic

Riding pontics are temporary prostheses used during fixed orthodontic treatment in patients with missing teeth and can be used for any missing teeth. It is especially good when one or more anterior teeth are missing.

When treatment plan is to maintain the extracted space then pontic's mesio-distal width is kept exact and it acts as a space maintainer and when the space has to be closed then the width is kept 1 mm short so that adjacent teeth can be approximated orthodontically and in subsequent visits sides are trimmed accordingly till only bracket width distance remains.

### Benefits of using Riding pontics

- Improvement of esthetics during orthodontic treatment.
- Development of abnormal habits such as tongue thrusting and defective speech can be prevented.
- Exact mesiodistal width of the missing tooth can be maintained.
- Midline matching along with riding pontic is easier when a unilateral incisor is missing.
- Psychosocial status of the patient can be improved.

### PRE TREATMENT



### POST EXTRACTION



## TAPER

### INTRA ORAL PHOTOGRAPHS SHOWING RIDING PONTIC



### PRE TREATMENT



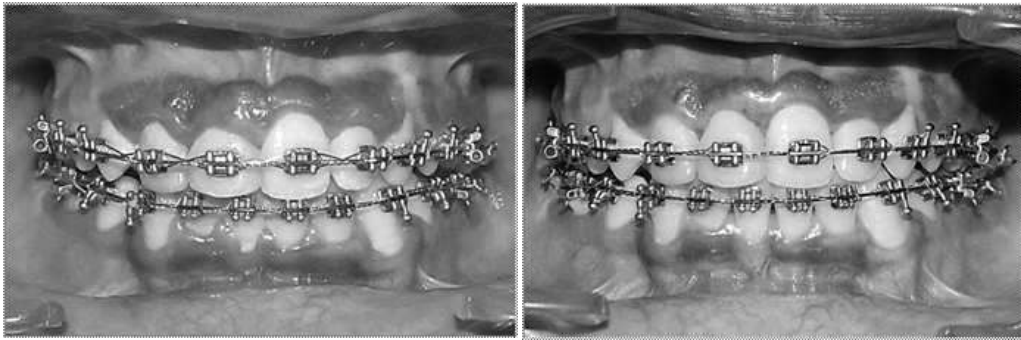
## TAPER

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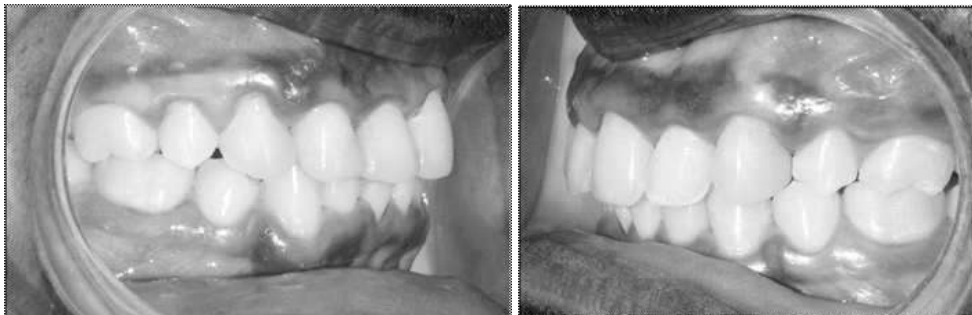
### Post Extraction



### GINGIVAL CONTOURING AFTER SPACE CLOSURE



### POST TREATMENT





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# IMMUNIZATION IN ELDERLY... ISSUES AND CONCERN

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## Introduction

The population of elderly people is increasing in india. This increase in life expectancy also means greater morbidity and health needs .In India the elderly suffer from dual health problems ie both communicable as well as non communicable.

Increased risk of infectious diseases in elderly can be attributed to the decline in immunity along with physiological changes. Usually the preventive care for the geriatric group is often neglected due to social , economic or other reasons.

We all know that prevention is better than cure and it is the most effective option to protect and promote health , especially among the vulnerable elderly.

Immunization is an important measure to achieve the same.

It is also important to note that there is no national immunization schedule for the elderly in India , despite of being prone to infections ,which can be prevented by vaccines.

## INFECTIOUS DISEASES IN GERAITRIC POPULATION

Among the vaccine preventable diseases the geriatric population is particularly susceptible to pneumococcal infections,influenza ,tetanus and herpes zoster. Other infections include HPV infection ,measles ,mumps, rubella and meningococcal infection. These are responsible for a large number of deaths and hospitalisation.

The public health impact of infections among elderly is likely to be amplified in future decades because of several reasons including increasing proportion of elderly and emergence of antibiotic resistant strains of bacteria like streptococcus pneumonia ,multidrug resistant pseudomonas aeruginosa ,carbapenem resistant enterobacteriaceae etc.

## PNEUMOCOCCAL INFECTIONS:

Streptococcal pneumonia is a major cause of pneumonia,meningitis and bacterimia world wide.the disease is increasingly showing a less favourable outcome and invasive diseases like bacteremia and meningitis are being common .more over there are reports of pneumococcal resistance to essentiak antimicrobials such as penicillin ,cephalosporins and macrolides ,both from developed and developing countries. It has also been noted

that during influenza season the risk of secondary pneumococcal infections also increases.

Guidelines for pneumococcal polysaccharide vaccine in adultshave been in place in developed countries for many decades .the vaccine has been licensed for use in the united states for 30 years and two thirds of the elderly population in the united states have received the vaccine(1)

Studies have demonstrated that the vaccine has a protective effect against invasive diseases and reduces the number of hospital admissions and overall deaths in the elderly age group.

During influenza outbreaks the benefits of pneumococcal and influenza vaccinations become additive .

In India large number of people suffer from diabetes mellitus which is a well known risk factor for pneumococcal disease. Hence pneumococcal vaccination may prove more beneficial in India in diabetic older persons.(2)

CDC recommends that all elderly adults should receive a single dose of pneumococcal polysaccharide vaccine.( CDC refers to The Centers for Disease Control And Prevention ,having headquarters in Atlanta,Georgia ,in the U.S.)

Re vaccination should be strongly considered after 6 years of the 1<sup>st</sup> dose for those at highest risk of fatal pneumococcal disease(such as asplenic patients ) or rapid decline in antibody levels (eg: transplant recepients or those with chronic renal failure or nephrotic syndrome.(3)

WHO recommend PPV23 (pneumococcal polysaccharide vaccine) for people over 65 years of age particularly those living in institutions or old age homes.

## INFLUENZA

Influenza is a viral infection caused by influenza viruses belonging to orthomyxoviridae family, of which there are four genera – influenza viruses A,B,C, and thogotoviruses.

Influenza A viruses cause epidemics most years . Influenza B virus causes a less severe illness and spreads less extensively and influenza C causes only acute pharyngitis.

The impact of influenza in high risk group is an important public health issue. The high risk groups include those with chronic lung, heart ,or renal disease, diabetes mellitus ,immuno suppression and those over the age of 65 years. People in these group have an increased mortality rate secondary to infection and its complications.

Complications include bronchitis , secondary bacterial lower respiratory infections

An effective way of protection is vaccination against influenza . currently a trivalent inactivated vaccine is used which contains two influenza A and one influenza B virus. It has been proved that the vaccine lessens the severity of infection and is 80% effective in preventing death in this population . it has also been demonstrated that during the influenza season the number of hospital admissions among the elderly may double if they are not vaccinated .

as per the recommendations of CDC all adults greater than or equal to 65 years of age should receive influenza vaccine annually.

### **TETANUS:**

It is important to note that the incidence of tetanus among adults is higher than among children. While high DPT coverage ensures that most children are protected, immunity against tetanus wanes over time ,leaving older adults susceptible to infection .

Elderly persons who lack immunity are particularly vulnerable and are also liable to injuries . in the developed countries tetanus has become a geriatric disease with majority of cases occurring in persons aged 60 years or older .

According to CDC all elderly adults (greater than or equal to 65 years ) should have completed a primary series of diphtheria and tetanus toxoids and there after should receive a booster dose every 10 years .

Persons with unknown or uncertain history of receiving the vaccine should be considered unvaccinated and should receive a full three dose of primary series of d T .for adults in the age group 18 to 64 years who have completed their childhood vaccination schedule ,a booster dose of Td vaccine is indicated once every 10 years till the age of 65 years .(4)

### **HEPATITIS B**

The reported prevalence of hepatitis B in India ranges from 2% to 10% being below 8% in most studies. (5)

Based on an average HBsAg positivity rate of 5%, the total HBV carrier pool in india is estimated at 50 million .

Most patients with acute infections recover within a few weeks to a few months time and become immune.

A small minority of patients with acute HBV infection develop a serious illness known as fulminant hepatitis which becomes fatal in a large majority within days or weeks of onset of symptoms .

This is more common especially in the elderly where the mortality rates may be as high as 10-15 %. Some persons

with acute HBV infection develop a chronic infection and most of the serious outcome due to HBV infections occur in these persons.

Those with chronic HBV infection may be asymptomatic for decades after the infection, however they are at high risk of eventually developing liver cirrhosis and /or primary liver cancer.

HBV vaccine is highly effective and is entirely safe except for minor local adverse effects .

Since mortality from acute hepatitis is more in elderly people ,this age group should be protected from hepatitis B . It has been recommended that vaccination against hepatitis B infection in the elderly is required only if he /she falls into any one of the high risk categories. Health care workers and elderly public safety workers who are exposed to blood in the workspace should be vaccinated against HBV infection.

### **HERPES ZOSTER**

Varicella zoster infection is another infection to which geriatric age group is susceptible to. The incidence and severity of herpes zoster and post herpetic neuralgia (PHN) increases with age in association with an age related decline in varicella zoster virus –specific cell mediated immunity (VZV-CMI)

In most of the cases herpes zoster causes debilitating pain , and when PHN develop the pain can last for months or even years . other complications include involvement of the eye that can threaten sight ,bacterial superinfection and disfiguring facial scarring.

There is a high risk of pulmonary ,cardiovascular and nervous system complications. It has been demonstrated that herpes zoster vaccine can significantly reduce the morbidity due to herpes zoster and PHN in older adults .

Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination of all persons aged 65 years or more with 1 dose of zoster vaccine .

Prevention of zoster and its sequelae is particularly important among the older persons because they experience the highest incidence of zoster and PHN. They are also most likely to suffer social and psychological consequences from PHN.

The administration of vaccine must be initiated within 72 hours of rash onset for maximum benefit . the available treatments for PHN often do not completely relieve the pain and might be poorly tolerated by the older patients .

however in india the expert group presently does not recommend the herpes zoster vaccine in adult population with or without comorbid conditions due to lack of reliable epidemiological data from the country regarding the burden of herpes zoster.(4)

### CHICKEN POX

According to CDC all adults without evidence of immunity to varicella should receive two doses of single antigen varicella vaccine if not previously vaccinated or the second dose if they have received only one dose unless they have a medical contraindication .

It is important to note that currently there is ignorance to a large extend, regarding the importance of vaccine preventable disease in the adults . and the awareness of indications and contraindications of vaccines in the geriatric age group needs to be improved for their health protection by largely benefitting from the vaccines.

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# AN UNDERSTANDING OF NITROUS OXIDE - OXYGEN INHALATIONAL SEDATION IN DENTAL PRACTICE

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Procedural sedation in pediatric dentistry is an aspect of treatment that has picked up pace in our country over the past many years. However, unlike general anesthesia, sedation has always been a controversial issue, when the procedure is performed outside of an operation theatre and also when performed by non anesthesiologist. A lot of countries have come up with guidelines to address this problem.

The various methods through which sedation can be achieved are oral, nasal, intramuscular, intravenous, subcutaneous and inhalational routes. Inhalational sedation using nitrous oxide ( $N_2O$ ) is widely used in dentistry especially in pediatric dentistry to alleviate dental anxiety and reduce dental pain and so improve patient cooperation. The technique is also termed 'relative analgesia', a phrase used by Dr Harry Langa in the 1960s with reference to the analgesic properties of nitrous oxide.

## Stages of sedation

The mixture of nitrous oxide and oxygen are administered in combination with appropriate behavior management techniques, resulting in sedation and analgesia during which the patient remains conscious (stage 1 of anesthesia, as described by Guedal<sup>6</sup>)

Depending upon the concentration of nitrous oxide delivered to the patient, stage 1 of anesthesia can be further subdivided into three planes of sedation.<sup>13</sup>

## Current practice guidelines

In the year 2002, the American Society of Anesthesiologists (ASA) task force generated and published guidelines that serve as the foundation for all who administer nitrous oxide. The guidelines were meant for those who are not specialists in anesthesiology, and they are mandatory for non – anesthesiologists practicing in hospitals (e.g. physicians, dentists, podiatrists). The American Academy of Pediatric Dentistry (AAPD) recognizes nitrous oxide/oxygen inhalation as a safe and effective technique to reduce anxiety, produce analgesia, and enhance effective communication between a patient and health care provider.

## Background

Nitrous oxide is a colorless and virtually odorless gas with a faint, sweet smell. It is an effective analgesic/anxiolytic agent causing central nervous system (CNS)

depression and euphoria with little effect on the respiratory system.<sup>11</sup>  $N_2O/O_2$  sedation has a rapid onset of action. The clinical effects may begin in less than 30 seconds, with peak effects usually occurring in less than 5 minutes. The decision to use nitrous oxide/oxygen analgesia/anxiolysis must take into consideration alternative behavioral guidance modalities, the patient's dental needs, the effect on the quality of dental care, the patient's emotional development, and the patient's physical considerations. Nitrous oxide generally is acceptable to children and can be titrated easily. Most children are enthusiastic about the administration of nitrous oxide/oxygen; many children report feeling a tingling or warm sensation.<sup>8</sup>

## Goals of Sedation

As listed by the AAP (American Association of Pediatrics) and AAPD (American Association of Pediatric Dentistry), the goals of sedation include

1. Guarding the safety and welfare of the patient
2. Minimizing physical discomfort and pain
3. Controlling anxiety and maximizing amnestic potential
4. Controlling behavior and movement
5. Returning the patient to a state where discharge is safe

## General guidelines for sedation

The AAP/AAPD considers children who fall in ASA (American Society of Anesthesiologists) classes 1 and 2 appropriate for all levels of sedation. (Children who fall under categories 3 or 4 require special consideration and medical advice)

## Patient assessment / Selection, Age Threshold and Indications

### A. Patient Assessment

1.  $N_2O/O_2$  sedation does not require an extensive physical evaluation of the child.
2. Patient assessment must focus on factors like previous sedation experiences, allergies, adverse drug reactions, medications which the patient is currently on, pregnancies and recent hospitalizations
3. Factors affecting the respiratory system such as enlarged tonsils and adenoids (since they can increase resistance to ventilation and  $N_2O$  movement)

## **B. Selection of the Patient**

1. Mild to moderately apprehensive children (not extremely fearful)
2. Must be old enough to understand the commands of the care provider, follow instructions and interact with him/her (usually not younger than 3 years of age)
3.  $N_2O/O_2$  must be used not as a replacement for behavior guidance methods, but is to be used in conjunctions with basic behavior management techniques

## **C. Age Threshold**

The average age threshold for young children to display and exhibit limited cooperation is around 3 years. It is around this time that normal children will have reached a level of cognitive growth which will enable them to understand and accept simple explanations. Only then can they be expected to accept the nasal mask for short, uncomplicated dental treatments.

Children who display agitated behavior and require physical restraints cannot be expected to wear the nasal masks. Such uncontrolled behavior and crying would result in irregular breathing and would increase the flow of nasal secretions, thereby making the treatment impossible.

## **D. Typical indications in Pediatric Dentistry**

1. Easing a patient's anxiety, raising pain threshold, suppressing gag reflex.
2. Increasing tolerance to longer appointments since passage of time with  $N_2O/O_2$  becomes unclear to patients.
3. In young patients or borderline cooperative children, it may make limited dental treatment possible that could not be achieved without its sedative effects.
4. In older children for more difficult or extensive dental treatment.

## **Contraindications**

There are a number of relative contraindications to the use of nitrous oxide and the practitioner must use caution:

1. the common cold or tonsillar/adenoidal enlargement. the patient requires a patent nasal airway
2. chronic obstructive pulmonary disease
3. pregnancy
4. severe asthma;
5. psychiatric disease;
6. complex cardiac conditions.<sup>7</sup>

The current health and safety guidelines in the UK recommend that occupational exposure for an 8-hour period should not exceed 100 ppm (25 ppm in the

USA).<sup>12</sup> Dental surgeries must be equipped to minimize pollution by nitrous oxide and so protect personnel. To reduce exposure, any machine delivering nitrous oxide for sedation purposes should have a suitable vacuum system of active scavenging to remove expired gases. This system should be vented to the outside to prevent accidental pollution of any other part of the dental practice. The surgery should be well ventilated, and operating times kept short.



## **Administration of $N_2O_2$ mixture for inhalational sedation**

The technique for administering is quite simple and straightforward. The technique is an incremental procedure in which the nitrous oxide is given in stepwise concentrations.<sup>13</sup>

1. Following pre operative equipment checks, the patient can be allowed to select the appropriate size and type of nasal hood/ mask.
2. Begin  $O_2$  flow to the nasal hood or mask. The ball will float or the light will appear on the  $O_2$  side of the flowmeter.
3. Estimate the total liters flow per minute (L/min) according to the size and physical and physiologic condition of the patient.
4. For an average-size adult, begin with 6–7L/min of 100%  $O_2$ .
5. Begin with 4–5L/min for most children of 100%  $O_2$ .
6. Set the machine to deliver 100%  $O_2$  at the level of liters per minute that you have initially chosen. To ensure that there is flow; listen for the sound of  $O_2$  moving into the breathing apparatus.
7. Turn the mixture dial to 90% oxygen (10% nitrous

oxide). Wait for a minimum of 60 seconds, and encourage nasal breathing.

8. Continually explain to the patient the sensations he or she will experience, and check the nose piece for leaks.
9. Turn the mixture dial to 80% oxygen (20% nitrous oxide). Wait for a minimum of 60 seconds. Above this level, with experience, operators will be able to judge whether further increments are needed.

The operator can assess the correct level of sedation by observing objective signs and subjective symptoms felt by the patient. Titrate to a level of sedation that is determined by patient comfort and relaxation. The percentage of N<sub>2</sub>O administered to a patient for a given experience will most likely not be the same for any subsequent experience. The patient should be awake, relaxed, comfortable and able to maintain an open mouth for treatment, but there is a reduction in spontaneous movements. Pulse, blood pressure and respiration are normal. The pupils are normal and responsive to light. The laryngeal reflex is normal but the gag reflex is reduced.

The patient may feel a range of subjective symptoms: mild intoxication and euphoria, paraesthesia of extremities, a sense of detachment and a lessened response to pain. It is imperative to monitor the flow meters of nitrous oxide and oxygen throughout all stages to ensure that the machine is delivering gases correctly. Also important is to ensure the continuous movement of the reservoir bag. The reservoir bag serves as a monitor of the patient's respirations. Levels of sedation may be influenced if the patient is allowed to maintain conversation and breathe through the mouth. Therefore, patient talking should be kept to a minimum.

## Recovery

While nearing completion of treatment, the dentist can decrease the level of N<sub>2</sub>O incrementally, thereby causing an increase in the amount of oxygen being delivered. Once the N<sub>2</sub>O flow is terminated, it is important to deliver 100% O<sub>2</sub> during the final minutes of the operative procedure. A five minute postoperative flushing of 100% O<sub>2</sub> is required before the patient is assessed for recovery and subsequent discharge.

Patients must indicate that they are fine and not drowsy, light headed, dizzy or nauseated. Generally they must be alert with a pleasant and happy demeanor.

## Summary

There is evidence in literature which suggests that the beneficial effects of N<sub>2</sub>O in children extends beyond the

treatment session, where N<sub>2</sub>O was used.<sup>6,16</sup> Nitrous oxide – oxygen inhalational sedation, in combination with behavior management techniques, can be used to build a patient's confidence and promote a positive attitude to dental treatment; this may in time allow the patient to accept treatment without the need for sedation.

Nitrous oxide sedation has no absolute contraindications and can be a very useful alternative in some patients for whom a general anesthetic would seem the only other option.

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# PERIODONTAL FLAP SURGERY , TO DO OR NOT TO DO?

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## Introduction

Periodontal disease is associated with inflammation and loss of tooth supporting structures. It is multi -factorial in nature. Dental plaque accounts for approximately 20% of the risk of developing periodontal disease. Other factors include host related factors (such as lifestyle, uncontrolled diabetes) and environmental factors such as smoking. An accurate assessment of the individual risk factors is essential prior to diagnosis and periodontal therapy. Periodontal therapy prevents the disease progression and ultimately the risk of tooth loss as a result of periodontitis. Periodontal therapy includes nonsurgical and surgical modes of treatment.

Nonsurgical therapy includes mainly scaling and root planing. It is indicated for periodontal pockets associated with supra- and subgingival plaque and/or calculus, bleeding on probing and inadequate self-performed plaque control. It also includes control of etiological factors which might induce plaque formation (including improper brushing, deep carious lesions, crowding, missing teeth etc). An effective non-surgical periodontal therapy is often successful in controlling periodontal disease. Nevertheless, a number of periodontal pockets, defined as 'residual', often remains after nonsurgical treatment. The presence of residual pockets may jeopardize tooth survival and be a determinant of further disease progression and ultimately tooth loss.

## Surgical therapy

In sites with persistent inflammation and residual pockets, surgical treatment modalities are often considered as the next phase of therapy. The primary aims of periodontal surgery are

1. to create accessibility for proper professional scaling and root planing and
2. to establish gingival morphology that facilitates effective plaque control through regular oral hygiene practices performed by the patient (98).

This is achieved by improved access to the periodontally involved root surface, by correcting the anatomical and morphological sequelae of periodontitis, as well as by reconstructing, and when possible regenerating, the lost (periodontal) tissues.

More than two decades ago, concept of a 'critical probing depth', defined as a threshold (given in mm) under which treatment may not be beneficial, was advocated.

The effect of surgery on shallow sites with probing pocket depth < 4 mm has been found to have no benefits. Flap surgery in such cases led to further attachment loss manifested clinically as gingival recession. Therefore, a probing pocket depth of  $\geq 4$  mm does not represent an indication for surgery. A nonsurgical periodontal treatment approach is sufficient in such cases.

## Pocket Elimination

Pocket elimination is defined as pocket-depth reduction to gingival sulcus levels (probing depth of 2-3mm), is considered one of the main goals of periodontal therapy. This procedure is indeed essential because of the need to improve accessibility to root surfaces for the therapist during treatment and for the patient during periodontal maintenance and self-performed oral hygiene. Pocket elimination is usually associated with all periodontal surgical approaches utilizing a 'respective' surgical approach.

## Pocket Closure

Pocket closure is usually associated with more conservative approaches, when no attempt of a physical reduction of the gingival tissue is performed but the treatment strategy focuses on enhancing the cleaning of the colonized root surface in order to trigger wound healing with minimal tooth loss.

## Indications for surgical treatment of residual pocketing

A probing pocket depth of  $\geq 5$  mm is a clear indication for a surgical intervention. Surgical intervention of deep lesions after nonsurgical therapy would improve periodontal pocket reduction when compared with a nonsurgical approach alone.

Surgical treatment of pockets remaining after successful cause-related therapy aims to re-establish periodontal anatomy and create an oral environment compatible with periodontal health.

## Conservative Surgery Techniques

Conservative surgery (i.e. access flaps) encompasses a range of surgical procedures aimed at gaining access to the root surface in order to remove residual plaque/calculus.

There is no active removal of alveolar bone and minimal resection of soft tissues.

Graziani et al. classified these procedures into

- open flap debridement,
- minimally resective flaps (e.g. the modified Widman flap) and
- flaps aimed at conserving interdental soft tissues

Preservation flaps utilized as access flaps include

- modified papilla preservation technique,
- simplified papilla preservation flap,
- papilla preservation flap,
- microsurgical periosteal flap variation
- papilla preservation flaps and
- modified minimally invasive surgical technique.

## The need for flap surgery to correct osseous defects

According to the classification by Goldman & Col periodontal osseous defects are differentiated into

1. suprabony defects,
2. intra-bony defects and
3. inter-radicular or furcation defects

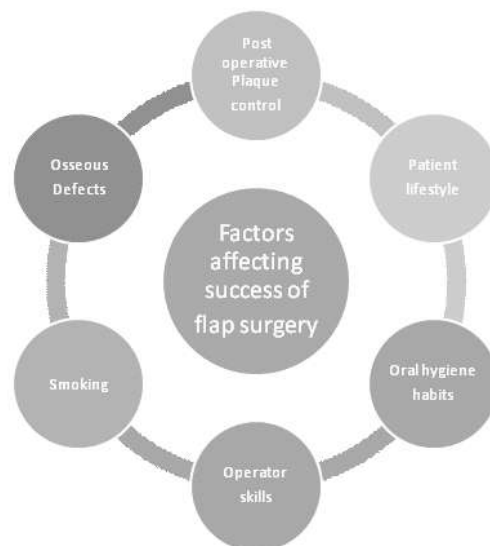
Suprabony defects are those in which the base of the pocket is located coronal to the alveolar crest. Intra-bony defects, on the other hand, are defined by the apical location of the base of the pocket with respect to the residual alveolar crest. Inter-radicular or furcation defects are the result of conditions entailing pathological resorption of bone within the furcation of a multirooted tooth. Different surgical approaches, varying from access flaps to resective or regenerative techniques, have been suggested to treat residual periodontal defects.

Suprabony defects, because of their horizontal pattern of tissue destruction and relative paucity of cellular sources for wound healing, are a less-predictable type of periodontal defect to manage in comparison with intra-bony defects

Intra-bony defects have been classified based on the number of residual alveolar bony walls as three-wall, two-wall and one-wall defects. Frequently, intra-bony defects present a complex anatomy consisting of a three-walled component in the most apical portion of the defect, and two- and/or one-walled components in the more superficial

portions. Such defects are referred to as combination defects. Successful regenerative therapy is usually associated with:

1. Deep narrow three walled defects
2. absence of hypermobility,
3. absence of oral environmental factors, such as mechanical trauma and infection



**Figure 1: Parameters affecting success of Flap Surgery**

## Impact of Periodontal Flap Surgery on Deep Residual Pockets

Surgical management of deep residual pockets is capable of influencing a shift in the microbiological composition, which is more compatible with periodontal health (healthy commensal bacteria).

Surgical therapy has a positive impact on oral health-related quality of life of adults in the immediate (1 week) and long (12 months) term. Periodontal flap surgery, when supplemented with oral prophylaxis (and the use of interdental aids and mouthwashes), is successful both in reducing tooth loss and in promoting an individual's quality of life.

Ideally, periodontal health should be achieved in the least invasive and most cost-effective manner possible, particularly when considering that a patient should ideally commit to lifelong regular visits for maintenance of therapeutic outcomes. Therefore, an economic evaluation of various periodontal treatment modalities to ascertain which therapy provides the greatest 'value for money' is of major public interest. Cost-effectiveness studies have shown that the cost of supportive periodontal therapy is

relatively lower when compared with the cost of implants or crown/bridgework, and the patients will benefit from greater periodontal stability and higher tooth-survival rates.

The cost-effectiveness of periodontal surgery, in patients with moderate to severe chronic periodontitis is justifiable considering the benefit of tooth preservation but may not be considered worthwhile in patients with mild periodontal disease. Similarly, nonsurgical and surgical periodontal treatment of molars with furcation involvement, including open flap debridement, root resection, guided-tissue regeneration and tunneling, was more cost-effective than replacing them with implant-supported restorations. It is still unknown whether periodontal surgery provides the greatest value for money in terms of additional clinical benefit for additional money spent, in comparison with nonsurgical alternative treatments.

### **Conclusion**

Residual pockets following nonsurgical therapy are associated with progression of periodontal disease and tooth loss. Nonsurgical retreatment of these sites rarely proved to be effective in closing the pockets. Thus, surgical treatment of residual pockets is a treatment option that should not be underestimated by the clinician.

However success of the treatment depends on carrying out the procedure where it is indicated and the motivation of the patient and clinician to ensure the long term success of the procedure

### **Key Points**

- ▶ Pocket elimination/closure is a major goal of periodontal therapy and is carried out through nonsurgical and surgical treatments.
- ▶ Residual pockets can compromise both the therapeutic results achieved and have an impact on the remaining periodontally healthy sites.
- ▶ Surgical therapy in a residual site with pocket depth  $\geq 4$  mm can lead to gingival recession and give no additional benefits.
- ▶ A residual site with probing pocket depth  $\geq 5$  mm can lead to both periodontal disease progression and tooth loss.
- ▶ Surgical treatment shows a higher performance, in terms of probing pocket-depth reduction and elimination of microbiota noncompatible with periodontal health, than does nonsurgical retreatment of residual pockets  $\geq 5$  mm.

- ▶ The current evidence suggests that only surgical management of deep residual pockets can influence a shift in the microbiological composition that is more compatible with periodontal health.
- ▶ Residual pockets can be a reason for impairment of the oral health-related quality of life.
- ▶ Factors that affect the degree of pocket elimination/closure/reduction after periodontal surgery should be kept in mind prior to advising flap surgery to the patient

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## VESTIBULAR INCISION SUBPERIOSTEAL TUNNEL ACCESS (VISTA) TECHNIQUE WITH PLATELET RICH FIBRIN IN THE MANAGEMENT OF MULTIPLE GINGIVAL RECESSION- A CASE REPORT

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### Introduction

Gingival recession is defined as the apical migration of marginal periodontal tissues, resulting with exposure of root surfaces[1]. It can cause functional and esthetic problems due to higher incidence of attachment loss, hypersensitivity, root caries and smile related concerns. Various treatment modalities are available for isolated defects. CTG the current gold standard, presents a number of disadvantages, including the need for harvesting at a distant donor site, limited tissue availability, and increased potential for post harvesting morbidity.[2] Different tunnel techniques that can maintain the better blood supply and maintain critical papillary integrity have been attempted for management of recession defects. The limitations of this tunnel access technique is increased risk of traumatizing and perforating the sulcular tissues, resulting in unfavorable healing outcomes. As a consequence of these limitations, the vestibular incision subperiosteal tunnel access (VISTA) approach was developed to avoid some of the potential complications of intrasulcular tunneling techniques. To promote healing and periodontal regeneration, various adjunctive agents such as enamel matrix derivative, recombinant human bone morphogenetic protein, recombinant human growth factors, and platelet concentrates have been applied. Platelet-rich fibrin (PRF) described by Choukroun et al in 2001 is a second generation platelet concentrate which is enriched with

platelets, growth factors, cytokines and glycoproteins which are key factors for regeneration of the bone and maturation of soft tissue with added synergetic effect on healing process.

Present case report is about minimal invasive technique for coverage of Miller's Class I gingival recession by VISTA along with PRF.

### Case Report

A 35 years old male patient reported to the Department of Periodontology, Pushpagiri college of Dental Sciences with Miller's Class I recession in relation to 21, 22. At the first visit after recording case history and routine investigations, thorough scaling and root planing was performed and patient was recalled after one week. The recession depth was 4 mm and 2.5 mm in 21, 22 respectively and recorded using the University of North Carolina 15 periodontal (UNC) probe, measured from the cemento-enamel junction (CEJ) to the gingival margin. For 21 and 22 root coverage was planned by VISTA approach. [Figure 1, 2]

Following local anaesthesia, a vestibular access incision was given in midline of the maxillary labial frenum [Figure 3]. Through the vestibular access incision the periosteal elevator was introduced and inserted between the periosteum and bone to elevate the periosteum, creating the subperiosteal tunnel. The incision was extended one or two teeth beyond the teeth requiring root coverage and



Pre-operative measurements of recession with UNC-15 probe



Vestibular access incision



Mucogingival complex advanced coronally with horizontal mattress suture



Sutures secured with composite resin

immediately centrifuged at 3,000 rpm for 10mts at room temperature. This resulted in 3 layers [Figure ]

Top most layer consists of acellular platelet poor plasma (PPP)

PRF clot in the middle layer

RBC s at the bottom

PRF was easily separated from red corpuscles base (preserving a small red blood cell layer) using a sterile tweezers and scissors just after removal of platelet poor plasma (PPP) and then transferred on to a sterile dappen dish.

beyond mucogingival junction to mobilize gingival margin and allow coronal repositioning. The tunnel preparation was also extended beneath the papilla without making any surface incision. Once coronal advancement of the gingival margin was established, the freshly prepared PRF membrane was trimmed and adjusted to cover the dehiscence on root through the subperiosteal tunnel with a fine tipped curved serrated forceps. The membrane and mucogingival complex were then advanced coronally and stabilized in the new position with a coronally anchored suturing, by placing a horizontal mattress suture at approximately 2 to 3 mm apical to the gingival margin of each tooth (or within the band of keratinized gingiva). [Figure.4] The suture was then tied to position the knot at the mid coronal point of the facial aspect of each tooth, which was secured with help of composite resin to prevent apical relapse of the gingival margin during initial stages of healing. [Figure5]. Periodontal dressing was placed to cover the surgical site. Patient was advised post-operative instructions and strict oral hygiene maintenance. Antibiotics and analgesics were prescribed for 5 days. Suture removal was done after 10 days and follow up done after 3 months and 6 months. The outcome of this study came favorably better ie, reduction from 4mm to 1mm and 2.5mm to 0mm respectively.

## PRF Preparation By Choukron[3]

Just prior to surgery, 10ml of intravenous blood was drawn from each patient by venipuncture of the antecubital vein. [Figure. ] Blood was collected in a sterile test tube (10ml) without any anticoagulant. The tube was

## Discussion

Earlier periodontal therapy was limited to eliminate and to avoid disease by maintenance of a functional healthy dentition and supporting hard and soft tissues [4]. However, more recently periodontal therapy is extended to esthetic outcomes for patients. Patients have become more conscious of dental esthetics and are demanding precision treatment for exposed root surfaces [5]. Growth factors present in PRF plays crucial role in hard and soft tissue

## PRF preparation





Post-operative measurements of recession with UNC-15 probe

repair. These growth factors include (PDGFs), epidermal growth factor (EGF), transforming growth factor beta (TGF- $\beta$ ), vascular endothelial growth factor (VEGF), insulin like growth factor-1 (IGF-1) [6]. These growth factors has been shown to accelerate bone repair and promote fibroblastic proliferation, increase tissue vascularization. Studies have shown that PRF when placed under coronally positioned flap improve soft and hard tissue healing. [7,8] The minimally invasive VISTA approach, combined with a PRF has a number of advantages for the successful treatment of multiple recession defects. The vertical incision that is given mesial to the defect reduces trauma to the gingiva Also subperiosteal dissection reduces the tension of the gingival margin during coronal advancement and maintaining blood supply to interdental papillae. In VISTA technique advancement of gingival margin with augmented PRF membrane coronal to CEJ and securing the gingival margin in fixed stable position to prevent relapse in earlier stage of healing gives better results in gingival recession coverage.

## Conclusion

Various treatment options exist for the treatment of gingival recession, however treatment of multiple gingival recession is always a greater challenge compared to single recession defects. Hence, VISTA technique used in our study is aimed at overcoming the shortcoming of other treatment options and gives better results. However, further studies with longer duration are advised to determine the success and predictability of this technique

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# ESSENTIAL HARDWARE FOR MANAGING MEDICAL EMERGENCIES IN A DENTAL CLINIC PRACTICE

Dr Mathew Sam, Dr Sherry Andrews, Dr Brigit Eapen

## Introduction

An emergent situation or emergency is a medical condition that demands immediate recognition, attention and successful management. A hard reality is that medical emergencies can occur in any dental practice scenario. Fortunately, serious medical emergencies are not common in a dental practice environment which unfortunately turns out to be the main reason for complacency and under or non-preparedness to face an eventuality if and when it occurs.

It is important to realise that a medical emergency though uncommon in a dental practice, if and when it occurs can turn out to be a human life threatening situation. Not to mention the unwanted consequences that would follow. Needless to say all the dental team members of a clinic should be well trained and regularly refreshed in recognition and handling of medical emergencies in the dental clinic.

Dental surgery involves a wide range of interventional and surgical procedures most of which require administration of local anaesthesia with some advanced centres providing minimal to moderate sedation. Invariably, this necessitates the preparedness in managing a medical emergency, if it occurs. Emergencies can be prevented to a great extent by taking a detailed medical history, physical examination and an alert patient monitoring. Sound knowledge and preparedness in handling of emergent situations include regular training and practice of Basic Life Support manoeuvres, so as to be able to render necessary lifesaving resuscitation as and when needed.

The most common situation faced in a clinic is a vasovagal syncope or a faint. It has also been reported that medical emergencies occur more frequently in a hospital dental practice than those in a general dental practice. Excluding syncope other emergent situations which a clinician may face along with prevalence as reported in a study is listed in Table I<sup>1,2</sup>

Emergency	Average cases per dentist per year	Average number of years before a case is encountered
Hypoglycaemia	0.17	5.6
Angina	0.17	5.7
Epileptic seizures	0.13	7.2
Choking	0.09	15.1
Asthmatic attacks	0.06	75.5
Allergy / Anaphylaxis	0.013	75.5
Myocardial infarction	0.006	151
Cardiac arrest	0.003	302
Unspecified collapse	0.026	37.6

Table I

### **Objectives**

Along with an understanding and having a sound knowledge into types of possible emergency one is likely to face in a dental clinic, it is of utmost importance as a part of being prepared to the right functional equipment and valid drugs that facilitate necessary and efficient management readily available. This article aims to provide an overview of basic medical emergency equipment and drugs (together coined as **HARDWARE**), that a Dental practice setup need to have in place, along with an insight into when and how emergency drugs can be used.

### **Medical Emergency Hardware**

As introduced, being prepared for a medical emergency in a dental clinic is extremely critical. It involves the survival of a human life, and a vital component in this process is having a functional medical emergency Hardware / Kit or in a hospital scenario a Crash Cart readily available at all times. Medical Emergency Hardware components can be broadly classified into:

- A. Emergency Equipment
- B. Emergency Drugs Kit
  - a. Drug delivery equipment and accessories
  - b. Emergency drugs

### **Medical Emergency Equipment**

The basic emergency equipment needed in a Dental Clinic are listed<sup>3</sup>:

- 1. Portable oxygen cylinder with regulator
- 2. Oxygen delivery devices
  - a. Nasal cannula
  - b. Oropharyngeal and Nasopharyngeal airways
  - c. Pocket face mask with oxygen port
  - d. Non-breathing mask with oxygen reservoir
  - e. Bag valve mask device with oxygen reservoir
- 3. Stethoscope
- 4. Sphygmomanometer with adult, medium and small cuff sizes
- 5. Blood glucose estimation kit
- 6. Pulse oximeter
- 7. Portable suction apparatus
- 8. Wall clock with seconds hand

Equipment desirable to be available:

- 1. Endotracheal tubes
- 2. Laryngoscope
- 3. Magill forceps
- 4. Automated External Defibrillator

### **Medical Emergency Drug Kit**

Practitioners can organise emergency kits themselves or purchase readymade kits. The components of the kit can be divided into:

## TAPER

### a. Drug delivery equipment and accessories

These include necessary disposables and accessory equipment for stabilizing the disposables and disinfecting the patient's skin surface for drug delivery.

- I. Alcohol swabs
- II. Sterile gauze strips
- III. Sterile micro pore tape
- IV. Disposable syringes of 5ml and 2 ml capacity
- V. Needles of 21 – 25 gauges
- VI. Intravenous cannula
- VII. Scalp vein set
- VIII. Intravenous tube set

### b. Emergency Drugs<sup>2,4-26</sup>

Health administration of various states usually list out mandatory emergency drugs that must be available in dental clinics. Listed in **Table II** are suggested emergency drugs needed for any dental clinic, though one must also verify with State health / dental council / board on the mandatory emergency medications.

Drug	Indication	Administration	Adult dosage	Paediatric dosage
Oxygen	All medical emergencies except hyperventilation	Therapy mask Nasal cannula Pocket face mask Bag vale mask Oeso/Nasopharyngeal airway	2 -6 lit/min  10 – 15 lit/min  2-6 lit/min	3 – 5 lit/min
Chlorphenaramine Diphenhydramine	Mild allergy	Oral / Intra muscular	10 – 25 mg  25 – 50 mg	1 -2 mg max 8 mg/day q6h 1 -1.2 mg max 50 mg/ day q6h
Epinephrine/Adrenaline	Anaphylaxis Bronchospasm	IM / SC  IV	1:1000 Dilution 0.3 -0.5 MG 1:10000 Dilution	1:1000 Dilution 0.05 -0.3 MG 1:10000 Dilution 0.01mg/kg
Nitro-glycerine	Angina	Sublingual tablets  Spray	0.4 mg q5min 2-3 times  400 mcg / actuation	Amyl nitrate 0.3 ml vaporole
Salbutamol (Albuterol)	Asthma	Metered aerosol inhaler	100mcg per actuation	100mcg per actuation
Dextrose  Glucagon 50 ml Amp	  Hypoglycaemia	IV  SC/IM/IV	5 0 % d e x t r o s e 100ml  1mg	25%dextrose 1-4 ml/ kg  0.5 mg

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Atropine	Bradycardia	IV/IM/SC	0.5-1 mg	0.02 mg/kg
Propranolol	Hypertension	Oral	Immediate release 40mg	1.2 mg / kg/day
Hydrocortisone	Adrenal crisis , Anaphylaxis , Anti- inflammatory	IM/IV	100mg	1mg/kg
Dexamethasone		IM/IV	4-8 mg	0.25-0.5mg/kg
Aromatic ammonia	Syncope	Inhalant buds	0.3ml	0.3ml
Diazepam	Status Epilepticus	Oral / rectal	2 -10 mg / 0.2mg/ kg	0.3-0.5 mg/kg
Midazolam		IM / Intranasal / oral / infiltration / topical	5-10mg / 0.2mg/kg  5mg/ml	0.1-0.2 mg/kg
Lorazepam		IM/IV	4mg	0.02-0.04 mg/kg

**Table II**

Emergency medications list may be modified or increased in clinics or hospital dental centres engaging advanced anaesthesia and sedation techniques. Listed in **Table III** are other emergency medication which could be on the emergency kit or crash cart along with other mandatory emergency drugs.

Drug	Indication	Administration	Adult dosage	Paediatric dosage
Morphine sulphate	Angina unresponsive to nitro-glycerine	IM /IV RR less than 12 do not re-administer	2.5 mg repeat every 5- 30 min	0.05 – 0.1mg/kg max 10mg/dose
Lidocaine 2%	Premature ventricular tachycardia	IV/IV/IO/ET	50 – 100 mg 1-1.5mg/kg	Up to 100mg 0.5 – 1mg/kg
Nifedipine	Hypertension / angina	Oral capsules	10-20 mg	0.25-0.5 mg/kg/dose max 10mg
Flumazenil	Benzodiazepine overdose	IV	0.2 mg	0.1-0.2mg max 1mg
Naloxone	Opioid overdose	IM/IV	0.4mg	0.1 mg/kg 1mg

Dental surgery emergency drug kit may also contain necessary drugs in event of persistent bleeding encountered during procedures. **Table IV** contains emergency drugs which can be placed in the kit which might come in handy in controlling bleeding.

## TAPER

Drug	Indication	Administration	Adult dosage	Paediatric dosage
Vitamin K	Bleeding due to liver damage	PO/IV/IM/SC  In case of anticoagulant use discuss with prescribing physician	2.5-10 mg	1mg SC or IM
Tranexamic acid	Post-operative bleeding	IV  PO / TOPICAL  MOUTH WASH	10 mg/kg  25mg/kg / ampule  5%	10 mg/kg  25mg/kg / ampule  5%
Gel foamGel foam with thrombinOxidised cellulose	Post-operative bleeding	Local application	Available as variably sized sheets	As per need

**Table III**

### **Principles of Medical Emergency Hardware use<sup>27</sup>.**

- I. An emergency kit is critical in a dental setting
- II. Know how to use your emergency equipment and drugs before the emergency happens
- III. Emergency drugs along with their actions and doses should be known by the dental surgeon and his /her team.
- IV. Know the location of all the emergency hardware.
- V. Develop an emergency log book and review the drugs each month.
- VI. Never administer an expired drug
- VII. Know how to administer each drug in the kit.

### **Conclusion**

Medical emergencies in dental practice are not common but could occur at any time. Such events are less alarming and best managed by prompt anticipation and preparedness. Participating in regular emergency drills and adhering to principles of emergency hardware use ensures a rapid response in emergent situations. It is the combination of a knowledgeable and skilled dental team along with and organised medical emergency hardware that make a dental clinic a safe environment for patients.

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## “FOREWARNED IS FOREARMED”

Dr. Zubin Cherian (BDS, LLB)

### Introduction

Healthcare professionals are often faced with situations wherein they have to go through litigations in some point of their clinical practice. In some cases, these may be vexatious litigations initiated against them by a dissatisfied patient or by some other person with a view to harass them. In the recent years, doctors are faced with increasing number of medical negligence suits and consumer court cases related to their clinical practice. In some cases, litigations often involve civil disputes like money suits, property disputes, rent disputes with the landlord, matrimonial disputes, which are not directly related to their professional practice. Getting entangled in a litigation is the worst kind of situation one can ever find oneself in. Litigation is often a lengthy and time consuming affair. Moreover, it also proves to be a huge drain on one's financial resources and it even destroys your mental peace. All the aforesaid things would effect the professional practice of the doctors as well. Therefore, it is always better to be forewarned about the undesirable consequences of litigations and one should avoid or stay away from such litigations as far as possible. The English proverb, “Forewarned is forearmed” is relevant in this context. In health parlance, we can say “prevention is better than cure”.

In order to stay away from unnecessary litigations, one should have basic knowledge and understanding about the laws of our country, knowledge about the rights and remedies available to him and the mechanisms available to enforce his rights when there is a violation of his rights. Once faced with a litigation, an elementary knowledge about the judicial set up of our country is helpful in conducting his legal battle against his adversary.

As a precautionary measure, in our daily activities, one should know and follow the simple traffic rules like wearing a seat belt while driving a car, wearing a helmet while riding a two-wheeler or not to drive a vehicle under the influence of alcohol. Following these simple traffic rules would save oneself from embarrassing situations before police authorities or even before a Magistrate. This article is aimed at providing an elementary knowledge about the judicial setup of our country, and also to create legal awareness among healthcare professionals.

### What are courts?

Courts are institutions or tribunals through which state administers public justice to its citizens. Courts are established by law and constituted by the Government. Courts are of different classes with distinct powers of jurisdiction. Jurisdiction means the extent of the power of a court to entertain legal proceedings. Jurisdiction is of different kinds. They are Civil, Criminal, Original, Appellate, Local or territorial and Pecuniary.

### I) CIVIL COURTS

There are different classes of civil courts; subordinate to the High Court based on their pecuniary Jurisdiction. It is the Jurisdiction based on the amount of valuation of the subject matter and reliefs claimed in the suit. They are as follows:-

a) The court of a District Judge.	}	Pecuniary jurisdiction not limited
b) The court of subordinate Judge		
c) The court of a Munsiff		Pecuniary jurisdiction Limited up to a valuation of Rs. 10 lakhs.

### II) CRIMINAL COURTS

Criminal courts and their powers to pass sentences are as follows:-

#### Courts

#### Power to pass sentences

- |               |   |   |
|---------------|---|---|
| 1. High Court | : | Has the power to pass any sentence authorized by law. |
|---------------|---|---|

## TAPER

2. Sessions Judge & 3. Additional Sessions Judge	}	Has the power to pass any sentence authorized by law. (Death sentence requires confirmation by the High Court)
4. Assistant Sessions Judge	:	Imprisonment up to 10 years (any sentence authorized by law except a sentence of death or of imprisonment for life or of imprisonment for a term exceeding ten years).
5. Chief Judicial Magistrate	:	Imprisonment up to 7 years (Any sentence authorized by law except a sentence of death or of imprisonment for life or of imprisonment for a term exceeding seven years).
6. Additional Chief Judicial Magistrate	:	All or any of the powers of a Chief Judicial Magistrate.
7. Sub Divisional Judicial Magistrate	:	Powers of the Judicial Magistrate of the first class
8. Judicial Magistrate of the first class	:	Imprisonment up to three years. Fine up to Rs.5000/- or both.
9. Judicial Magistrate of the second class	:	Imprisonment up to one year. Fine up to Rs.1000/- or both.

### III) HIGH COURT

The High Court stands at the head of the judiciary in the state. The Constitution of India provides for the establishment of a High Court in each state. However, the parliament can establish by law a common High Court for two or more states or for two or more states and a Union Territory.

#### **Jurisdiction of High Courts**

The High Courts of a State are conferred with the following jurisdictions:-

- a) Writ jurisdiction
- b) Original jurisdiction
- c) Appellate jurisdiction

#### **(a) Writ jurisdiction of the High Court**

Every High Court shall have power, throughout the territories in relation to which it exercises jurisdiction to issue to any person or authority including in appropriate cases, any government within those territories, directions, order or writs including writs in the nature of Habeas Corpus, Mandamus, Prohibition, Quo-warranto and certiorari or any of them for the enforcement of the Fundamental Rights and for any other purpose. The words “for any other purpose” refer to the enforcement of a legal right or legal duty. Moreover, the power conferred on a High Court shall not be in derogation of the powers conferred on the Supreme Court to issue writs for the enforcement of fundamental rights.

## WRITS

### 1. Habeas Corpus

“Habeas Corpus” is a Latin term which literally means “you may have the body”. The writ of habeas corpus is issued as an order calling upon the person who has detained another person to bring that person before the court and to let the court know by what authority he has detained that person. If the court finds that the detention is illegal, it will order that the person so detained be immediately released. The main object of this writ is to give quick and immediate remedy to a person who is unlawfully detained by another person whether in prison or private custody. An application of habeas corpus can be made by a person who is illegally detained. It can be even made by any person on behalf of the prisoner, i.e. a friend or a relation.

### 2. Mandamus

The word “mandamus” means “the order”. The writ of Mandamus is an order by a superior court commanding a person or a public authority (including the Government and public corporation) to do or forbear to do something in the nature of public duty or in certain cases of a statutory duty. The writ or order in the nature of mandamus would be issued when there is a failure to perform a mandatory duty.

### 3. Prohibition

A writ of Prohibition is issued primarily to prevent an inferior court or tribunal from exceeding its jurisdiction, or acting contrary to the rules of natural justice. It is issued by a superior court to inferior courts for the purpose of preventing inferior courts from usurping a jurisdiction with which it was not legally vested, or in other words to compel inferior courts to keep within the limits of their jurisdiction.

### 4. Certiorari

A writ of certiorari is issued by a superior court (Supreme Court and High Courts) to an inferior court or body exercising judicial or quasi-judicial functions to remove a suit from such inferior court or body and adjudicate upon the validity of the proceedings of the body exercising judicial or quasi-judicial functions. It may be issued before the trial to prevent an excess or abuse of jurisdiction and remove the case for trial to higher court. It is also invoked after the trial to quash an order which has been made without jurisdiction or in violation of the rules of natural justice.

### 5. Quo Warranto

The words ‘quo warranto’ means ‘what is your authority’. By this writ, a holder of an office is called upon to show to the court under what authority he holds the office. The object of the writ of quo warranto is to prevent a person to hold an office which he is not legally entitled to hold. A writ of quo warranto can be claimed by a person if he satisfies the court that the office in question is a public office; and it is held by a person without legal authority.

#### (b) Original Jurisdiction of the High Court:-

The High Courts are conferred with original jurisdiction by certain enactments to hear matters specifically provided therein.

eg:- Election petition, Contempt petition

#### (c) Appellate Jurisdiction of High Court:-

The high courts have the power to hear appeals on both civil and criminal matters.

(i) Civil Appeal:- In civil matters, appeal from the decrees and orders of the District Judge’s court and the subordinate Judge’s court shall lie to the High Court.

(ii) Criminal Appeal:- The criminal Appellate jurisdiction of high court is as follows:-

- a) Confirmation of death sentence awarded by a court of sessions.
- b) Appeal from conviction by a Sessions Judge.
- c) Appeal from conviction and sentence by any court for more than seven years.

### Reference to High Court

Subordinate courts may refer questions of validity of law for the opinion of the High Court for both civil and criminal matters.

### Powers of Revision

The High Court have the powers of revision in civil matters in cases where no appeal lies, and if the subordinate court has either exceeded jurisdiction, or failed to exercise jurisdiction, or if acted illegally or with material irregularity. The High Court shall exercise powers of revision in criminal cases where there is no provision for appeal .

## IV) SUPREME COURT

The Supreme Court of India is the highest court of appeal in civil and criminal matters. It is the final interpreter and guardian of the constitution. In addition to the above function of maintaining the supremacy of the constitution, it is also the guardian of the fundamental rights of the people.

### Jurisdiction of the Supreme Court

The jurisdiction of the Supreme Court of India is as follows:-

- a) Original Jurisdiction
- b) Appellate Jurisdiction
- a) Original Jurisdiction of the Supreme Court:-

The Supreme Court has original jurisdiction in any dispute –

- i) between the government of India and one or more states;
- ii) between the government of India and any state or states on one side and one or more other states on the other;
- iii) between two or more states.

However, the Supreme Court in its original jurisdiction cannot entertain any suits brought by private individual against the Government of India.

- b) Appellate Jurisdiction of Supreme Court:-

The Appellate Jurisdiction of the Supreme Court can be divided into four main categories.

- a) Constitutional matters;
- b) Civil matters;
- c) Criminal matters;
- d) Special leave to appeal.

### Appeal in Constitutional matters:-

An appeal shall lie to the supreme court from any judgment, decree or final order of a High Court whether in civil, criminal or other proceedings, if the High Court certifies that the case involves a substantial question of law as to the interpretation of the constitution.

- b) Appeal in civil cases:-

An appeal shall lie to the Supreme Court from any judgment, decree or final order in a civil proceeding of a High Court only if the High Court certifies that –

- (i) the case involves a substantial question of law of general importance; and
- (ii) in the opinion of the High Court the said question needs to be decided by the Supreme Court.

- c) Appeal in criminal cases:-

An appeal lies to the Supreme Court from any judgment, final order or sentence in a criminal proceeding of a Higher Court in the following two ways:-

- (i) without a certificate of the High Court; and
- (ii) with a certificate of the High Court.

(i) Appeal to Supreme Court without a certificate of the High Court:-

An appeal lies to the Supreme Court without the certificate of the High Court, if the High Court –

- a) has on appeal reversed an order of acquittal of an accused person and sentenced him to death;
- b) has withdrawn for trial before itself any case from any court subordinate to its authority and has in such trial convicted the accused person and sentenced him to death.

But if the High Court has reversed, the order of conviction and has ordered the acquittal of an accused, no appeal would lie to the Supreme Court.

(ii) Appeal to Supreme Court with a certificate of the High Court:-

An appeal lies to the Supreme Court if the High Court certifies that it is a fit case for appeal to the Supreme Court. It is to be noted that the Supreme Court is not constituted as general court of criminal appeal. It would entertain appeals from the High Court only on the principles mentioned above. In other words, it can be said that the Supreme Court is conferred with limited criminal appellate jurisdiction. It is limited in the sense that the Supreme Court has been constituted as a court of criminal appeal only in exceptional cases where the demand of justice requires interference by the highest court of the land.

(d) Appeal by Special Leave (Special Leave Petition):- Leave means permission. The Supreme Court is authorized to grant in its discretion, special leave to appeal from;

- (i) any judgment, decree, determination, sentence or order,
- (ii) in any case or matter
- (iii) passed or made by any court or tribunal in the territory of India.

The only exception to this power of the Supreme Court is with regard to any judgment, etc. of any court or tribunal constituted by or under any law relating to the Armed Forces.

## CONCLUSION

In India, adversarial system of justice is followed. In this legal system, two advocates represent their parties case or position before an impartial person or group of people usually a jury or judge who attempt to determine the truth and pass judgment. However, one of the major drawbacks among others is that it uses a tedious process which is slow and cumbersome. Usually it might lead to injustice, as there is no time bound disposal of cases. The courts have a huge stockpile of pending cases. Therefore, potential litigants should weigh the pros and cons before embarking on a protracted legal battle against his adversary. Once a person is faced with a litigation, he should explore the possibility of a negotiated settlement with his opponent. Such a settlement is win-win situation for all the parties involved in the litigation process. Since the adversarial system of justice is time consuming and expensive affair for the litigants, recently alternate dispute resolution mechanisms have gained popularity among the legal fraternity as a mechanism for speedy settlement of disputes. Alternate dispute resolution methods like Arbitration, Mediation and Conciliation should be utilized by healthcare professionals for settlement of disputes as it offers a quick and speedy settlement of disputes.

In my next article, I shall explain the importance of Alternate Dispute Resolution Mechanisms as means for speedy settlement of disputes especially in cases of medical negligence and in suits for compensation or damages.

## RADICULAR CYST: A CASE SERIES

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### INTRODUCTION

The radicular cyst is the most common odontogenic cyst<sup>1</sup>. A radicular cyst is a cyst that most likely results when rests of epithelial cells (Malassez) in the periodontal ligament are stimulated to proliferate and undergo cystic degeneration by inflammatory products from a nonvital tooth. Synonyms include periapical cyst, apical periodontal cyst, or dental cyst<sup>2</sup>. The frequency of radicular cysts in permanent dentition is about 7-54%, while in primary dentition this is approximately 0.5-3.3%<sup>3</sup>.

### CASE REPORT

#### CASE 1

A 62-year-old female patient came to our department with a chief complaint of discoloured upper front tooth since 1 year. History revealed trauma to her upper front tooth region one and a half years back following which the tooth got discoloured gradually since one year. On extraoral examination, a diffuse swelling of app size 2x1cm was present on the middle third of face extending superoinferiorly from ala of nose to the angle of mouth and anteroposteriorly from philtrum to the nasolabial fold without obliteration of nasolabial fold. On intraoral examination, diffuse swelling of app size 2x1cm was present on the labial sulcus extending from the mesial aspect of 11 to the distal aspect of 23 with obliteration of labial vestibule which was tender and soft in consistency and discoloured crown was seen in relation to 22 (Figure 1). Pulp vitality test revealed non vital tooth 22 and a straw colored fluid was aspirated (Figure 2). IOPA, maxillary cross sectional occlusal and OPG (Figure 3) taken revealed a well defined unilocular radiolucency greater than 1.5 cm in diameter in periapical area of 22 with corticated border with tooth displacement and no root resorption suggestive of a radicular cyst in relation to 22.

#### CASE 2

A 37-year-old male patient reported to our department with a chief complaint of swelling and pain in upper front tooth region since one month. History revealed that patient had a trauma of upper front tooth region after a bike accident seven years back. He noticed swelling since one

month which was sudden in onset and gradually increased to attain the present size. Associated symptoms like pain was present which was dull, intermittent and non-radiating in nature. On intraoral examination, a well defined ovoid swelling of app size 1x1.5cm was present on the right side of palate extending from 11 to 14, not crossing the midline which was tender on palpation and soft in consistency. Tender on percussion was present on 12. Pulp vitality test revealed non vital tooth 12 and pus was aspirated (Figure 4,5). IOPA, maxillary cross sectional occlusal and OPG (Figure 6) taken revealed a well defined unilocular radiolucency of app size 1.5x1cm present on the periapical region of 11, 12 and 13 with sclerotic border and with no root resorption and no tooth displacement suggestive of an infected radicular cyst in relation to 12.

#### CASE 3

A 31-year-old male patient visited our department with a chief complaint of swelling in upper front tooth region since one year. History revealed that he noticed swelling since one year which was sudden in onset, no associated symptoms like pain but pus discharge was present and swelling gradually increased to attain the present size. On intraoral examination, an ovoid swelling of app size 1.5x1cm was present on the left side of hard palate without crossing the midline which was non tender and firm in consistency and a sinus opening was present on the attached gingiva in relation to 21 (Figure 7,8). Discoloured crown was seen in relation to 11 and 21. We noticed that patient had anterior traumatic occlusion with attrited lower anteriors and a class III molar relation. Pulp vitality test revealed non vital tooth 11 and 21 and blood tinged pus was aspirated (Figure 9). IOPA, maxillary cross sectional occlusal and OPG (Figure 10) taken revealed a well defined periapical radiolucency of app size 3x2cm present on the apical one third of 11 and 21 extending to the periapical region of 12 suggestive of a radicular cyst in relation to 11 and 21.

### DISCUSSION

The term, 'cyst' is derived from the Greek word, 'Kystis', meaning, 'sac or bladder'. Kramer in 1974 defined cyst as a pathological cavity having fluid, semifluid, or gaseous

contents and which is not created by the accumulation of pus, it is frequently, but not always lined by epithelium<sup>4</sup>.

Radicular cyst (Root end cyst or Periapical cyst) is the most common odontogenic cyst occurring about 58-62 % in the human jaws<sup>5</sup>. They arise from nonvital teeth (i.e., teeth that have lost vitality because of extensive caries, large restorations, traumatic occlusion or previous trauma)<sup>2</sup>. In the cases reported here, patients had given a history of trauma; it could be probable etiology.

### **PATHOGENESIS**

This cyst is classified as inflammatory, because in the majority of cases it is a consequence to pulpal necrosis. The first line of defense to pulpal necrosis in the periapical area is the formation of a granuloma. A granuloma is a highly vascularized tissue containing a profuse infiltrate of immunologically competent cells, i.e. lymphocytes, macrophages and plasma cells. The epithelial rests of Malassez, which are pluripotential in nature can differentiate into any type of epithelium, under the proper stimuli. These play a central role in the formation of radicular cysts. In the midst of the rich vascular area provided by the periapical granuloma, the rests of Malassez proliferate and eventually form a large mass of cells. With continuous growth, the inner cells of the mass are deprived of nourishment and they undergo liquefaction necrosis. This leads to the formation of a cavity which is located in the center of the granuloma, giving rise to a radicular cyst<sup>1,6</sup>. Endodontists refer to these granulomas as 'bay cyst'<sup>1</sup>.

### **CLINICAL FEATURES**

Nearly two thirds of the reported cases were in males in the 3<sup>rd</sup>- 6<sup>th</sup> decades of life. Maxillary anterior region are commonly affected. Most of the small radicular cysts are asymptomatic and usually discovered during routine dental screening. Large cysts cause swelling and bony expansion followed by erosion and fluctuation of the overlying soft tissue; this is usually associated with pain and infection with a discharging sinus<sup>7</sup>. On palpation the swelling may feel bony and hard if the cortex is intact, crepitant as the bone thins, and rubbery and fluctuant if the outer cortex is lost<sup>2</sup>.

### **RADIOGRAPHIC FEATURES**

In most cases the epicenter of a radicular cyst is located approximately at the apex of a nonvital tooth. Sometimes

### **Case I**



**Fig 1 – Intraoral swelling**



**Fig 2 – Straw colored fluid**



**Fig 3 - OPG**

it appears on the mesial or distal surface of a tooth root, at the opening of an accessory canal, or infrequently in a deep periodontal pocket. Radicular cyst appears as a round or pear shaped radiolucency of variable size which is generally well delineated and most likely with a marked radiopaque rim. Displacement and resorption of the roots of adjacent teeth may occur. The resorption pattern may have a curved outline. The cyst may invaginate the antrum, but usually an evidence of a cortical boundary between the contents of the cyst and the internal structure of the antrum. The outer cortical plates of the maxilla or mandible may expand in a curved or circular shape. Cysts may displace the mandibular alveolar nerve canal in an inferior direction. Dystrophic calcification also develop in long standing cysts appearing as sparsely distributed, small radiopacities<sup>1,2,8</sup>.

### **HISTOPATHOLOGIC FEATURES**

The cyst is lined by stratified squamous epithelium, which may demonstrate exocytosis, spongiosis, or hyperplasia. The lining epithelium may demonstrate linear or arch-shaped calcifications known as Rushton bodies. The wall of the cyst consists of dense fibrous connective tissue often with an inflammatory infiltrate containing lymphocytes variably intermixed with neutrophils, plasma cells,

## CASE 2



**Fig 4 – Intraoral swelling**



**Fig 5 – Fluid filled with pus**



**Fig 6 – OPG**

histiocytes, and (rarely) mast cells and eosinophils. Dystrophic calcification, cholesterol clefts with multinucleated giant cells, red blood cells, and areas of hemosiderin pigmentation may be present in the lumen, wall, or both. Cholesterol crystals may be partially responsible for failure of healing of cysts in which the original focus of infection was treated appropriately. The walls of inflammatory cysts will contain scattered hyaline bodies (pulp granuloma, giant-cell hyaline angiopathy). These bodies appear as small circumscribed pools of eosinophilic material that exhibits a corrugated periphery of condensed collagen often surrounded by lymphocytes and multinucleated giant cells<sup>9</sup>.

Based on clinical, radiological and analysis of aspirate, a provisional diagnosis of an infected radicular cyst was made in our three cases. After surgical enucleation and biopsy, histopathological picture revealed a cystic lumen areas with cystic lining in arcading pattern and a capsule. The lining was of non keratinised stratified squamous epithelium. Areas of connective tissue capsule showed

cholesterol crystals, fibroblasts, fibrocytes and inflammatory cells. Fewer areas of epithelial lining showed cuboidal pattern. Histological findings confirmed clinical diagnosis of radicular cyst.

## DIFFERENTIAL DIAGNOSIS

A small radicular cyst is difficult to differentiate from an apical granuloma. An early radiolucent stage of periapical cemental dysplasia, a radiolucent apical scar, and a periapical surgical defect should also be considered in the differential diagnosis. Radicular cysts that originate from the maxillary lateral incisor and are positioned between the roots of the lateral incisor and the cuspid may be difficult to differentiate from an odontogenic keratocyst or a lateral periodontal cyst<sup>2,8</sup>. The differential diagnosis of the radicular cysts should also include dentigerous cyst, parodontoma, traumatic bone cyst, ameloblastoma and odontogenic fibroma<sup>10,11</sup>. Confirmatory diagnosis of the radicular cyst can be made only after surgical biopsy and histopathological examination of the lesion.

## MANAGEMENT

The treatment of the radicular cyst consists of extraction, endodontic therapy and apical surgery<sup>2</sup>. The choice of treatment may be determined by factors such as the extension of the lesion, relation with noble structures, origin, and clinical characteristics of the lesion, and cooperation and systemic condition of the patient. Many professionals opt for a conservative treatment by means of endodontic therapy. However, in large lesions, the endodontic treatment alone is not efficient and it should be associated with decompression or marsupialization or even enucleation of the cyst<sup>12</sup>. In children a surgical procedure would normally be unpleasant and more traumatic than conventional endodontic treatment. Apicectomy would certainly reduce the available length of an immature tooth. Thus a conservative procedure is adopted that would allow the root canal and apices to heal and attain a mature configuration<sup>13</sup>. Recurrence of a radicular cyst is rare if it has been removed completely<sup>2</sup>.

In all our three cases, patients had undergone root canal treatment of the affected teeth followed by apicectomy,

### CASE 3



**Fig 7 – Sinus opening in relation to 21**



**Fig 8 – Intraoral swelling**



**Fig 9 – Blood tinged pus**

cyst enucleation and curettage. Excised tissue was sent for histopathological investigation. Necessary prescriptions and postoperative instructions were given.

### CONCLUSION

The current concept in management of radicular cysts is using nonsurgical means. However, depending on size and extent of lesion, surgical management might be necessary, for achieving success. Early diagnosis proves very important and regular clinical and radiographic follow up is strongly recommended. In our cases, radicular cyst mainly occurred due to previous trauma and traumatic occlusion. So awareness about non vital teeth, its etiology and consequences is very important for prevention, management and prognosis of such pathologies as most of the patients are not concerned about it.

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**Fig 10 - OPG**



# PYTRIC SCHOOL OF YOGA

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