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President's message

Dr Antony Thomas

Dear Members

I am sitting in this chair with great pleasure and privilege as the president of IDA Kerala State. I am very much thankful to all the members for elevating me to this prestigious post. IDA is getting strength year after year not only in plethora but also in its activities and its involvement in various problems faced by our members. My primary objective is to make our association more member friendly, and with the new state office I am confident that I can fulfill your expectations. This year our priorities are mainly focused to uphold the dignity of its members, protect their interest and project their aspirations with the theme "Best in Quality-Best in Profession."

I wish the new state secretary Dr. O.V. Sanal and team all the very best. The mirror of IDA Kerala state and the Jewel of IDA Kerala is KDJ. I extend all the support from my part to help our Hon: Editor Dr K. Nandakumar & the editorial board. We all expect a global rated publication in dentistry in the coming year.

For better functioning of our association please note these golden rules

- See issues as challenges rather than problems
- See colleagues as collaborators instead of competitors
- Look at issues, instead of people
- Look at what is being said, instead of who is saying it
- Reduce expectations-the less we expect the more we get
- Empathize with others rather than expect sympathy
- Be proactive rather than reactive
- Even if someone says something nasty or rude to you, it does you no harm until you internalize the comment. No one can make you feel inferior without your consent.

Air moves freely through the atmosphere. Water flows freely down a mountain stream. Waves roll freely onto ocean beaches. The earth moves freely in its axis. The nature of life is freedom of movement. The freedom of a dentist… Free from mental stress, financial stress, ill health, stress from practice, fear of lack of knowledge, lack of confidence and so on. These negative energies we are holding on will create discomfort. Try to address one by one in a cool way, time will align everything right and the journey to freedom is under your way.

Congratulations to all new office bearers of state office & local branches. Wishing all a wonderful IDA year ahead which will be filled with richer in knowledge and thicker in friendship.

Regards

Dr. Antony Thomas
President IDA Kerala State.

Oral health policy for Kerala State

Dr. K. Nandakumar

Policy documents are produced by the ruling governments on a variety of subjects ranging from industry to culture. A policy document should envision what our state needs in a particular field in the future. It should contain both short term and long term projects to be implemented so that our state should fit into the future world appropriately. The present government is in the process of formulating a health policy and the Hon,ble Governor has declared it in the recently made address in the assembly. It is in this context the present editorial is focusing on the oral health policy.

Available statistics focus on the fact that sixty percent of the population readily needs treatment for some form of an ailment of the oral cavity. The major areas of concern are dental caries, periodontal disease, oral cancer, oral manifestations of HIV/AIDS, malocclusion and fluorosis. Aging population is a significant group that requires particular attention. Trauma due to road traffic and industrial accidents has started challenging the integrity of face and oral health. The mammoth burden of oral health maintenance is in fact shouldered by the flimsy organizational fabric of a few dentists employed at different levels. (Figures in parenthesis is the total number of hospitals)

General/District Hospital	18	(26)
Taluk Hospital	42	(80)
Community Health Centre (CHC)	5	(230)
Primary Health Centre (PHC)	0	(835)
Mobile dental unit	1	(1)

It is evident that improving the facilities in the government hospitals for oral (dental) health maintenance are totally neglected in the last 20 years. Needs of the people are greatly catered by the private dental clinics. While acknowledging their services, we would like to point out that, recently dental treatment has become prohibitively expensive and a common man cannot afford it. We would like to remind the government that it cannot shirk off from its responsibilities.

While formulating the health policy, the concerned people should avoid the usual vague non committing statements and try to focus on a specific action plan. We urge the government to create dental surgeons' posts in all taluk hospitals and CHCs on a war footing otherwise our society will be a dentally morbid one and by all means it will top the world statistics. Preventive measures should be actively pursued and government should provide tooth pastes and brushes at a subsidized price to the people belonging to the below poverty line. Dental Colleges can be asked to take initiatives by way of research to reduce the cost of dental treatment and oral hygiene products. Our earnest wish is that the proposed health policy will not remain as an idle document. It should serve as a leading light in promoting the health of the people in actual terms not in mere statistics.

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Tungsten carbide trimmer

Tungsten carbide is an inorganic chemical compound containing equal parts of tungsten and carbon atoms. In its most basic form, tungsten carbide is a fine gray powder, but it can be pressed and formed into shapes for use in cutting tools, abrasives, surgical instruments and jewelry. Tungsten carbide is approximately three times stiffer than steel and is much denser than steel or titanium. Tungsten carbide is high melting, 2,870 °C and extremely hard (1700–2400 Vickers number). Tungsten carbide is sometimes used to make the rotating ball in the tips of ballpoint pens that disperse ink during writing. In dentistry it is very popular because of its long standing usefulness and versatile shapes. In dental labs it is used with micromotors.

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Intracoronal bleaching of non-vital teeth- revisited

* Sreeja J., ** Madhavadas K.

Abstract

Intracoronal bleaching of non-vital teeth involves the use of chemical agents within the coronal portion of an endontically treated teeth to remove tooth discoloration. This treatment modality is a conservative alternative to a more invasive esthetic treatment such as placement of crowns or veneers. Furthermore, when metal free restorations are planned, bleaching of the prosthetic core can be useful in improving the final esthetic results.

This article discusses the various non-vital tooth bleaching techniques and some case reports are added along with.

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Introduction

Color of the tooth is of particular importance to the patient because of social and psychological concern. In fact, matching the color of the tooth with the adjacent tooth is one of the major motivations of the patient to seek for cosmetic dental treatment.[1]

The correct diagnosis of the cause of discoloration of teeth and proper selection of bleaching technique are of great importance because it has a profound effect on the treatment outcome.

Treatment modalities of discolored teeth includes

1. removal of surface stains by scaling and polishing
2. micro-abrasion
3. macro-abrasion
4. veneering
5. placement of porcelain crowns

The best esthetic solution for a badly discolored tooth is a porcelain crown. But a large number of patients dislike their teeth cut down for crowns and are electing an alternative conservative approach such as bleaching and veneer placements.

Bleaching now is the single most common esthetic treatment for adults. The lightening of color of the tooth through the application of chemical agents to oxidize the organic pigmentation in the tooth is referred to as bleaching.[2]

Intra coronal bleaching of non-vital teeth involves the use of chemical agents within the coronal portion of an endodontically treated tooth to remove tooth discoloration. The successful outcome depends mainly on the etiology, correct diagnosis and proper selection of bleaching technique.

Bleaching is the simplest, least invasive, least expensive means available to lighten discolored teeth and diminish and eliminate many stains in both vital and non-vital teeth.

Tooth Discoloration

Tooth color is determined by a combination of phenomena associated with optical properties and light. Essentially, tooth color is determined by the color of dentin and by intrinsic and extrinsic colorations. Intrinsic color is determined by the optical properties of enamel and dentin and their inter-action with light. Extrinsic color depends on material absorption on the enamel surface. Any change in enamel, dentin, or coronal pulp structure can cause a change of the light-transmitting properties of the tooth.

Thus, it can be classified as intrinsic, extrinsic, or a combination of both, according to its location and etiology.

Extrinsic Causes

The principal causes are chromogens derived from habitual intake of dietary sources, such as wine, coffee, tea, carrots, oranges, licorice, chocolate, or from tobacco, mouth rinses or plaque on the tooth surface.

Intrinsic Causes

Systemic causes are 1) drug-related (tetracycline), 2) metabolic:

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dystrophic calcification, fluorosis and 3) genetic: congenital erythropoietic porphyria, cystic fibrosis of the pancreas, hyperbilirubinemia, amelogenesis imperfecta and dentinogenesis imperfecta.

Local causes are 1) pulp necrosis 2) intrapulpal hemorrhage 3) pulp tissue remnants after endodontic therapy 4) endodontic materials 5) coronal filling materials 6) root resorption and 7) aging

Methods most commonly employed to bleach endodontically treated teeth are

1. the walking bleach
2. thermo/photo bleaching technique
3. the inside/ outside bleaching technique

Walking bleach procedures:

Walking bleach is preferred since it requires less chair time and is safer and more comfortable to patients. Sodium perborate when mixed into a paste with superoxol, decomposes into sodium metaborate, water and oxygen. When sealed in pulp chamber, oxidizes and discolors the stains slowly. This is walking bleach.[3]

Technique involves the following steps (fig.1)

1. Familiarize the patient with possible causes of discoloration, procedures to be followed, expected outcome and possibility of future discoloration.
2. Radiographically assess the status of the periapical tissues and quality of endodontic obturation; Endodontic failure or questionable obturation should always be re-treated prior to bleaching.
3. Assess the quality and shade of any restoration present and replace if defective. Tooth discoloration is the result of leaking or discolored restorations. In such cases cleaning the pulp chamber and replacing the defective restorations usually suffice.
4. Evaluate tooth color with a shade guide and if possible, take clinical photographs at the beginning and throughout the procedure.
5. Isolate the tooth with a rubber dam. The dam must fit tightly at the cervical of the tooth to prevent possible leakage of bleaching agent into gingival tissue. If superoxol is used, a protective cream, such as Orabase or Vaseline, must be applied to the surrounding gingival tissues prior to dam placement.
6. Remove the restorative material from the access cavity, expose the dentin and refine the access.
7. Remove all materials to level just below the labial gingival margin. Orange solvent, chloroform or xylene on a cotton pellet may be used to dissolve sealer remnants.
8. Apply a sufficient thick layer, at least 2mm of a protective white cement barrier such as polycarboxylate cement, zinc phosphate cement, glass ionomer, cavit or IRM to cover the endodontic obturation.
9. Prepare the walking bleach paste by mixing sodium perborate and an inert liquid such as water, saline or anesthetic solution, to a thick consistency of wet sand. With a plastic instrument, pack the pulp chamber with the paste. Remove excess liquid by tamping with a cotton pellet. This also compresses and pushes the paste into all areas of pulp chamber.
10. Remove excess bleaching paste from undercuts in pulp horn and gingival area and apply a thick, well-sealed temporary filling directly against the paste and into the undercuts. Carefully pack the temporary filling, at least 3mm thick, to ensure a good seal.
11. Remove the rubber dam and inform the patient that bleaching agent works slowly.
12. Evaluate the patient 2 weeks later and if necessary repeat the procedure several times.
13. As an optional procedure, if initial bleaching is not satisfactory, strengthen the walking bleach paste by mixing the sodium perborate with gradually concentration of hydrogen peroxide instead of water.[3]
14. Silver alloy is often the simplest and most predictable restorative material. Composite resin can provide an aesthetic restoration but when dependent solely upon dentin bonding, prognosis is limited.[4]

Thermo catalytic/photo bleaching procedure:

The technique involves placement of the oxidizing, chemical bleaching material generally 30-35% hydrogen peroxide in pulp chamber, followed by either heat application by electric heating devices, light application by specially designed lamps, or both.[5]

Technique:

Steps 1-8 are similar as in Walking bleach technique.

9. Soak a small amount of 30-35% hydrogen peroxide solution on a small cotton pellet or a piece of gauze and place it into the pulp chamber. A bleaching gel containing hydrogen peroxide may be used instead of aqueous solution.
10. Apply heat with a heating device or a light source. The temperature should be between 50 and 60^0 C so that patient can tolerate it comfortably

11. Re-wet the cotton pellet and pulp chamber with hydrogen peroxide as necessary. If tooth becomes too sensitive, discontinue bleaching procedure immediately.
12. Remove the heat or light source and allow the teeth to cool down for at least 5 minutes. Then wash with warm water for 1 minute and remove the rubber dam.
13. dry the tooth and place walking bleach paste into the pulp chamber
14. Recall the patient approximately 2 weeks later and evaluate the effectiveness of bleaching. Take clinical photographs with the same shade guide used in the pre-operative photographs for comparison purposes.

Note: Do not use anesthesia and avoid placing rubber dam metal clamps as heat is used in this procedure.

The inside/ outside bleaching technique

This is also called Internal/external bleaching or the patient administered intra-coronal bleaching technique or Modified walking bleach technique. This combines intra-coronal bleaching technique with home bleaching technique. After barrier placement, the access cavity is left open so that the bleaching material, which is normally 10% carbamide peroxide, can be placed into pulp chamber. The bleaching tray is applied to the tooth to retain the material on to the tooth. Bleaching can thus take both internally and externally at the same time.[6]

Suggestions for safer Non-vital bleaching:

1. Isolate tooth effectively:

Intracoronal bleaching should always be carried out with rubber dam isolation. Inter-proximal wedges and ligatures may also be used for better protection.

2. Protect oral mucosa;

Protective cream, such as orabase or Vaseline, must be applied to the surrounding oral mucosa to prevent chemical burns by caustic oxidizers

3. Verify adequate endodontic obturation

The quality of a root canal obturation should always be assessed clinically and radiographically prior to bleaching. Adequate obturation ensures a better overall prognosis of the treated tooth.

4. Use protective barrier:

This is essential to prevent leakage of bleaching agents, which may infiltrate between the gutta percha and root canal walls. It reaches the periodontal ligament via dentinal tubules, lateral canals or root apex.

5. Avoid acid etching and strong oxidizers:

6. Avoid heat:

Excessive heat may damage the cementum and periodontal ligament, as well as dentine and enamel especially when combining with strong oxidizers.

6. Recall patients periodically

Case reports

Case 1

A 27 year old female reported to my department with aesthetic concerns resulting from discoloration of her maxillary left central incisor, with occasional pain and pus discharge. She gave a history of trauma 6 years back. On intra-oral examination, tooth 21 was discolored with a shade corresponding to A3 in vita shade guide (Fig 2). A sinus tract was also located at the apex of the concerned tooth. Radiograph presented a peri-apical radiolucency in relation to 21.

The access opening of 21 was initiated under rubber dam, working length determined and was closed for 3 weeks with calcium hydroxide/ chlorhexidine paste as intracanal medication. Patient was recalled, and dressing was repeated for yet another 3 weeks. As patient was very much concerned about discoloration and she was symptomatically better and as the root canal was free of any exudates, tooth 21 was obturated with gutta-percha /AH plus sealer using lateral condensation technique (Fig. 3). Temporary seal was given in the access.

Patient was recalled 1 week later, rubber dam placed, temporary material removed and access was refined. Gutta-percha and sealant was removed to a level just below the labial gingival margin using xylene and a finger plugger and cotton pellets. Then a 2mm thick layer of glass ionomer protective barrier was applied to cover the obturation properly. Then a thick paste of sodium per borate and anesthetic solution, mixed to a wet sand consistency was packed into the pulp chamber using a plastic instrument. Excess liquid was removed with a cotton pellet. Access was sealed with IRM. The material was held using index finger till it sets completely to avoid the O2 released from pushing IRM out. Rubber dam was removed.

Patient was evaluated two weeks later. Walking bleach was repeated two more times to attain a perfect shade match with her adjacent teeth. Finally the patients' 21 had B1 shade (Fig.4) and the access was sealed

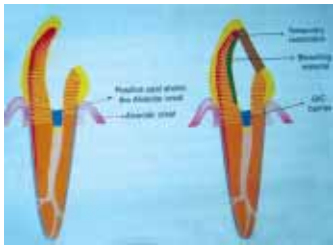
Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5


Fig. 6


Fig. 7


Fig. 8


Fig. 9


Fig. 10

permanently with composite in another appointment. The patient is still under review.

Case 2

A 28 year old female reported to the department with aesthetic concerns resulting from discoloration of her maxillary right central incisor (Fig.5). She didn't give any complaint of pain, but had undergone orthodontic therapy with removable appliance 6 years back. On radiographic examination, the root canal of tooth No. 11 was partially obliterated. Any way, an endodontic treatment was planned for 11.

Access opening was made, canal negotiated with no.10 k-file with EDTA flooding the access. Slowly the file was introduced to apex, but the apical region was not negotiable till working length. The tooth was obturated in the next appointment as patient was totally asymptomatic (Fig 6). Then bleaching procedures were initiated and completed as in Case 1. In this case tooth shade improved from A4 to A2 (Fig 7).

Case 3

A similar case as cited above came to my department who had undergone orthodontic treatment 8 years back. That was a male, 32 years of age, with discolored 21 (Fig 8). Radiograph revealed obliterated root canal of 21. As in case 2, canal was negotiated and RCT was completed uneventfully (Fig.9) Then we proceeded with walking bleach procedure. After 3 sittings there was drastic improvement in the tooth shade (Fig 10). Tooth was then permanently restored with composite.

Conclusion

Bleaching has lead to a lot of dramatic changes in esthetic dentistry. It has got fewer complications and is a time saving procedure. Though bleaching has given a better esthetic look, chances of relapse in the color is also possible after some years. So simultaneous with the scientific and clinical advances, we need to give professionals and prospective patients a broader, better awareness of the possibilities of bleaching and the limitations of these procedures.

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Primary tuberculous osteomyelitis of the mandible

* Sherin A. Khalam, ** Surej Kumar L.K., *** Rakesh Koshy Zacariah

Abstract

Tuberculous osteomyelitis of mandible is an extremely rare condition, particularly in comparison to pyogenic infections and neoplastic diseases involving the mandible. Although a rare occurrence, the differential diagnosis of tuberculous osteomyelitis must always keep in dentist's mind when the routine therapy fails to respond. Here, we report an unusual case of primary tubercular osteomyelitis of the mandible where the biopsy of the lesion has lead to near final diagnosis of the case.The authors have done segmental mandibulectomy distal to 36 with dearticulation of condyle through an extra oral approach and there after antitubercular therapy subsided the swelling.

Key words: Primary Tuberculosis, osteomyelitis, biopsy, segmental mandibulectomy.

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Introduction

Tuberculosis is a chronic infectious granulomatous disease caused by *Mycobacterium tuberculosis*[1] which is anaerobic, slender, non-motile, non-encapsulated, non-sporing, rod shaped organism ranging from 2 to 5 µm2. The World Health Organization (WHO) estimates that worldwide there are approximately 20 million active cases, of them approximately 3 million people die each year from tuberculosis, of which 80 % are in developing countries.[3]

Tuberculous oral lesions are relatively rare occurrence. Oral manifestations occur in approximately 3% of cases involving long standing pulmonary and/ or systemic infection[4]. Oral clinical presentation may be as ulcers, erythematous patches, indurated lesions with granular surface, nodules and fissures or as jaw lesions. The most common sites involved are tongue, gingiva, tooth sockets and jaw involvement may present as osteomyelitis[5].

Two main types of tubercular infections of oral tissues are recognized - Primary and Secondary. Primary lesions develop when tuberculosis bacilli are directly inoculated into the oral tissues of a person who has not acquired immunity to the disease and in fact, any area that is vulnerable to direct inoculation of bacilli from exogenous source can be a potential site. These frequently involve gingiva, tooth extraction sockets and buccal folds.

Secondary infection of oral tissues can result from either haematogenous or lymphatic spread or from autoinoculation by infected sputum and direct extensions from neighbouring structures. Intraoral sites frequently involved include the tongue, palate, lips, alveolar mucosa and jaw bones[2].

With myriad presentations and sometimes lack of specific systemic symptoms, oral tubercular lesions may present as puzzle for us and may escape our eyes. Hence, we document a case of primary tuberculous osteomyelitis of mandible in a young female individual who was initially suspected for dental abscess with nonspecific chronic osteomyelitis and later proved as primary tubercular osteomyelitis.

Case report

A 20 year old female patient presented with a gradually increasing swelling and pus discharge on the left mandibular region of face since 6 months. The patient reported that 6 months back she had visited a dentist for severe pain associated with 38 and extraction of 38 was done, after which swelling started. Extra oral incision and drainage along with multiple courses of antibiotics were

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Fig. 1 Pre operative profile view and extraoral swelling

Fig. 2 Extraoral sinus formation

Fig. 3 An ill-defined radiolucency extending from the distal of 36

Fig. 4 Incision marking

Fig. 5 Submandibular incision

Fig. 6 Exposure of the lesion

started; despite this the swelling didn't subside. She had received multiple courses of oral antibiotics after which she reported to our institute. The swelling which was initially small gradually increased in size with extra oral sinus formation and appearance of secondary swelling above it (Fig. 1 & 2).

Physical examination revealed that she was well built, nourished and afebrile. On local extraoral examination there was a well defined ovoid swelling of approximately 3x3 cm on the left submandibular region extending from the distal side of 36, inferior border of right side of mandible to few involving the condyle and coronoid process of the mandible. Surface appeared erythematous, smooth, shiny, sinus opening with serosanguinous discharge. On palpation it was tender, soft to firm inconsistency, nonfluctuant, surface raise of temperature and was attached to the underlying structures. Lymph nodes were not palpable. The second swelling appeared 2cms above it which was 1x1 cm, tender, erythematous, smooth, firm. On intra oral examination there was no apparent change from normal except for slight expansion of buccal cortical plate in vestibule, below a well healed extraction socket 38. The oral hygiene was fine with mild gingival recession.

A panoramic radiograph revealed an ill-defined radiolucency extending from the distal side of 36 postero-inferiorly the condyle and coronoid process (Fig 3). A provisional diagnosis of chronic nonspecific osteomyelitis was given and since it was refractory to medication, actinomycosis and tuberculosis were thought of as differential diagnosis.

On further evaluation she revealed, she had dry cough since 6 months, didn't notice evening rise of temperature, weight loss and was not aware of possible contact with tuberculosis persons. Routine laboratory tests and investigations for tuberculosis were simultaneously carried out. All haematological values were within the normal limits, ELISA for HIV was negative. A tuberculin (Montoux) test was positive, Chest radiograph (PA view) did not reveal any abnormal findings, Test for C-reactive protein was also negative, sputum examination for Acid fast bacilli (AFB) did not reveal any bacilli and culture after 48 hrs of incubation was negative.

Segmental mandibulectomy distal to 35 was planned under general anaesthesia. Blind naso tracheal intubation was carried out. An extra oral submandibular incision was given to approach the mandible in the affected site (Fig 4 & 5). Necrotised bone was found distal to 36 involving the condyle and coronoid process with formation of seqestrum in the angle area. Segmental resection was carried out distal to 35 with dearticulation of condyle (Fig 6,7&8).

Specimens were submitted for histopathological analysis. Cytological smear taken from the sinus drainage was stained with Ziehl-Neelsen, PAS, but revealed only polymorphonuclear leucocytes, few lymphocytes in necrotic background and no actinomycotic colonies or bacilli were detected. FNAC showed no granulomatous lesion. Since the tests were inconclusive, biopsy from extraction socket and curettage of the lesion was performed and sent for histopathological examination. It showed granulomas of varying sizes and shapes consisting of central Langhan's type of multinucleated giant cell, epitheloid

Fig. 7 Segmental resection

Fig. 8 Intra oral view

Fig. 9 Post operative site

Fig. 10 Gross specimen

Fig. 11 Wound closure

Fig. 12 Post op profile

cells, surrounded by lymphocytes and few plasma cells. Few granulomas showed extensive caseating necrosis in the centre. Areas of necrosis with polymorphonuclear neutrophils were also appreciated. The above features were consistent with tuberculous granuloma, a chronic granulomatous lesion.

Standard antitubercular therapy for bone tuberculosis was started. At 2 weeks follow up some reduction in size of swelling was noticed. The patient continues to be followed up regularly.

Discussion

Tuberculosis (TB) remains the leading cause of death worldwide from a single infectious organism. It is very common in India and South-East Asia, where the prevalence rate is about four in every 1,000 people. 15% of tuberculous population of the world resides in India[6] Primary oral tuberculosis is rare, as an intact oral mucosa, cleansing action of saliva, salivary enzymes, tissue antibodies and oral saprophytes act as barriers to infection. Any breach in these defense mechanisms, such as abrasions, tears, chronic inflammation, poor oral hygiene, tooth eruption, extraction sockets, periodontal disease, and carious teeth with pulp exposure may lead to infection by, tubercle bacilli.[4,5] Poor socio-economic conditions with inadequate nutrition and lack of hygiene are predisposing factors to infection[5]. Bone TB is a relatively uncommon form of extrapulmonary tuberculosis seen in approximately 1% of children with TB[7]. It is more frequently seen in children as compared to adults because of highly vascularised bone in infants and children[8]. Tuberculous osteomyelitis quite rare and constitutes less than 2% of skeletal TB. Jaw involvement is even rarer and affects older individual[3,9,10] and also children[3,5]. The involvement of the mandible by TB infection is extremely rare as it contains less cancellous bone. But the mandibular involvement is more frequent than maxilla[11] and the alveolar and angle regions have greater affinity.

The infection may extend to the mandible by:

1) Direct transfer from infected sputum or infected raw milk of cow through an open pulp in carious tooth, an extraction wound or gingival margin or perforation of an erupting tooth.

2) Regional extension of soft tissue lesion to involve the underlying bone

3) Haematogenous route[11]

There have been cases of primary TB of the mandible reported in adults and they did not find any primary focus in lung route.[10] Meng[13] stated that jaw infection is practically always associated with pulmonary infection and 43% of his cases had TB of other bones. But in our case there was no history of pulmonary or osseous involvement. Hence the spread of infection might have been through an extraction socket of 38, which could have made an occult tubercular focus in the mandible. Moreover, the patient was of lower socio-economic conditions with poor oral hygiene which might have been a predisposing factor.

Tuberculosis of the jaw causes slow necrosis of the bone and may involve the entire mandible[11]. There is no characteristic radiographic appearance of TB of the jaws, or alveolar bone and most

Fig. 13 post op OPG

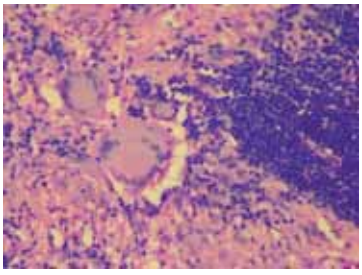

Fig. 14 Langhan's type of giant cells wih epitheloid cells (40x magnification)

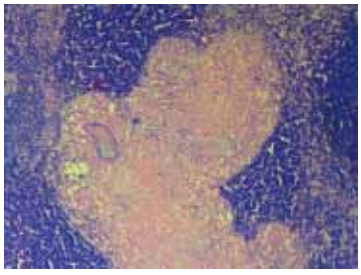

Fig. 15 Tubercular granuloma (10x magnification)

lesions are indistinguishable from those caused by pyogenic organisms[14]. The destruction of the bone in radiographs appears as blurring of trabecular details with irregular areas of radiolucency. There is an erosion of the cortex with little tendency to repair. Gradually the bone is replaced by soft tuberculous granulation tissue. Caseation appears at places followed by softening and liquefaction. A subperiosteal abscess forms presenting as a painless, soft swelling. This cold abscess may burst either intra or extraorally forming single or multiple sinuses. Pathological fracture of mandible and sequestration may also occur[11]. India being a country with high prevalence of TB in population, our case which presented a painful swelling with preceding toothache, discharging sinus, multiple swellings, necrosis of bone with no involucrum on radiographic picture, refractory to oral antibiotics led us to tuberculous osteomyelitis as one of the differential diagnosis.

Traditionally, the diagnosis of tuberculosis has been made on the basis of clinical findings and radiographs and confirmed by sputum or tissue smears that show AFB bacilli. These methods remain the gold standard for diagnosis, but the development of DNA probes, polymerase chain reaction assays, and liquid media now allow, more sensitive and rapid diagnosis[3]. However our country being a developing country, the facilities is scarce and expertise required are lacking. FNAC has been a useful adjunct in the diagnosis of TB and is the first choice of investigation in India.[14,15] Absence of AFB in smears, FNAC, showing and otherwise characteristic cytological picture should not weigh against the diagnosis of TB[14,15]

The medical line of treatment(usually 6-8 weeks of Antikoch's therapy) is followed by the surgical treatment in chronic extensive cases, as in our case conservative segmental resection was the only choice left behind considering the time and extend of the lesion.

Conclusion

The case reported in this paper emphasizes the importance of clinical findings histopathological diagnosis and surgical intervention in any long standing swellings refractory to routine treatment of which tuberculosis is one. If detected early, conservative resection can be done without much destruction of the adjacent structures and therefore there should be prompt initiation of an effective regimen without wait and watch attitude even though there was lack of confirmation, as in our case which regressed after surgical and antituburcular drug therapy.

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Lip bumper treatment to distalize mandibular molars incase of submerged mandibular second premolars

* Shukoor K.M.

Abstract

Mesial drift of permanent first molars is a common problem causing malocclusion. If it is diagnosed at an early stage, very importantly before the eruption of second and third molars, it can be easily corrected using a lip bumper or a Denholz appliance. This article describes correction of mesially drifted lower first molars and moderate crowding of maxillary and mandibular teeth of a 14 year old female patient in a non extraction approach using a lip bumper and 0.022 inch slot Pre-adjusted Edgewise Appliance. Therapeutic extraction of premolars was not advisable for this patient as it might cause dishing of the face. Since both the upper and lower lips were retrusive, proclination of maxillary and mandibular anteriors was advisable to get sufficient space for the crowding as it is one of the methods of gaining space. Total treatment took around 20 months to get a satisfactory result.

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Introduction

Non-extraction approaches to treatment have increased interest in appliances and techniques that help to create additional space within the dental arch. The lip bumper appliance, which is lip activated, has regained popularity in recent years for the treatment of crowding in the mandibular arch[1,2,3]. Lip bumper or lip plumber is a semi fixed (combined removable-fixed) appliance can be called a modified vestibular screen that is used for muscular force application or force elimination.

The uses of lip bumper are

- Distalization of the first molars can be done by the use of lip bumpers.
- In case of lip sucking habits to keep the lower lip away[4,5,6]. Can be used to augment anchorag[7,8].
- To transmit muscular force onto the molars in a distal direction discouraging the forward movement of the molars.
- Can be used as a space regainers in case of lower molars drifted mesially due to prematrure loss of deciduous molars[9].
- A modification of lip bumper is used to distalize maxillary molars called Denholz appliance[10].

The appliance has a stainless steel wire, usually 0.045 inch thick that spans the facial surface of the mandibular arch without contacting the teeth and is inserted into tubes attached to the mandibular molars[1,7,10,11]. Anteriorly, the wire is sometimes covered by plastic tubing or a shield made of acrylic or plastic that holds the lower lip away from the mandibular incisors. Forces from the mentalis muscle are translated to the mandibular molars, enabling them to move to an upright and distal position. At the same time, the tongue may cause the mandibular incisors to tilt outward and the canines and premolars to move buccally. Thus mandibular arch length and width may increase, helping to alleviate crowding mesial to the mandibular molars.[9,11-15]

Case report

A 14 year old female patient reported the clinic complaining of irregularly placed upper and lower anterior teeth. On examination, she has got moderate crowding of upper and lower anterior teeth, submerged lower second premolars, super class I molar relation (slightly more than a class I molar relation and not a full-fledged class III) and slightly retrusive upper and lower lips. Super class I molar relation is due to mesial drift of permanent molars due to early loss of deciduous second molar.(fig: 1-6)

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Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5


Fig. 6


Fig. 7


Fig. 8


Fig. 9


Fig. 10


Fig. 11


Fig. 12


Fig. 13


Fig. 14


Fig. 15


Fig. 16


Fig. 17

Treatment Objective

The patient's main complaint was the irregularly placed front teeth. It impaired her esthetics. Therefore the treatment objectives involved correction of maxillary and mandibular crowding and bring the submerged lower second premolars to occlusion and correction of molar relation.

Treatment

Since her both upper and lower lips were retrusive, extraction of premolars was not advisable. The treatment started with strapping of only upper arch with Pre Adjusted Edgewise Appliance (0.022 Roth) and 0.016 niti given. Both the lower molars were banded and a lip bumper was given.(fig:7-9) After two months of initial alignment, 0.016 niti wire was replaced by a 0.016 X 0.022 rectangular niti wire. Within five to six months the upper crowding got corrected by slightly proclining the maxillary anteriors. It took six to seven months to distalize and upright the lower molars to get a class I molar relation and brought the lower second premolars to occlusion. Then the lower arch was strapped with the same appliance to correct the crowding (.fig:10-12). After initial alignment of both the arch, nickel titanium rectangular wire was replaced by rectangular stainless steel wire. Before removing the appliance, settling elastic (red box elastics) (fig:13-15) was given to get correct occlusion in the posterior region. The total treatment time took about twenty months to get a satisfactory result. (fig 16-21)

Conclusion

It confirms that the lip bumper appliance may be used for gaining space in the mandibular dental arches. The main dental effects included incisor proclination and protrusion, molar distalization and tipping, increases in arch widths, length, perimeter, and a decrease in anterior crowding.. There was no correlation between initial lip force and tooth movement. Dental changes may be greater when the lip bumper is not removed by the patient.

Fig. 18

Fig. 19

Fig. 20

Fig. 21

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Full mouth rehabilitation of a case of amelogenesis imperfecta: An interdisciplinary approach

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Abstract

Amelogenesis imperfecta is a genetic disorder that causes defective enamel development in both primary and permanent dentitions. This case report describes an interdisciplinary approach in the management of a case of amelogenesis imperfecta. This case report highlights the importance and the methods for increasing the vertical dimension in the full mouth rehabilitation of the patient. All efforts were made to restore the caries affected and missing teeth to bring all the thirty two teeth in functional occlusion along with better esthetic appearance.

Key words: Amelogenesis imperfecta (AI), Vertical dimension at occlusion (VDO), Vertical dimension at rest (VDR), Full mouth rehabilitation.

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Introduction

Amelogenesis imperfecta (AI) is a relatively rare group of inherited disorders characterized by abnormal enamel formation. The term amelogenesis imperfecta is reserved for hereditary defects of enamel that are not associated with defects in other parts of the body or other health problems[1,2]. Amelogenesis imperfecta is caused by mutations in genes that control amelogenesis and follows different inheritance patterns, such as autosomal dominant, autosomal recessive or X-linked and even sporadic cases have been reported[3]. The prevalence of these conditions has been studied in only a few populations and is reported to range from 1 in 700 to 1 in 15,000[4,5]. AI is also known by varied names such as hereditary enamel dysplasia, hereditary brown enamel, and hereditary brown opalescent teeth. This enamel anomaly can affect both primary and permanent dentition.

Amelogenesis imperfecta was predominantly classified based on the clinical and radiographic appearance of the enamel. Recently, the mode of inheritance has become the primary discriminator to categorize the condition[6]. Amelogenesis imperfecta has been classified into four groups based primarily on phenotype: (1) hypoplastic, (2) hypocalcified, (3) hypomaturation, and (4) hypomaturation hypoplastic. Hypoplastic enamel results in a decreased quantitative enamel formation. The enamel in hypocalcification appears normal but poorly mineralized and occurs as a result of inadequate primary mineralization, while hypomaturation results in an abnormal mineralization in the final stages of tooth formation[6]. Dental problems include sensitive teeth and poor appearance due to tooth loss and staining. When there is severe enamel loss of occluding teeth, a vertical loss is seen which results in reduced masticatory function and poor appearance. The roughness which may form over the tooth surface makes cleaning more difficult which may progress to gingivitis and periodontitis[5].

The diagnosis of AI involves exclusion of extrinsic environmental or other factors, establishment of a likely inheritance pattern, recognition of phenotype and correlation with the dates of tooth formation to exclude a chronological developmental disturbance. An orthopantomogram and full mouth intra oral periapical radiographs play a vital role in diagnosing the difference in density of enamel in AI patients [2,7].

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Fig.1 Pre - Operative photograph.

Fig.2 Face bow transfer.

Fig.3 2 mm raised bite.

Fig.4 Occlusal splint.

Fig.5 Tooth preparation for PFM-FVC.

Fig.6 Provisional restoration.

Although different treatment modalities have been described for the rehabilitation of amelogenesis imperfecta in adults and children, treatment is always a great challenge to clinicians. Treatment planning for AI is dependent on various factors including the patient's age and socioeconomic status, type of disorder, and severity. An interdisciplinary approach is necessary to evaluate, diagnose and correct the esthetic problems using a combination of prosthodontic and restorative treatment[5,8]. Attention must also be paid to the psychological health of the patient[9]. This case report demonstrates an uncomplicated and logical interdisciplinary approach for functional and esthetic rehabilitation of a case of amelogenesis imperfecta.

Case report

The patient was a healthy 25-year-old male referred to the Department of Conservative Dentistry and Endodontics, Rajas Dental College, Tirunelveli with complaints of discoloration and sensitiveness of teeth, and difficulty in chewing. His primary teeth had also been affected but he was not sure to what extent. His elder sister also suffered from the same type of problem. On examination, all teeth present had a severe yellow-brown stain. Deep carious lesions were noted on the two mandibular first molars and mandibular right second molar. Initial caries lesions were present on the four maxillary premolars. There was severe loss of enamel on the occlusal aspect of posterior teeth. The patient gave history of extracted mandibular left second molar due to caries. All the four wisdom teeth were seen clinically erupted and were in occlusion with the opposing counter parts. Periodontal condition was sound with satisfactory oral hygiene. The teeth were vital, firm, and not tender to percussion. Radiographic investigations included an OPG and full mouth IOPA radiographs. Crowns of the teeth showed reduced enamel thickness with normal dentin and no abnormalities of the root. He was diagnosed as a victim to amelogenesis imperfecta (Figure 1).

After full mouth oral prophylaxis, all the four maxillary premolars which had initial caries lesions were restored with light cure glass ionomer cement (GC Fuji II LC). Endodontic therapy was done on all the three molars which had deep caries lesions. The maxillary and mandibular impressions were made with irreversible hydrocolloid impression material (Jeltrate plus, Dentsply). Study casts were made using type 3 dental stone (Elite Arti, Zhermack). The casts were then mounted on to the semi adjustable articulator (Stratos 300, Ivoclar Vivadent) with the use of a face bow and centric record (Figure 2). After studying the occlusion, it was planned to raise the vertical dimension by 2 mm to provide space for the definitive restorations (Figure 3). A diagnostic wax-up was done on the study casts in the laboratory. An occlusal splint was given for a period of 6 weeks in order to raise the bite by 2mm (Figure 4).

Tooth preparation was done on all the 31teeth (missing mandibular second molar) for porcelain fused metal-full veneer crown. The preparation was done quadrant wise in four appointments (Figure 5). The final temporary restoration was also prepared with the increased vertical dimension (Figure 6). Minor occlusal discrepancies were corrected and the patient was made to use the temporary for another 6 weeks. This period was uneventful and the patient was seen comfortable with the new centric relation and occlusion. Complete arch definitive impressions (Figure 7) were recorded with vinyl polysiloxane (Elite HD, Zhermack) and the casts were made. The new bite was registered (Virtual, Ivoclar Vivadent) with the previously increased occlusal

Fig.7 Complete arch definitive impressions.

Fig.8 New bite registration.

Fig.9 Ceramic crowns prior to glazing.

Fig.10 Post-operative final restoration.

vertical dimension (Figure 8). The casts were mounted on an articulator (Stratos 300, Ivoclar Vivadent) with face bow transfer. Porcelain fused metal-full veneer individual crowns were fabricated for rehabilitation of all the teeth. A three unit metal ceramic fixed partial denture was made for the missing mandibular left second molar. A trial evaluation of the metal substructure, prior to glazing of the ceramic material was done to evaluate the contacts and occlusion (Figure 9). After finishing and glazing, the crowns were cemented to the prepared teeth with glass ionomer cement (GC Fuji I) (Figure 10). The final esthetic and functional treatment outcome satisfied the expectations of the patient and the interdisciplinary team.

Discussion

A good treatment planning and patient communication is required before the commencement of the restorative treatment in the case of full mouth rehabilitation. Many factors like age of the patient, patient demands, severity of dental deformities and the periodontal conditions determine the treatment plan and its outcome. In the present case, esthetic and functional rehabilitation was equally demanded by the patient. Since all the third molars were present in good periodontal condition, a treatment plan was formulated to utilize all the teeth for masticatory function. All the initial caries lesions were permanently restored and the deep caries affected teeth were endodontically treated anticipating the possible pulpal inflammation it may cause. The missing tooth was restored with a fixed partial denture thereby establishing occlusal contacts of all the 32 teeth.

The vertical dimension can be defined as the distance between any two points measured in the maxilla and the mandible when the teeth are in maximum intercuspation[10]. Vertical dimension (VD) can be increased or decreased for the best functional and esthetic anterior contact in centric relation[11]. The indications for alteration of vertical dimension are esthetics, alteration of the occlusal relationship and for prosthetic convenience to allow space for restorations[12]. In the present case, patient's occlusal vertical dimension was increased in order to provide adequate interocclusal space and crown height for the definitive restorations. By this approach, the need for multiple intentional endodontic therapy was eliminated. Some authors have stated that occlusal vertical dimension (OVD) is not altered following tooth wear (except in case of amelogenesis/dentinogenesis imperfecta) and any method to restore occlusal vertical dimension will result in increased OVD. In cases with serious lack of space for the planned restoration, OVD can be raised but only within the vertical dimension at rest (VDR)[13].

Occlusal overlay splints, temporary cover dentures, Dahl's modality and orthodontic bite raising appliances are the four basic modalities of bite raising[14]. In the present case, occlusal splint was given in the initial six weeks and the provisional restorations were also fabricated maintaining the increased vertical dimension. These procedures helped the patient to adapt to the newly increased VDO. Such an approach is more convenient for the patient's maintenance and allows easy subsequent replacement with definitive restorations.

Considering the superior strength, wear resistance, marginal fit and conservative tooth preparation needed, gold crowns were traditionally used for restoration of extensively worn out molars[15]. Due to its unacceptable appearance and high cost of manufacturing, its use is not accepted by most patients. In the present case, porcelain fused metal-full veneer crowns were considered as a better choice considering the comparatively lower cost, minimal tooth preparation needed and better esthetics it provides. Individual crowns were fabricated for all the teeth with the aim of replicating maximum possible natural contacts and contours. It not only helps the patient to maintain proper oral hygiene but also reduces the risk of treatments involving individual tooth without disturbing other tooth restorations. Periodic review of the patient's oral hygiene and periodontal health must be stressed and maintained in order to achieve long term success.

Conclusion

The management of amelogenesis imperfecta differs among patients depending on the severity of

the disease, age at which the treatment is planned, the anatomy of the pulp chamber, the periodontal status and the socioeconomic status of the patient. The full mouth rehabilitation of such cases requires a coordinated multidisciplinary approach from the part of prosthodontist, restorative dentist and orthodontist to deliver the best treatment outcome both functionally and esthetically to the satisfaction of the patient.

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Unicystic mural ameloblastoma of mandible

* Roopesh U., ** Vishnu Mohan, *** Genu Vaidain

Abstract

Ameloblastoma is a benign epithelial neoplasm that has no tendency to metastasize. It is one of the most common odontogenic neoplasm. Ameloblastoma, a locally aggressive jaw tumor with high propensity for recurrence is believed to arise from the remnants of odontogenic epithelium, lining of odontogenic cysts and basal layer of overlaying mucosa. In contrast to squamous cell carcinoma of head and neck, which are relatively common these tumors are rare but have tendency to recur. This article consists of a case report of unicystic mural ameloblastoma, its diagnosis and management.

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Introduction

Ameloblastoma is a Benign tumors of the oral cavity arising from odontogenic epithelium. It was first described by Robinson and Martinez in 1977 as is slow growing, anatomically benign, clinically persistent and locally aggressive lesion. Its incidence, combined with its clinical behavior, makes ameloblastoma the most significant odontogenic neoplasm. It represents about 1% of all ectodermal tumors and 9% of odontogenic tumors. The vast majority of ameloblastomas arise in the mandible, and the majority of these are found in the angle and ramus region. It can occur at any age; peak incidence is in 3rd or 4th decade of life with equal sex distribution. Only 10% of cases are reported to arise in children. Ameloblastoma may occur centrally within bone or peripherally, without an intra-osseous component, in the soft tissues overlying the alveolar ridge. Intraosseous lesions outnumber peripheral lesion by atleast a 9:1 margin. The ameloblastomas mostly have three forms, namely multicystic, peripheral, and unicystic. Unicystic can be again classified into two variants, 1) luminal, 2) mural variant.

Case report

A 34 year old female patient had come to our out patient department with the chief complaint of pain in relation to left lower side of face since one month. Patient gives a history of pain in relation to left side of face for last one month. Had similar episode with swelling of the same side three years back, for which she consulted a dentist from where she was referred to govt dental college.

Histopathological and radiological investigations were done and diagnosed as unicystic mural ameloblastoma at govt dental college and couldn't do surgery due to family reasons. Had lower 3rd molar extracted and iodoform packing was given. It was continued for 1 and ¼ years. One month back pain restarted.

Panoramic radiography showed multilocular radiolucent area from mesial to first molar to the neck of condylar process involving ascending ramus in the left side. Lower border of mandible and posterior border of ramus was intact, but anterior border of ascending ramus was involved almost upto coronoid process. Root resorbtion of the second molar was noticed.

Computed tomography showed well defined lesion extending from distal to first molar to neck of condyle involving ascending ramus over left side.

Under general anaesthesia and nasoendotracheal intubation and all aseptic precaution, the tumor mass was exposed using submandibular approach with slight extension to retromandibular region for better exposure to condylar region. A segmental resection was done from mesial of first molar to the neck of the condylar process. Reconstruction was done using iliac

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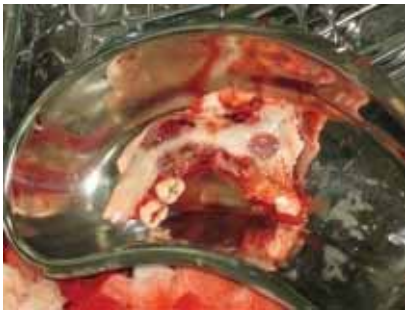
Pre-operative

Pre-operative

Pre-operative OPG

Computed tomography



Resected segment

Reconstruction

bone graft. Hemostasis was achieved, vacuum drain was secured and closure was done in layers. Antibiotics, analgesic and anti-inflammatory drugs were given post-operatively. Both the wounds healed uneventfully sutures were removed on seventh post operative day. Patient was under periodic follow up and there was no recurrence seen till date.

Discussion

Ameloblastoma is a benign odontogenic neoplasm that frequently affects the mandible. The tumor cells are derived from caricatures of enamel organ and some may resemble ameloblast without enamel matrix formation. It is the 2nd most odontogenic tumor after odontoma. Although it's clinical behavior with high recurrence rate makes it the most significant odontogenic neoplasm. Unicystic ameloblastoma occurs in 5-15% of all intraosseous ameloblastoma of jaw. It is a cystic lesion that shows clinical, radiographic or gross picture of a cyst but histological examination revels typical ameloblastic epithelium.

Unicystic ameloblastoma can be divided in to 4 subgroups microscopically[1].

1- Luminal

1.2- Luminal And Intraluminal

1.2.3- Luminal, Intraluminal And Intramural

1.3- Luminal And Intramural

Unicystic ameloblastoma can be divided in to 3 subgroups histologically[1].

Group 1-Luminal

Group 2- Intaluminal/Plexiform

Group 3- Mural

Based on evidence of invasion, ameloblastoma can be histopathologically described as[2]

1) Ameloblastoma in situ
   a) Mural ameloblastoma in situ
   b) Intraluminal ameloblastoma in situ.
2) Microinvasive ameloblastoma
   a) Intramural microinvasive ameloblastoma
   b) Transmural microinvasive ameloblastoma
3) Invasive ameloblastoma
   a) Invasive ameloblastoma arising from lining of cyst
   b) Invasive ameloblastoma

The treatment should be planned taking patients age and histopathological evidence of invasion into consideration.

Essentially, most studies showed that the prognosis for ameloblastoma is more dependent on the method of surgical treatment rather the histologic type of tumour[3].

Post operative OPG

Post operative

Resection with some safe margin (marginal, segmental or composite resection depending on the site and size of the lesion) is the best primary method for treating solid/multicystic ameloblastomas to avoid recurrence.[3]

En-Bloc tumour resection reduces the chance of tumour recurrence but resulted in large mutilating bony and soft tissue defects as indicated by our experience and also in many other series.[4]

The challenge in the management of large ameloblastoma of the mandible is not only to excise the tumour completely in order to prevent recurrence but also to provide the best reconstruction method. There are different methods of mandibular reconstruction for large defect that have been described in literatures and among all, microvascular surgery has become the preferred option. Four donor sites i.e, fibula, iliac crest, radial forearm, and scapula have become the primary sources of vascularized bone and soft tissue for the oral reconstruction.[4]

Another method of reconstruction is internal distraction osteogenesis as has been popularized by McCarthy *et al.* (1992).[4]

It is suggested that cyst enucleation followed by application of carnoy solution peripheral ossectomy is the treatment for ameloblastoma in situ/intraluminal ameloblastoma and aggressive resection for microinvasive and invasive /mural ameloblastoma to reduce the recurrence rate.

Conclusion

Aggressive resection has been advocated for ameloblastoma's of maxillofacial region. Again this should be planned taking patients age and histologic evidence of invasion into consideration.

Careful Histopathological examination of multiple sites of cystic lining and it should be corelated radiologically and with clinical findings to come to a proper diagnosis, so that justified surgical treatment along with reconstruction can be planned to reduce the chances of recurrence and to minimise postoperative complications.

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Duplicate dentures: Impression tray technique

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Abstract

The copy denture technique is one that facilitates the replication of the favourable features of existing complete dentures. It is useful in situations in which the existing denture has been used successfully and the patient has developed good neuromuscular control. They are also indicated when the patient may not adapt to changes made in the new prostheses easily. Copy dentures allow favourable features of the existing dentures to be incorporated in the replacement. This article discusses the indications and fabrication of duplicate dentures using the copying technique. It also discusses the qualitative assessment of the existing dentures and the steps involved in the procedure per se.

Keywords: Duplicate dentures, copying technique, neuromuscular control, adaptation

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Introduction

As age increases, there is progressive reduction in the ability to learn new patterns of muscular behaviour on which the success of complete denture therapy largely depend. An elderly person may therefore have difficulty in controlling new dentures if the contour differs from that of existing dentures. Therefore, duplicating existing dentures, maintaining the same contour of the polished surfaces, making necessary changes of the ill-fitting surfaces and worn out occlusion becomes increasingly valuable. The denture duplication technique discussed here depends on accurate diagnosis and careful evaluation of the impression, occlusal and polished surfaces of the existing complete dentures.

Discussion

The Copy denture technique is one that facilitates the replication of the good features of an existing denture. The older the patient, the stronger the reason for using the denture copying technique. In fact, this method of treatment may prove to be the only way of realizing treatment goals for a patient whose powers of adaptation have deteriorated markedly.

Indications of the copy denture technique

- Denture surfaces fit satisfactorily and the patient desires an additional set.
- Ill-fitting impression surfaces.
- Worn out occlusal surfaces.
- Treatment dentures.

Methods of denture duplication:

Various methods of constructing copy dentures have been described in the literature. Some of the methods are:-

- Modified denture flask method[1]
- Duplicating flask method[2]
- Soap container method[3]
- Agar container method[1]
- Impression tray method[3]

All the above methods involve investing the existing denture in a well-supported elastic material to produce a copy of the existing denture. This article describes the impression tray technique of denture duplication.

Case report

A 76 year old female patient reported to the Department of Prosthodontics, Mar Baselios Dental College, Kothamangalam with a complaint of ill-fitting dentures (Fig. 1). She had worn the

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Fig 1. Old maxillary and mandibular denture

Fig 2. Impressioning the occlusal and polished surfaces

Fig 3. Placement of sprue formers

Fig 4. Impressioning the tissue surface

Fig 5. Embedded denture removed and wax poured

Fig 6. Copy template


Fig 7. Border moulding of copy templates and final impressions

Fig 8. Template with raised vertical dimension

Fig 9. Articulation of copy templates

Fig 10. Teeth setting

Fig 11. Trial dentures

same successfully for the past 20 years.

The patient had developed good neuromuscular control of the dentures but they had undergone occlusal wear with a resultant loss of facial vertical dimension. After a thorough intraoral examination and evaluation of the existing dentures, it was decided to use the denture duplication technique to fabricate new dentures for the patient. The impression tray technique for denture duplication was followed.

Impression tray technique

1. This technique used stock impression trays and addition silicone poly vinyl siloxane putty impression material (Orange Snow, Equinox Medical Technologies, Holland).
2. A maxillary, stock, perforated, stainless steel tray was selected and filled with silicone putty impression material.
3. The denture was positioned with the *polished surface facing* down and embedded in the impression material up to the denture borders (Fig. 2).
4. Two sprue formers with green stick compound of 25mm length were attached to the heels of the dentures (Fig. 3).
5. The set, excess impression material was trimmed and relocating grooves were cut in the anterior and posteriors regions bilaterally. Petroleum jelly was applied onto the impression borders.
6. A second mix of putty impression material was then placed into the *impression surface* of the denture and held in place with the reverse surface of a second maxillary impression tray until the mix had set (Fig. 4).
7. The two sections were separated and the embedded denture and sprue formers were removed.
8. Molten wax was poured into the impressions of the teeth upto the cervical level (Fig. 5).
9. Both the putty impressions were reassembled with the help of relocating grooves and held together.
10. A thin mix of autopolymerising PMMA acrylic resin was poured into one of the sprues till excess material flowed out through the other.

Fig 12. Comparison of new copy dentures and old

Fig 13. Patient with new dentures

11. When polymerisation was complete, the impressions were separated and the temporary denture bases with wax teeth (copy templates) were retrieved (Fig. 6). The resin sprues and the fins were removed.
12. Border moulding of the maxillary and mandibular copy templates was done with green stick compound and final impressions were made with low viscosity PVS impression material (Fig. 7).
13. The maxillary copy template with the maxillary impression was checked for adequate incisal visibility. The occlusal plane and reduced vertical dimension were corrected by adding wax on the occlusal surfaces of the maxillary and mandibular wax teeth (Fig. 8).
14. The centric relation was registered with PVS bite registration material and the record kept aside.
15. The impressions were poured in dental stone and the copy templates with the casts articulated using the centric relation record (Fig. 9).
16. The wax teeth were replaced one by one with acrylic teeth (Fig. 10).
17. An assessment of the trial dentures were done in the patient's mouth (Fig. 11).
18. New complete dentures were fabricated using heat cure PMMA acrylic resin and delivered (Fig. 13).
19. The patient was recalled after 24 hours, one week and one month, and was found to be satisfied with the new dentures. The patient displayed good acceptance towards the new dentures.

Conclusion

Denture copying technique is a valuable approach to treat patients with dentures, who find it difficult to adapt to new complete denture prostheses. The assessment of the old denture provides essential information for diagnosis and treatment planning and facilitates construction of a new prosthesis with familiar features, inclusive of desirable modifications. The copy denture technique must not be considered as a shortcut to new denture construction. The decision to use the method should be based on sound diagnosis and the clinical and technical procedures undertaken with the greatest care.

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A new possibility for the management of hemi mandiblectomy patients with mandibular removable guide flange device with precision attachment in a cast partial denture

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Abstract

Mandibular deviation related to mandibular segmental resection for existing ameloblastoma results in impaired function and facial asymmetry with regard to our prosthetic management. The use of an intraoral resin splint (guiding plane) in a cast partial denture with precision attachment permits retaining the patients neuromuscular system to the centric position before definitive prosthetic rehabilitation. A new possibility for treating hemi mandiblectomy patients by one device both for physiotherapy and mastication.

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Introduction

Prosthetic management of surgical defect has always a big challenge for a prosthodontics. The sudden change in patients prospective towards life affects the future outcome of any prosthetic rehabilitation.

Loss of continuity of mandible destroys the balance and asymmetry of mandible function leading to altered mandibular movements, facial asymmetry, malocclusion and deviation of the residual fragments towards the surgical side.[1,2]

Method reduce or eliminate mandibular deviation include inter maxillary fixation immediately after surgical recession, use of mandibular based guidance restoration, an implant supported fixed prosthesis with bone graft. For best results these methods and restoration should be combined with a well-organized mandibular exercise regimen.[1,2,8]

This clinical report gives a brief description of prosthetic management of hemi-mandiblectomy patient that foresees using only one device both for corrective mandibular movement and masticatory function.

Clinical report

A 30 years old male patient was referred to department of Prosthodontics. (Rajas dental college and hospital, Tirunelveli, Tamilnadu, India) for prosthetic rehabilitation following a hemi-mandibulectomy. A detailed case history revealed that the patient was diagnosed with ameloblastoma 6 month back (Fig. 1). A pre surgical CT scan revealed extensive radiolucency of size 2.5×3cm in the body of right ramus (Fig. 2). The patient had undergone segmental recession of ameloblastoma[4] 4 month back and primary closure was done. Clinical examination revealed difficulty in speech, mastication, mandibular deviation towards the resected site with lack of proper contact between maxillary and mandibular teeth (fig. 3).

According to Cantor and Curtis classification of mandibular defect, this defect is classified as Cantor and Curtis Class II defect (Fig. 4) (ie) Resection defect involve loss of mandibular continuity distal to canine area[3].

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Fig. 1 Intraoral view of patient with Ameloblastoma

Fig. 2 CT scan portraying Ameloblastoma

Fig. 3 Mandibular deviation shifting towards the right side 2 weeks after surgery

Fig: 4 The mandibular defect was classified as Cantor and Curtis Class II

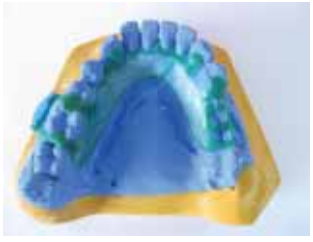

Fig. 5 Wax pattern for cast partial framework with precision attachment.

Fig. 6 Cast partial framework with Precision Attachment

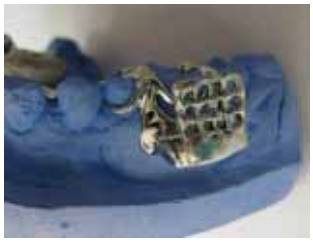

Fig. 7 Cast partial framework with precision attachment try in patient's mouth

The patient can able to achieve normal centric occlusion if the mandible is guided in to position but unable to repeat this position if mandible is not guided. So cast partial denture with a guiding flange attached to it, significantly improves the patient control and closure[1,2].

A stainless steel stock tray and irreversible hydrocolloid were used to record preliminary impression of maxillary and mandibular arch. The impression was poured with dental stone and diagnostic cast were made. Surveying was done and occlusal rest seat prepared using triangular configuration of support which is effective in neutralizing leverage. A common feature among all removable resection prosthesis is that all frame work designs should be detected by basic prosthodontics design. This includes broad stress distribution, cross arch stabilization and retaining components and location within the arch to minimize dislodgement and replacement of tooth position that optimize the prosthesis.

The design includes a cast removable partial denture with a guiding flange on the non-defect side and retentive lattice meshwork for acrylic support on the defect side (Fig. 5). Here only one mandibular prosthesis can be used both for physiotherapy and eating by simply inserting and removing the guide flange. Precision attachment was inserted in to the buccal side of the cast partial dental with the patrix and corresponding matrixes were inserted in to the guiding flange (fig. 6). The cast frame work was finished, evaluated, adjusted intraorally. Bite registration taken with cast partial framework and precision attachment in patient mouth (Fig. 7).

Articulation was done on whip mix articulator with framework placed on cast. Definite resin splint made on dentulous side over the female part of precession attachment and edentulous side replaced with acrylic teeth (Fig. 8). The prosthesis was finished, evaluated and inserted intraorally (Fig. 9,10).

The guiding flange provides a mechanical system which prevented the mandible from turning towards the resected side. Using only one prosthetic device patient used to reeducate mandible muscles and removing only the guide flange from the cast partial denture for mastication. In this way patient use only one device for the physiotherapy and second for mastication by using a single device (Fig. 11).

Discussion

Loss of continuity causes deviation of the remaining mandibular segments towards the defect and rotation of the mandibular occlusal plane inferiorly. Mandibular deviation towards the defect side occurs primary because of the loss of tissue involved in surgical resection[1,2].

Fig. 8 Definitive resin splint made on Dentulous side

Fig. 9 Cast partial framework with precision attachment made with tooth color auto polymerizing acrylic resin (guiding flange)

Fig. 10 Guiding flange in patient's mouth to guide him into centric occlusion.

Fig. 11 Pre-operative and post-operative photograph of the patient.

Early post resection physical therapy is indicated to reposition the mandibular fragments towards a more normal position and to minimize the effect of scar formation. The physical therapy should involve having the patient gently push the mandible away from the defect side towards a more normal position. While holding the mandible in position the patient should open the mouth as widely as possible to stretch the musculature and resection site[1,2].

A review of the literature shows varying basic design of prostheses used, that can be mandibular-based or palatally-based anchored on natural teeth or denture flange [6]. In this case only one mandibular prosthesis can use both for physiotherapy and mastication by simply inserting and removing the guide flange. Two precision attachments were inserted in to buccal surface of the denture base with the patrix and corresponding matrixes were inserted in to the tooth color acrylic guiding flange[7].

The advantage of this design was total rehabilitation physically as well as psychology, comfortable to wear also without guide flange inserted, easy to make and repair, easy to clean. The disadvantage was cost of precision attachment, although cost of making precision attachment may high, when compared with the benefits provided by the end results this may not be a primary disadvantage[7,8].

The main purpose is to re-establish an acceptable occlusal relation for residual hemimandibulectomy, so that the patient can control the opening and closing of mandibular movements adequately and repeatedly.

Conclusion

The prosthetic rehabilitation was done to correct mandibular deviation. Bar-type precision attachment was fabricated with cast partial framework where their male part, corresponding female part inserted into the guide flange. This mandibular prosthesis can be used both for physiotherapy and eating by simply inserting and removing the guide flange.

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Neuroprosthetic rehabilitation of acquired skull defects

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Introduction

Cranial defects occur among all ages from a wide variety of causes, such as trauma, infection, congenital malformations, pathology and tumors, and their surgical management can all lead to skull abnormalities and defects. Small defects that are covered in formidable soft tissue may not need repair. Other cranial defects usually require secondary reconstruction. Cranioplasty is defined as the repair or reconstruction of a cranial defect or deformity using bone graft or implant materials. Repair of cranial defects is indicated to protect underlying brain tissue, provide pain relief at the defect site, improve cosmesis and minimize patient anxiety. Cranioplasty is accomplished either with osteoplastic reconstruction or restoration with alloplastic materials that include metal, acrylic resin, polyethylene and silicone.

Materials

The ideal material for undertaking cranioplasty should be malleable to fit precisely even in complicated cranial defects, strong but lightweight, easily securable to the cranium, biocompatible, chemically inert, radiolucent, non-ferromagnetic, readily available, and inexpensive. No such material currently exists fulfilling all these properties.

Various implant materials have been used in cranioplasties. Metals have been widely employed but each has its shortcomings. Gold and silver are rather soft and expensive [3]; aluminium is epileptogenic and disintegrates over time; lead is toxic; and platinum, though very biocompatible, is prohibitively expensive. Alloys such as ticonium (used in 1930s) are generally cheaper than other pure metals, lightweight, strong and often chemically inert.

Tantalum, a chemically inert, non-absorbable and non-corrosive material, was first successfully employed as a cranioplasty material during World War II. Unfortunately, tantalum is an excellent thermoconductor, leading to patients' complaints of headaches in extreme temperatures, and its radioopacity interferes with diagnostic radiological studies. Thus, when stainless steel (cheaper) and acrylic compounds (radiolucent) were introduced, and soon replaced.

Titanium was first used for cranioplasty in the 1940s. It is more radiolucent and less expensive than tantalum, more biocompatible, nonmagnetic, non-corrosive and strong. However, it is also difficult to mold intraoperatively as well. Non-metals that have been used for cranioplasty include celluloid, hard rubber, plaster of Paris, gum cork and sheet mica. Due to various undesirable handling qualities and side effects none of these materials have gained popularity[4].

Acrylic resins were used even before World War II as dental prostheses and since the 1940s have been employed for cranioplasty because of their good biocompatibility. Methylmethacrylate is chemically inert and, being malleable before it sets, allows for good cosmetic results. It is also lightweight, non-magnetic, non-thermoconductive and similar to bone in strength[5]. It needs a totally dry, bloodless operative field to set, but the main drawback is the exothermic reaction produced during setting of the polymer, which can reach temperatures in excess of 100°C, with the potential for damage to underlying brain tissue. The surgeon can counteract this rise in temperature by irrigating the implant with cold saline while it sets. It is also very brittle and therefore breaks or shatters easily[5]. To reduce the risk of plate breakage, nowadays it is often used with a stainless steel or titanium mesh core. Hence heat cured Methylmethacrylate cranioplasties can be preformed, thus saving on operative time and also avoiding the hazard of intraoperative exothermic reaction during setting as well.

Hydroxyapatite is a calcium phosphate compound that is found

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Fig.1 Patient with cranial defect

Fig. 2 Frontal cranial defect

Fig. 3 Cranial Acrylic Prosthesis

Fig. 4 Preoperative stage

Fig. 5 Postoperative stage

naturally in human bone and teeth but which, since the 1970s is manufactured as a paste providing ease of application and a good fit to the defect. But now is also available as granules and preformed buttons and plates. Most importantly, hydroxyapatite sets without the exothermic reaction of methylmethacrylate[6].

The porosity of the compound encourages the ingrowth of fibrovascular tissue which can subsequently ossify[7]. Again, however, it does not set when exposed to fluids and, compared to methylmethacrylate, is relatively expensive[8].

Future developments

The search for the ideal cranioplasty material and technique still continues. New techniques are being developed as well. Known materials are combinations of acrylic resins and titanium struts, with their qualities improved by the antibiotic coating of pre-formed plates[9]. Preforming of implants has advanced due to 3D-CT scanning, computer assisted design[10] and stereolithography[11]. A 3D-CT image of the region of interest is formatted and a resin model is then created by fused deposition modelling. This model then acts as a template for the actual cranioplasty membrane which is fashioned preoperatively by specialized maxillo-facial prosthetic consultants.

There is also some exciting developments in 'tissue engineering' using molecular biology techniques, such as harvesting osteoblasts or bone marrow-derived mesenchymal stem cells, to seed onto the scaffold for the cranioplasty. Bone morphogenic proteins of the transforming growth factor-β family, and various polypeptide growth factors, play a central role in fracture healing. These factors can now be manufactured by recombinant DNA techniques and potentially incorporated into implants to evoke osteoinduction[12]. In future, biodegradable implants could be used to provide immediate cover of the cranial defect whilst over time releasing bioactive molecules to transform the perfectly fitted implant into living bone.

Case report and discussion

A 52 year–old male patient referred to the department of Prosthodontics and maxillofacial prosthetics, Government Dental College, Trivandrum from the department of neurosurgery for the rehabilitation of postsurgical cranial defect. The patient had a large cranial defect on the left frontal bone region by an accident due to LPG cylinder burst a few years back. The neurosurgeon demanded a cranial prosthesis in order to protect the exposed brain segment through the defect which was covered only by the scalp. Moreover the patient wanted the rehabilitation due to the existing social stigma. On examination, the defect was found to be 5 x 7 cm in size with a normal skin overlying the skull bone. Osteoplastic reconstruction by autogenous graft offers a number of disadvantages as follows:

- Possible absorption and loss of contour
- Insufficient graft material for large defects.
- Multiple incisions are necessary for removing the donor material as well as for the cranioplasty.
- Osteoplastic reconstruction with cartilage, fat and dermis provide only little protection to the brain as the graft remains soft.

Taking these drawbacks of osteoplastic reconstruction into the consideration this option was

ruled out. The fabrication of alloplastic implant with heat- cured acrylic resin was decided because it has sufficient hardness, less tissue reaction and better restoration of tissue contours etc.

Procedure

The impression of the patient's face including the defect was made using irreversible hydrocolloid impression material (Alginate). Then L- shaped clips were inserted and Plaster of Paris was poured over the Alginate in order to reinforce the impression. When the plaster had set, the impression was removed and poured with type III dental stone. The margins of the defect were then marked on the stone cast. As the defect was large, it was blocked out with the modeling clay in the centre to reduce the thickness of the acrylic resin implant. A wax pattern was fabricated over the defect on the stone cast and then tried on the patient's face. The margins of the implant were checked and adjusted for complete approximation to the adjacent tissues inorder to restore the normal anatomy and appearance. After the corrections were made, the wax pattern was invested by conventional method and processed in heat- cured acrylic resin with a 72 hours curing cycle in order to eliminate all the residual monomer content completely. The prosthesis was then deflasked finished and polished.

A no. 8 round bur was used to place holes throughout the acrylic implant to achieve the following:

- Allow accumulated fluid to flow out of the subgaleal spaces.
- Permit adhesion and growth of connective tissue onto the prosthesis, which enhances the stabilization.
- Provide an adequate blood supply to the overlying scalp.
- Allow suturing
- Better tissue surface contours overlying the prosthesis.

The implant was gas sterilized and degassed for 3 days prior to insertion. Marginal discrepancies were noted, and the overextensions were marked. The acrylic resin implant was then adjusted to fit the cranial defect as closely as possible. It is then secured in position using a ligature wire tied around the adjacent boarders of the prosthesis and the surrounding bone. The bone defect was then found to be closed and the scalp overlying sutured.

Postoperatively, the patient had a good recovery, and drain was removed on second postoperative day. Patient was then recalled every week for check up. Phenomenal improvement in the contour of the cranium was noticed after a period of one month. This corrective treatment showed a significant improvement in patient's morale and attitude towards life.

Summary

The cranioplasties have come into practice since early 1950s. Acrylic resin materials have been used as bone substitutes in dentistry, neurosurgery and orthopedics surgery for three decades. The heat-cured resin prosthesis offer many advantages. A prefabricated implant can save valuable time in the operating room and provide a better cosmetic results as the contours are checked against a master cast and the patient, and also the adjustments are made prior to the surgery as well. Excess free monomer is completely removed by the extended time of curing and preparation before implantation. Hence such surgical rehabilitation not only improve the anatomy and cosmetic appearance of the patient but also provides a psychological upliftment of his/ her future.

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Sialolithiasis presenting as submandibular space abscess

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Abstract

Sialoliths can form in any salivary gland but the most commonly involved is the submandibular salivary gland. It may be asymptomatic or cause prandial pain and swelling. Occasionally it may also progress to a purulent infection requiring admission to the hospital. One such case of multiple salivary calculi in the submandibular gland that presented as a submandibular space abscess and its management is discussed. The current management strategies are also briefly reviewed.

Keywords:Sialolith, Submandibular Gland, Salivary calculi

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Introduction

Sialolith or salivary calculi are formed by deposition of calcium salts on a central nidus. The nidus may consist of altered salivary mucins, desquamated epithelial cells, bacteria, foreign bodies or products of bacterial decomposition. No definite etiology has been identified so far. It can cause partial or complete salivary gland ductal obstruction and exhibit recurrence[1].

These affect the salivary glands in the following order: submandibular-78%, parotid gland 20%, sublingual gland-2%.[2] The higher incidence in submandibular gland has been attributed to the following causes - a) salivary stasis in the Whartons duct due to its position (at a higher level than the gland) and gravity b) alkalinity, mucous nature and increased calcium content of the saliva secreted by the gland c) long and tortuous course of the whartons duct.[3]

Patients may complain of moderately severe pain, associated with meals. This is caused by occlusion of the duct which prevents free flow of saliva. The stimulation of saliva causes swelling of salivary gland. This can also lead to purulent infection necessitating incision and drainage.[1]

The management of sialoliths ranges from conservative measures to radical treatment-sialadenectomy when other methods fail. A case of recurrent sialadenitis due to sialolithiasis that presented as a submandibular space abscess and its management is discussed.

Case report

A 48 year old man presented with swelling in the left submandibular space and inability to swallow foods for the past 1 week [fig1a and 1b]. He was apparently normal 3 months back. Following this he developed recurrent swelling and pain for which he took antibiotics prescribed at a local hospital that relieved his symptoms. One week ago, he developed a swelling in the same region that was initially small and progressively increased in size. Pain that accompanied the swelling aggravated during mealtimes. He was prescribed antibiotics but was not relieved. His medical history showed that he was a known diabetic taking oral hypoglycemic agents. At the time of presentation, his blood sugar values were elevated.

On examination, the swelling extending over the left submandibular and sublingual spaces and was diffuse, tender, fluctuant and warm. The mouth opening was 2 cm and he had dysphagia. Intraorally, there was pus discharge from left Whartons duct. No odontogenic focus could be elicited on clinical examination and hence an orthopantomogram was

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a) b)
Fig 1 a) and *b)* Submandibular space abscess


2 a) *2b)*
Fig 2 a) aspiration and *2 b)* incision and drainage from the submandibular space abscess

Fig. 3 Axial cut of CT scan showing the sialoliths in the left floor of mouth region

advised. This showed a few circumscribed areas of radioopacities on the left body of mandible region. Suspecting a sialolith, an occlusal radiograph to view the floor of the mouth was taken. Occlusal view showed multiple sialoliths in the left floor of the mouth. An extraoral incision and drainage was done and 10 ml pus drained. [fig 2a and 2b] Pus sample was sent for culture and sensitivity. Patient was placed on parenteral antibiotics, injection ampicillin and metronidazole. He was also started on an insulin regime after checking his blood sugar. CT scan was then taken that showed atrophic nature of the gland and presence of 8 sialoliths in the left submandibular duct and 2-3 intraparenchymal calculi [fig3]. The infection subsided with drainage and parenteral antibiotics along with rigid glycemic control. [fig4a and b] Considering the recurrent nature of the disease, atrophy of the gland and presence of intraparenchymal calculi, extirpation of the left submandibular salivary gland was planned. Surgical removal of the salivary gland was done via submandibular approach under general anesthesia. [fig 5 and fig 6] Postoperative period was uneventful. Patient has been on regular follow up.

Discussion

'The evaluation of a patient presenting with sialadenitis should commence with a thorough history and physical examination. The specific symptoms, their chronicity, presence of modifiable predisposing factors are to be noted. Presence of medical conditions like diabetes mellitus can play an important role as adequate control of the same can attenuate salivary symptoms.

A screening panoramic radiograph is essential in a patient who has been clinically diagnosed to have sialadenitis.[3] However 80% of submandibular stones, 40% of parotid stones and 20% of sublingual stones are radioopaque[4] indicating that the remaining will not be diagnosed using the pantomogram. An occlusal view is useful in identifying sialoliths in the floor of the mouth. Conventional sialography using contrast agent, when first introduced, was considered the technique of choice. However due to its invasiveness and accompanying risks like allergic reactions, damage to ducts and acute gland infections the procedure is being superseded by less invasive imaging techniques.

Ultrasound is considered ideal to assess inflammatory changes in glands. Non enhanced CT is sensitive for detecting calculi within the duct. CT sialography is advocated to visualize the duct system. However the inferior spatial resolution compared to conventional radiograph and exposure to additional radiation has lead to high resolution MR sialography replacing this technique. MRI is the preferred imaging modality after ultrasound for evaluating salivary gland lesions. But it is not indicated for nonobstructive sialoliths. Saliva has a very high signal intensity on T2 weighted MR images and acts like an endogenous contrast material. Scintigraphy using 99m pertechnate is taken up by salivary glands following IV administration and helps in assessing gland activity. However, the quantification and comparability of the findings is still being studied.[5]

The initial treatment approaches involve using sialagogues, hydration and antibiotics. When symptoms do not subside, sialolith removal is undertaken. Several methods for sialolithectomy exist. Sialadenectomy is indicated when there is a) persistence of symptoms after removal of the sialolith b) stones are in the hilum of the gland and duct.[6]

Minimally invasive surgical techniques are now available that allow safer surgeries and gland sparing along with restoration of gland function. There is sonographic, scintigraphic and histopathologic evidence that salivary gland function recovers after removal of calculus.[7] Lithotripsy or fragmentation of salivary calculi within the gland or duct can be performed followed by physical removal or flushing out the fragments through saliva or irrigation fluid.

a)

b)

Fig 4a) and b) 1 week following control of infection

Fig. 5 Excision of submandibular gland via submandibular approach

Fig. 6 Excised salivary gland and calculi

The methods of lithotripsy vary according to the type of energy used to fragment the stone and based on whether energy is introduced into the stone directly (intracorporeal) or extraorally (extracorporeal). The intracorporeal techniques involve use of mechanical fragmentation using crushing forceps, lasers (Er:YAG), (HO:YAG) or air blasts (Pneumatic) directly onto the sialolith after accessing it via an endoscope. The extracorporeal technique involves external application of focused multiple high intensity acoustic pulses termed shock waves in the direction of the sialolith. These shock waves are delivered through an aqueous gel into the soft tissue. The fragments are removed if large or they may be washed out in the saliva. Best results are found when the size of the stone is lesser than 7mm. The success rates are low in submandibular gland calculi lithotripsy in several studies and hence extracorporeal lithotripsy is recommended in parotid sialolithiasis and not submandibular gland calculi.[8] The complications of sialoendoscopy assisted sialolith removal are a) inability to remove stone or fragment, b) postoperative infection, c) change in peripheral nerve function d) intraductal adhesion formation e) subglossal scar band if incision is used prior to endoscopy f) ranula formation.

When surgical removal of gland is contemplated extraoral/transcervical approach is favoured. Other approaches used are intraoral, retroauricular, submental and Endoscope assisted surgical excision for gland removal. Albeit the high chances for lingual nerve damage, this complication is temporary.[9]

Submandibular gland resection is indicated for sialoliths, refractory sialadenitis and neoplasms. The complications include bleeding, infection, seroma formation and damage to marginal Mandibular nerve.[10] The removal of each gland causes a decrease in salivary function of 15% to 35%. With the added hyposalivation induced by medications, oral health and quality of life of the patients can be affected.[7]

Conclusion

The management of salivary calculi depends on size and location of the sialolith. Anteriorly located submandibular sialolith can be removed transorally.[11] For calculi within the gland, submandibular sialadenectomy is the preferred treatment.[6] Alternatives like endoscope assisted removal or lithotripsy and Extracorporeal shock wave lithotripsy are useful when the calculi are of small size.[12] Gillespie MB, Intaphan J, Nguyen SA. Endoscope assisted management of chronic sialadenitis. Head and Neck2010; 10:1346-1351

Due to the presence of multiple intraglandular stones and gland atrophy, submandibular gland excision was carried out in this case.

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Grossly destroyed teeth -an aesthetic solution

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Abstract

Aesthetic rehabilitation of grossly mutilated tooth generally involves a multidisciplinary approach. Maintainance of periodontal health and biological width is of prime concern during such treatments. Forced orthodontic extrusion followed by conservative periodontal therapy when used to restore a grossly mutilated tooth, was found to be successful without affecting biologic width. This article presents a case of grossly destroyed central incisor aesthetically rehabilitated by multidisciplinary approach.

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Introduction

The importance of care for dentoalveolar trauma cannot be overestimated. Facial trauma that results in fractured displaced or lost teeth can have significant negative functional, esthetic and psychological effects on the patient. Mastering the prevention and management of dento alveolar trauma is a responsibility that all dentists owe to their patients. Approximately 30% of all individuals sustain some form of dento alveolar trauma in their life time.[1] The majority of dental injuries involves the anterior teeth, especially the maxillary central incisors.[2] A number of techniques have been reported in literature for rehabilitation of grossly mutilated teeth.[3,4,5,6]

The aesthetic rehabilitation of patients with mutilated teeth generally involves a multidisciplinary approach. However, during the restorative procedures, negligence of periodontal tissues is of common occurrence, and is often the cause of failure. Hence, it is essential to maintain a healthy periodontium and the biologic width while restoring teeth. The damaging effect on the periodontium, of restorations with subgingivally placed margins is an important factor that needs to be considered during restorative treatments. To avoid this damage, crown lengthening procedure is recommended.[3]

Here, we report a case of aesthetic rehabilitation of grossly destructed maxillary left central incisor using a multidisciplinary approach i.e. conventional endodontic treatment followed by orthodontic extrusion and conservative periodontal therapy, and final restoration using cast metallic post-core system with full coverage metal ceramic crown.

Case report

A 33 year old female reported to our department of Conservative dentistry and endodontics with the chief complaint of fractured maxillary left central incisor and lateral incisor due to trauma 1 year back. On clinical examination, a grossly destroyed crown with minimal remaining dentin was present with tooth 21 with fracture at gingival level. Palatally the fracture extended subgingivally. The tooth 22 had an Ellis class 2 fracture. Preoperative intraoral periapical radiographs showed gross destruction of crown of 21 along with fractured crown for 22 without any signs of root fracture. Pulp vitality tests (electric and cold tests) revealed both teeth to be non vital. The patient was concerned about aesthetics and was unwilling to undergo extraction. Hence it was decided to restore the tooth with conventional endodontic treatment and post and core restoration. It was noted that supragingival crown height labially was around 0.5- 1 mm and palatally the fracture extended subgingivally. The crown: root ratio and occlusal clearance was adequate. Hence in order to gain crown height for fabrication

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Fig (1) Showing the Preoperative view


(a) (b)
Fig (2) showing orthodontic extrusion (a) during the treatment (b) after extrusion




Fig 3 showing steps of flap surgery for crown lengthening and the post operative view

of a customized post and core with full coverage crown, it was decided to adopt forced orthodontic extrusion technique.

The teeth were isolated under rubber dam. Adequate endodontic access cavities were prepared for both 21 and 22 and working length radiographs were taken after initial identification of canals with # 15 K-files. Cleaning and shaping of the root canals were performed by using stainless steel files with a crown-down technique under copious irrigation with saline, 5.25% sodium hypochlorite solution and 17% Ethylenediaminetetraacetic acid (EDTA).

In the next visit master cone radiographs were taken. The canals were rinsed with saline, dried and successfully obturated using cold lateral compaction of gutta percha with zinc oxide eugenol sealer. A temporary restoration of zinc oxide eugenol was placed in the access cavity.In the next appointment, extrusion was planned for the grossly destroyed tooth 21. A J hook was fabricated using a 21 gauge stainless steel orthodontic wire and it was cemented in to the canal of tooth 21 using Glass ionomer cement after removing sufficient gutta percha. Another 21 gauge wire was made into the form of a loop and was attached to the labial surface of adjacent teeth on either side of 21 using composite. An elastic chain was stretched between the two wires to get sufficient force for extrusion.

The patient was reviewed on a weekly basis for 6 weeks. The required amount of extrusion was achieved and the appliance was removed.

As the attachment apparatus shifted coronally along with the tooth, the patient was made to undergo flap procedure and bone recontouring to expose the crown and for correcting the gingival discrepancies.

A crown height of around 3mm was achieved both labially and palatally. After sufficient postoperative healing, restoration of the tooth with post-core and crown was planned. Adequate post space preparation was made for the tooth using peeso reamers. A direct wax pattern of the post space was fabricated using inlay wax and was casted. A vitalium metal post-core was obtained which was cemented over the tooth using Glass ionomer cement.

Followed by this, crown preparation was done for both 21 and 22. Metal ceramic crowns were then fabricated and cemented over the teeth using glass ionomer cement.

The patient was recalled after 3 months and the tooth was found to be asympytomatic and treatment outcome was satisfactory.

Discussion

Biologic width is the most important factor to be considered while restoring teeth in order to avoid periodontal problems and ultimate failure of the restoration. In a healthy individual this width usually measures approximately 2.04 mm as described by Gargulio *et al.* In case of grossly destroyed teeth, in order to preserve the biologic width, crown lengthenning procedures are adopted. Crown




(a) (b) (c)

Fig 4 showing (a) cast post (b) after post fixation (c) radiographic view

Fig 5 Showing postoperative view

lengthening can be achieved either by orthodontic extrusion followed by conservative periodontal therapy or surgical technique alone.[3,4] Orthodontic extrusion followed by periodontal therapy is an excellent alternative to the traditional periodontal surgery alone for lengthening of the clinical crown.[11] Crown root ratio of tooth following surgery alone exceeds that of tooth that is first orthodontically erupted. End result of forced eruption contributes to a more cosmetic and physiologic restoration. Orthodontic extrusion also reduces the dimension of the esthetic deformities created by surgical management alone as the discrepancy between adjacent gingival margin is removed and there is minimal removal of supporting bone of adjacent tooth.[8,11] Ingber JS was the first to suggest the use of forced eruption to treat non restorable or hopeless teeth.[8] One of the major limitation of orthodontic extrusion is that after the procedure, conservative periodontal surgery may be necessary to correct any discrepancy. Also there is longer treatment duration requiring a lot of patient cooperation.[9,10] Surgical crown lengthening alone on the other hand, may sometimes have compromised aesthetics, inversed crown root ratio, compromised functioning of adjacent tooth and it may also hamper biologic width.[10] A cast metal post was selected for this case because of its ability to preserve existing tooth structure and excellent fit to the canal.[11]

Conclusion

The necessity for an interdisciplinary approach to treatments of routine dental problems has been recognized for a long time. In the case described, an endodontist, an orthodontist, a periodontist and a prosthodontist participated in the dental management of a patient with grossly destroyed tooth. In many cases forced orthodontic eruption is a useful alternative to extraction or surgery. Adjacent teeth need not be prepared for fixed prosthesis and alveolar bone is conserved.

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Internal root resorption

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Abstract

Root resorption is the pathological loss of dental hard tissues due to clastic action of resorptive multinucleated giant cells like odontoclasts. Internal root resorption is relatively a rare clinical entity and is diagnosed mostly through routine radiographs. Even when diagnosed properly, they present with unique difficulties in the preparation and obturation of the affected tooth. This article discusses two case reports of internal resorption successfully treated in our department by thermoplasticized obturation technique.

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Introduction

Root resorption is the loss of dental hard tissues as a result of clastic activities. [1] Unlike bone that undergoes continuous physiologic remodeling throughout life, root resorption of permanent teeth does not occur naturally and is invariably inflammatory in nature. Thus, root resorption in the permanent dentition is a pathologic event; if untreated, this might result in the premature loss of the affected teeth.

Root resorption might be broadly classified into external or internal resorption by the location of the resorption in relation to the root surface.[2] Internal root resorption is the progressive destruction of intraradicular dentin and dentinal tubules along the middle and apical thirds of the canal walls as a result of clastic activities.[3] Compared with external root resorption, internal root resorption is relatively rare in occurrence. This is a case report of internal resorption which has been successfully treated in the department of Conservative dentistry & Endodontics, GDC Kottayam.

CASE 1:

Case history

A 16 yr old female patient reported to our department with the complaint of unaesthetic appearance of her small front tooth. On clinical examination it revealed 22, as a peg lateral which was asymptomatic with no relevant history. Radiographic examination of 22 region revealed irregular wide canal with an open apex. The tooth was non vital, with no h/o pain, sinus or periapical abscess and diagnosis was made as internal resorption with an open apex.

Management:

The tooth was opened & access preparation & debridement was done. A calcium hydroxide paste was placed for apexification. The dressing was changed and review was done periodically with a one month interval which was done for a time period of 6 months. After attaining a definite apical closure, the exact working length was determined and the canal was enlarged and shaped. This was followed by sectional obturation with a master apical file size of 80, followed by a back filling with thermoplasticized gutta percha. (E & Q plus).

CASE 2:

Case history

A 15 yr old male patient reported with the complaint of caries in his upper left premolar. On examination revealed an occlusal caries with pulpal involvement. The tooth was found to be asymptomatic with no h/o any abscess, sinus. Clinical examination revealed, that tooth was non vital on pulp testing, with no pain on percussion and exhibited mild discolouration of crown. Radiographically, 24 region revealed irregular widening of root canal with widening of the PDL space. The case was diagnosed as internal root resorption.

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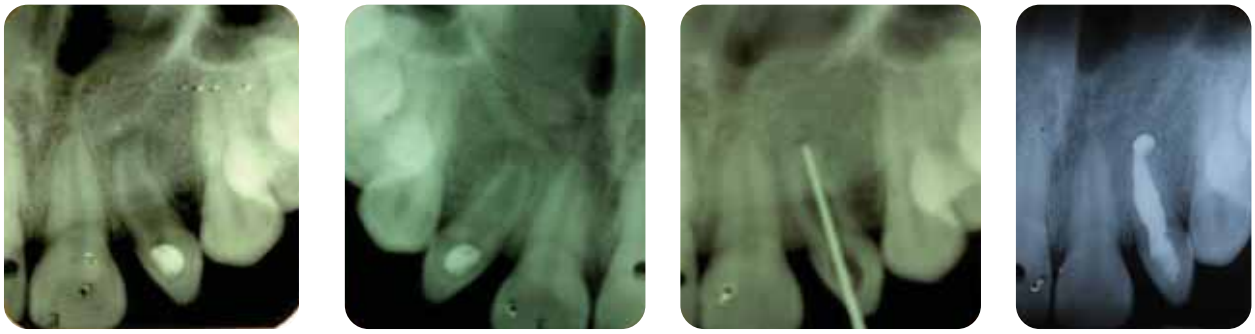
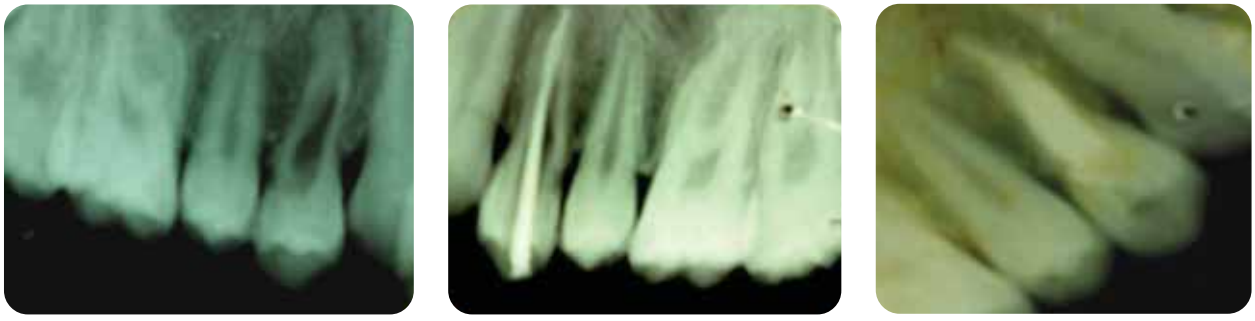


Case 1



Case 2

Management:

The tooth was opened, & access cavity preparation was done, followed by debridement, cleaning & shaping. Interappointment Ca(OH)2 intracanal medicament was also given. Canal was further obturated by Sectional obturation followed by back filling using thermoplasticized GP technique.

Discussion

Internal root resorption may be described as an unusual form of tooth resorption that begins centrally within the tooth, apparently initiated in most cases by a peculiar inflammation of the pulp. [4] The condition is more frequently observed in male than female subjects, with the most commonly affected teeth being maxillary incisors.[7]

For internal root resorption to occur, the outermost protective odontoblast layer and the predentin of the canal wall must be damaged, resulting in exposure of the underlying mineralized dentin to odontoclasts.[10] For this, the pulp tissue apical to the resorptive lesion must have a viable blood supply to provide clastic cells, whereas the infected necrotic coronal pulp tissue provides stimulation for those clastic cells.[4]

The precise injurious events necessary to bring about such damages have not been completely elucidated. Various etiologic factors have been proposed which include trauma, caries and periodontal infections, excessive heat generated during restorative procedures on vital teeth, calciumhydroxide procedures, vital root resections, anachoresis, orthodontic treatment, cracked teeth, or simply idiopathic dystrophic changes within normal pulps. Out of which trauma accounts for the major contributing factor with 45% cases, caries for 25%, endo-perio lesions for 14% and the rest [8].

Clinical manifestations:

Cases are usually asymptomatic and are first recognized clinically through routine radiographs.[9] Pain occurs only if perforation of the crown occurs and the granulation tissue is exposed to oral fluids. If resorption occurs in the coronal portion of the tooth, the latter might exhibit a pinkish hue that is classically described as the pink tooth of Mummery after the 19th century anatomist James Howard Mummery, who first reported the phenomenon.[11]

Radiographically, fairly uniform radiolucent enlargement of the pulp canal is seen where the original outline of the root canal is distorted.[3] Rarely changes occur in adjacent bone, when there is an apparent perforation.

Management

If the tooth diagnosed with internal resorption is deemed restorable and has a reasonable prognosis, root canal treatment is the treatment of choice. The aim of root canal treatment is to remove any remaining vital, apical tissue and the necrotic coronal portion of the pulp that might be sustaining and stimulating the resorbing cells via their blood supply,[12] and to disinfect and obturate the root canal system.

Teeth with Internal root resorption present the endodontist with unique difficulties in the preparation and obturation.[3] The shape of the resorption defect usually renders it inaccessible to direct mechanical instrumentation so to achieve thorough chemo mechanical debridement copious use of irrigants is a must. Use of ultrasonic irrigation system to agitate the irrigant has been shown to improve the removal of necrotic debris and biofilms from inaccessible areas of the root canal.[13] an intracanal, antibacterial medicament like calcium hydroxide, should be used to improve disinfection of the inaccessible root resorption defects.[14]

Obturation:

Resorption defects can be difficult to obdurate adequately. To completely seal the resorptive defect, the obturation material should be flowable.[3] Thus thermoplasticized gutta percha technique forms the ideal option.

Thermoplasticized GP technique

Introduced by Yee *etal*.[5] the Flowable nature of the material completely seals the resorptive defect and provides the best adaptability to the irregular canal space. The only drawback encountered has been a possibility of apical extrusion.

In situations when the root wall has been perforated, mineral trioxide aggregate (MTA) should be considered the material of choice to seal the perforation.[15] When internal resorption has rendered the tooth untreatable or unrestorable, extraction is the only treatment option.

Conclusion

With a few exceptions, pathologic tooth resorptions have endodontic implications that can be successfully addressed with a proper root canal treatment, since the eventual outcome of allowing this type of condition to continue is ultimate tooth loss. Thus, with an early detection and a correct differential diagnosis and with the advent of newer flowable gutta percha techniques, outcome of treatment can definitely be improved.

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Effect of premolar extraction on eruption of mandibular third molars

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Abstract

The purpose of this study is to compare the effect of premolar extraction on third molar space, its angulation and its eruption.

MATERIAL AND METHOD: Third molar space, its angulation, and its eruption were compared in 12 premolar extraction and 12 non-extraction orthodontically treated cases using pre & post treatment lateral cephalograms. Statistical analysis was done using Paired t-test for intra-group comparison and Unpaired t-test for intergroup comparison.

RESULT: Significant change in third molar angulation was seen in extraction cases. Highly significant increase in third molar space was seen in both extraction and non-extraction cases. The eruption rate was the same in both extraction and non-extraction cases.

CONCLUSION: The changes in third molar space and angulation in premolar extraction cases did not facilitate eruption of third molar in extraction cases. The cases where third molars erupted fully, were those cases which had initially increased third molar space.

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Introduction & review

The mandibular third molar is something of an enigma in orthodontics. Its development and eruption are very variables. Development may begin as early as five years or as late as fourteen years, with the peak formation period at eight years to nine years. Hellman[1] found the average age of eruption was 20.5 years. The eruption space for the mandibular third molars is also affected by the direction the teeth erupt during the functional phase of eruption. The more anteriorly the posterior teeth erupt, the more the retromolar space will increase. It is well established that extraction therapy is associated with mesial movement of the mandibular molars and the increase in retromolar space. However, the effect of those changes on the frequency of mandibular third molar impaction is unclear. Some researchers have found that non-extraction therapy is associated with a significant increase in the frequency of third molar impaction and a significant reduction in the frequency of third molar eruption, while others have found only small differences between samples treated with and without extraction.

New patients often want to know if third molar extraction will be necessary. Patients usually tolerate the loss of four premolars, yet they may not be as receptive to the loss of four additional teeth. Patients often complain that premolar extractions did not prevent the need for third molar extraction and as a result, eight "perfectly good teeth" were lost.

Faubion[2] found that 55% of the extraction group retained the mandibular third molar in good position as compared to 15% in non-extraction group. He concluded that the extraction of first premolars provides increased space for the eruption of mandibular third molars.

Richardson[3,4] study on effect of premolar extraction on third molar eruptions showed that there was an increase in third molar space in extraction group. However, the article remarked that factors other than change in third molar space influenced the eruption of third molars.

Julie Ann Staggers[5] study shows that orthodontic treatment involving premolar extractions does not improve third molar angulation any differently than non-extraction treatment. Third molar angulation improved regardless of the method of orthodontic treatment.

D. Erdem[6] study showed that impaction of lower third molars is unpredictable, even where

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	Group	*T1*	*T2*	*T2-T1*	*T**	*P*
Distance in millimeters from Xi-point to second molar distal surfaces	Extraction	21.0±2.1	23.9±2.4	2.9±2.2	4.53	<0.001HS
	Non-extraction	23.1±4.2	25.9±4.4	2.8±1.5	6.60	<0.001HS
	Extraction v/s Non-extraction**	T=1.56 P=0.14,NS	T=1.41 P=0.18,NS	T=0.11 P=0.91,NS	_	_
Third molar angulation in degrees.	Extraction	23.7±14.9	18.5±14.7	-5.3±8.1	2.24	0.05, S
	Non-extraction	17.8±10.8	15.3±11.7	-2.5±10.9	0.81	0.44,NS
	Extraction v/s Non-extraction**	T=1.17 P=0.28,NS	T=0.59 P=0.56,NS	T=0.69 P=0.50,NS	_	_

Table (I): *Showing third molar space and its angulation change in extraction and nonextraction cases in pre and post-treatment cephalogram.*

	Erupted n (%)	Partially erupted n(%)	Impacted n(%)	Mean+-sd
Extraction(n=12)	2(16.7)	10(83.3)	-	-0.8±1.4
Nonextraction(n=12)	5(41.7)	6(50.0)	-(8.3)	-0.9±1.4

(P=0.10 non significant)

Table (II): *Showing eruption percentage in extraction and non-extraction cases*

orthodontic treatment involved some mesial movement of the second molars. A greater mesial inclination of the mandibular third molars may be an indication of the tendency for these teeth to remain impacted even following extraction treatment.

Tae-Woo Kim's[7] study found that premolar extraction therapy reduces the frequency of third molar impaction because of increased eruption space concomitant with mesial movement of the molars during space closure.

Aims and objective

The aim of this study was to compare the effect of premolar extraction on eruption of mandibular third molars, third molar space and its angulation.

Materials and methods

Pre and Post treatment lateral cephalograms of 24 patients, who had undergone orthodontic treatment were selected from the Department of orthodontics and dentofacial orthopedics CODS Davangere. All the patients were between the ages of 17 to 19 years and had bilaterally unerupted mandibular third molars at the onset of treatment. 12 of these patients had orthodontic treatment with extraction of first or second premolars and were assigned to Group I. The remaining 12 who had non-extraction orthodontic treatment were assigned to Group II. All patients were treated with standard MBT philosophy using .022 slot multibonded appliances for correction of Class I or Class II malocclusion.

Group I comprised of 11 females and 1 male patient and Group II of 8 females and 4 males.

Radiographic procedure

The pre and post lateral cephalograms were analysed to determine:

1. Third molar Space
2. Third molar angulation
3. Eruption status of the third molar

Third molar Space: was measured from the Xi point as determined by Ricketts to the distal surface of the second molar along the occlusal plane (fig.I). Distance between Xi-point and distal surface of the second molar was measured in millmeters in Group I and Group II in pretreatment (T1) and post-treatment (T2) cephalograms.[1]

Third molar angulation was measured by the angulation formed between mandibular plane and a line through the occlusal surfaces of the third molars in both the groups in pre and post-treatment cephalogram. A tracing was made of the first radiograph outlining the mandible, the mandibular symphysis, the inferior dental canal and the lower third

Graph (I): showing increase in third molar space in degrees between extraction and non-extraction in pre and post-treatment cephalogram.

Graph (III):showing erupted, partially erupted, impaction in extraction and nonextraction cases.

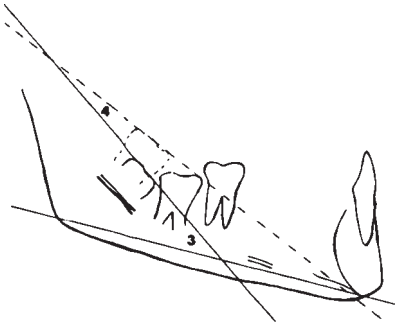
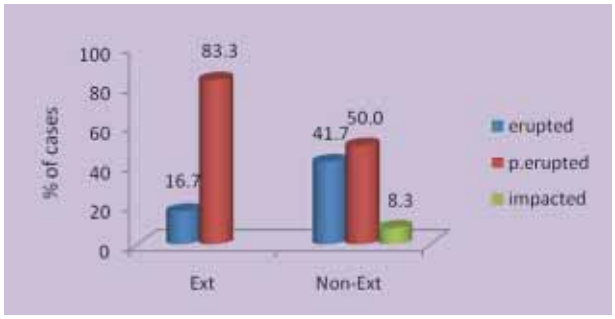


Fig.II Illustrating the measurement of the angulation of the lower third molar to the mandibular plane (3) and the change in the angulation of the lower third molar during the observation period (4)

molar. The mandibular plane and a line through the occlusal surface of the third molar were drawn and the angle between these lines was measured (fig.II). This tracing was superimposed on the later radiograph using the inner outline of the mandibular symphysis and the inferior canal for registration, keeping the lower borders of the mandible parallel. The new position of the third molar was drawn and the change in its angulation was measured.[3]

Tooth eruption were measured in both the group in pre and post-treatment cephalogram by whether the distal surface the third molar were anterior to the anterior border of the ramus. If it is mesial to the anterior border of the ramus then it is fully erupted (E). If it is not fully anterior to the anterior border of the ramus it is partially erupted (P E). If it is fully inside the bone then it is impacted (I).



Graph (II): showing third molar angulation change in extraction and non-extraction cases in pre and post-treatment cephalogram.

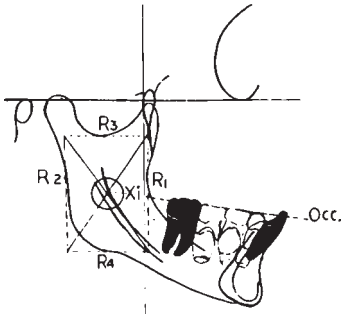


Fig I illustrating the lower third molar eruption space by measuring the distance between distal surface of the second molar and Ricketts'Xi point.

The data was statistically analysed using paired t – test for Intragroup comparisons and unpaired t – test for Inter group comparisons.

Results

Third molar space showed highly significant increase in both Extraction and non-extraction cases – P value - < 0.001.

Inter group comparison between extraction and non-extraction was non –significant –P=0.91. (Table I, graph I)

Third molar angulation showed a significant change in extraction group (P value-0.05) and a non-significant change in the non-extraction group (P value – 0.44)

Inter group comparison between extraction and non-extraction was non–significant – P = 0.50 (table.I.graph II)

The eruption percentage between Group I and II showed no significant difference. (P value – 0.10)(table II. Graph III)

Discussion

The results of this study shows that the third molar space increased significantly and similarly in both extraction and non- extraction cases and premolar extraction did not result in excessive space for eruption of third molars. Contrary to the claims of Fubion, inspite of a similar increases in third molar space, in

both groups, the third molar eruption % was higher in the non-extraction group (41.7%) compared to the extraction group (16.7%). Richardson indicated that a number of factors besides space and angulation are likely to be responsible for the eruption of third molars. Tae-Woo Kim's[7] findings of reduced frequency of impactions in premolar cases was not substantiated by this study.

There was significant change in the angulation of the third molar in extraction cases compared to the non-extraction group; however this did not facilitate the eruption of the third molar. There was no significant difference in the eruption of third molars between the two groups. The results of this study suggest that extraction of premolars in orthodontic treatment doesn't influence the subsequent eruption of third molars.

Bjorks and Svendsen[8,9,10] suggested that low mandibular growth, early physical maturity and late third molar mineralization may be etiological factors of mandibular third molar impactions.

Richardson[3,4] stated that the original space conditions in extraction cases may have more influence on the eruption of third molars than do pre molar extractions.

Forsberg[11] proposed that extraction cases have a larger tooth size/arch length discrepancy may still make third molar impactions more likely in extraction cases than in non-extraction cases.

The initial angulation of third molars may also influence their subsequent eruption.

Richardson[3,4] found that third molars with small degree of angulation erupted earlier than those with steeper angulation. She like Bjork and Svendsen, believes that mandibular growth is a contributing factor in mandibular third molar eruption, its exact role is uncertain. In concordance with our findings, Julie Ann Staggers also found that third molar angulation improved in both extraction and nonextraction cases and this improvement doesn't facilitate the eruption of third molars.

Like previous third molars studies in our study too there was improvement in angulation in extraction cases. This improvement in angulation did not facilitate the eruption of third molars nor did the increase in space facilitate the eruption of third molars.

In our study, cases where there was increase in initial third molar space, the molar erupted completely irrespective of premolar extractions as suggested by Richardson.

Rickets[12] measured the distance from 'Xi' to the distal surface of the second molar on occlusal plane, and inferred that, a distance of a 30mm is enough for the eruption of the third molar to occur, a distance of 25mm is borderline, and a distance of 20mm, or less, is not enough. All the cases in the present study where third molars erupted, irrespective of extraction mechanics, had larger Xi to second molar distance initially (25.59mm) compared to other cases, and the situation improved further (29.32mm) during treatment coming close to the 30mm as suggested by Ricketts.

Conclusion

Extraction of premolars during orthodontic treatment did not lead to increased eruption of third molars. Extraction treatment facilitated uprighting of the impacted molars, but did not facilitate eruption of third molars. If the initial third molar space is more there is a chance that third molar will erupt whether the treatment plan involved extraction or non-extraction.

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Various clinical presentations of odontomes

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Abstract

Odontomes are defined as tumours of odontogenic origin. They are considered to be hamartomatous malformations rather than true neoplasms and are generally asymptomatic. It is considered as a developmental anomaly resulting from the growth of completely differentiated epithelial and mesenchymal cells that give rise to ameloblasts and odontoblasts. These tumours are formed of enamel and dentin, but they can also have a variable amount of cementum and pulp tissue. Odontomes manifest in various ways, such as impacted or unerupted tooth, associated with infection and as swellings in oral cavity. We are presenting a case series were odontomes have clinically manifested in various ways.

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Introduction

Odontomes by definition alone refers to any tumour of odontogenic origin. They are considered as developmental anomalies rather than true neoplasm[1]. The term odontoma was first coined by Broca in 1866, who defined it as a tumour formed by overgrowth of complete dental tissue. Odontoma has also been defined as "a tumour that has developed enough to produce enamel and dentin". Though these tumours are formed of enamel and dentin, they can also have variable amount of cementum and pulp tissue.[1]

Most of the odontomes are asymptomatic, although occasionally signs and symptoms relating to their presence do occur. These generally consist of unerupted or impacted teeth, retained deciduous teeth, swelling, cystic changes around the odontome and evidence of infection.[1]

According to W.H.O. classification[2] odontomes can be divided into three groups:

1. Complex odontome - when the calcified dental tissues are simply arranged in an irregular mass bearing no morphologic similarity to rudimentary teeth.
2. Compound odontome - composed of all odontogenic tissues in an orderly pattern that results in many teeth-like structures, but without morphologic resemblance to normal teeth.
3. Ameloblastic fibro-odontome - consists of varying amounts of calcified dental tissue and dental papilla like tissue, the later component resembling an ameloblastic fibroma. The ameloblastic fibro-odontome is considered as an immature precursor of complex odontome.

Odontomas are also classified as intraosseous and extraosseous odontomas. The intraosseous odontomas occur inside the bone and may erupt into the oral cavity. The extraosseous or peripheral odontomas are odontomas occurring in the soft tissue, covering the tooth bearing portion of the jaws and having a tendency to exfoliate[3, 4]

Case series

Case I (Odontome with cystic changes associated with unerupted or impacted tooth)

12 year Male patient reported to our department with complains of absent tooth in upper anterior region. On examination 12, 13 was missing (Fig 1). Occlusal X-ray and OPG showed an odontome at this region preventing eruption of 12 and 13. The odontome also showed widened follicular space on the x-ray (Fig 2). A mucoperiosteal flap was raised and lesion was excised. Fig 3 shows the impacted 12 which was visible after excision of the odontome.

CASE II (Odontome manifesting as swelling in oral cavity)

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Fig. 1 Clinical photo showing edentulous ridge

Fig. 2 Occlusal Radiograph showing the odontome

Fig. 3 Impacted upper lateral incisor seen after the lesion is excised

Fig. 4 Clinical photo of palatal swelling on the right side

Fig. 5 OPG showing the odontome causing the palatal swelling.

Fig. 6 OPG showing odontome in relation to left angle of mandible

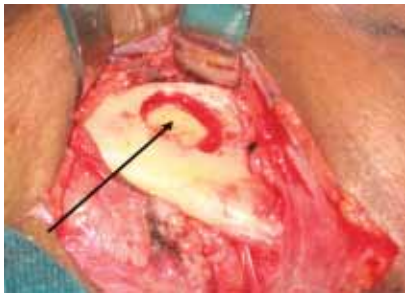

Fig. 7 Odontome exposed via Risdons Submandibular Incision

Fig. 8 Clinical photo showing erupted Odontome

Fig. 9 OPG showing the erupted odontome

23 year Male patient reported with palatal swelling. On examination a swelling measuring about 1x1.5 cm, on palatal region of 11, 12, 13 was seen (Fig 4). Overlying mucosa was slightly blanched. OPG shows odontome in relation to 11, 12, 13 (Fig 5). The lesion was excised via palatal approach.

CASE III (Odontome associated with infection)

45 year Female patient reported with pus discharge on left mandibular angle region. Intra orally pus discharge was seen in 38 region. OPG showed odontome in relation to 38 (Fig6). Risdons submandibular incisions was placed and the lesion was excised under general anaesthesia (Fig 7).

CASE IV (Odontome erupted into the oral cavity)

23 year Male patient reported with complains of malformed teeth erupting into oral cavity. On examination a swelling was seen in relation to buccal aspect of 11, 12. The odontome had erupted into the oral cavity and appeared as two teeth (Fig 8). OPG showed impacted 13, 14 and the retained 53 (Fig 9)

Discussion

Odontomas constitute about 22% of all odontogenic tumours of the jaws[6]. The complex odontomas are usually located in the posterior mandible, while composite odontomes are more often found in the anterior maxilla.[5, 6] Complex odontome are seen less common in comparison with compound variety in the ratio 1:2.[3, 6]

The exact etiology of odontomes is uncertain. Local trauma, infection, growth pressure, hereditary and developmental influences have been suggested as possible causes.

Hitchin suggested that odontomes are inherited or are due to a mutagene or interference, possibly postnatal, with the genetic control of tooth development.[6] The etiology of odontome is that most result from extraneous odontogenic epithelial cells.

Clinicians need to be focused on various minute details, as most of odontomas are asymptomatic. Bony expansion, delayed eruption and displacement of teeth may also be noted[7], in some cases as it was seen in case I where the tooth was impacted. Clinicians need to diagnose it and treat it appropriately as odontomes in the path of tooth eruption results in impacted tooth. In this case odontome also had cystic changes. The cyst lining was enucleated along with the excision of the odontome.

Occasionally odontomes present as swelling, as it was seen in case II where the swelling was noticed in palatal aspect. Pain, suppuration or pus discharge could be another presenting feature of odontome as it was seen in case III where the pus discharge was noticed in relation to 38. Literature reports of recurrent infection associated with odontomes is well documented.[8]

Rarely the odontomes may itself erupt into the oral cavity as in case III. The odontome erupted as malformed tooth, clinically giving an impression of two teeth when the actual teeth were impacted. Previous incidents of odontomes erupting into oral cavity has also been reported in literature [3]

The radiographic characteristics of odontomes are always diagnostic. The lesion consists of well defined radio-opacity surrounded by a radiolucent halo, which represents an enlarged cystic follicle. In compound odontome multiple teeth like structures of varying size and shape are seen. Complex odontomes are seen as irregular radiodense masses with no resemblance to dental structures. Radiographically three different development stages can be identified depending on the degree of odontoma calcification. In the first stage the lesion appears radiolucent due to the lack of calcification, intermediate stage is characterized by partial calcification; and in the final stage the odontoma appears radio-opaque which is surrounded by a radiolucent halo.[3,5,8,9] Odontomas are treated by conservative surgical excision and there is little possibility of recurrence.[10]

Kaban states that odontomas are easily excised, and adjacent teeth that may have been displaced by the lesion are seldom harmed by surgical excision because they are usually separated by a septum of bone.[11]

Conclusion

An odontoma has a limited growth potential, it sometimes produce no symptoms and is commonly identified as incidental findings on routine radiological studies. Radiographic examination of all child patients who present with clinical evidence of delayed permanent tooth eruption, retained deciduous teeth or temporary tooth displacement, should be done as early diagnosis and proper management of odontomas allows adoption of a less-complex and less-extensive treatment. It also ensures better prognosis or else it may predispose to cystic change and cause interference with eruption of permanent teeth with considerable destruction of bone.

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Management of a case of Intracapsular disorder of TMJ

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Abstract

Temporomandibular Joint Disorders (TMDs) are numerous clinical conditions involving masticatory muscles or temporomandibular joint or both. TMD is considered to be the major cause of nondental pain in orofacial region. Epidemiologic studies show that about 75% of the general population has signs and symptoms of TMD but only 2-5% has pain as the major symptom. This case report describes the effective management of a case of intracapsular disorder of TMJ with anterior reposition splint therapy and supportive therapy.

Key words: Temporo-mandibular disorders, Intracapsular disorder (internal derangement of TMJ), Anterior repositioning splint, Supportive therapy.

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Introduction

Condyle-disc complex derangements (intracapsular disorders) can be as a result of disturbances in the normal rotational function of the disc on the condyle. This alteration of normal disc movement can happen with elongation of discal collateral ligaments, inferior retrodiscal lamina and thinning of posterior border of the disc. The main causative factor considered is trauma. This can be macro trauma (blow to the jaws) or micro trauma (chronic muscle hyperactivity/ orthopaedic instability). The three types of derangements are (1) disc displacement (2) disc dislocation with reduction and (3) disc dislocation without reduction. The common symptoms associated with internal derangement are clicking and catching of the joint. These symptoms can be constant, repeatable and sometimes progressive.[1,2,3]

This case report describes the management of a case of internal derangement of left TMJ of a female patient due to trauma.

Clinical presentation

A thirty-four year old female patient reported to TMJ Clinic of Pushpagiri College of Dental Sciences, Tiruvalla with pain in relation to left pre-auricular region and left ear for the last two months. This pain was felt shortly after biting on a hard guava fruit. Pain was present throughout the day, which was aggravated during chewing. She had consulted an ENT surgeon for this pain. Since the pain was not subsiding, the patient was sent for dental consultation. The patient was initially seen by a maxillofacial surgeon, who recommended soft diet, analgesic and an anti-inflammatory gel for topical application. As there was no significant improvement, the patient was referred to the TMJ clinic (Fig. 1).

History taking revealed that she had a preference to chew on the left side.

On examination, there was tenderness in relation to left preauricular region, left masseteric region and left lateral pterygoid region. Temporo-mandibular joint examination revealed that opening click was present in relation to left TMJ and there was deviation of mandible to left on mouth opening. OPG (Fig 2) shows decreased inter articular space of left TMJ due to anterior disc displacement.

Diagnosis and treatment planning

The patient was diagnosed as having internal derangement of left TMJ (Disc displacement) with associated myospasm of left lateral pterygoid and masseter muscles. It was decided to fabricate an anterior repositioning splint in relation to the maxillary arch (Fig. 3, 4)..

The patient was advised to wear the splint especially at night for about three months. She was also asked to continue with the supportive treatment like topical application of anti-inflammatory gel, massaging and moist heat application over the left masseteric and preauricular region. She was advised to take soft foods, to chew slowly and to make smaller bites[1]. She needed to take sufficient rest, nutritious food and to sleep six to eight hours a day which would help in early recovery.

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Fig. 1 The patient with intracapsular disorder of left TMJ

Fig. 2 Orthopantamogram

Fig. 3 Patient with anterior repositioning splint

Fig. 4 Anterior repositioning splint

When the person was recalled after one week, the muscle pain and earache was markedly reduced. After two months, when recalled, opening click and deviation of mandible to the left on opening was also not discernable. When the patient returned in four weeks time, she was totally asymptomatic. After one year of follow up, the patient remains symptom free.

Discussion

Disc displacement especially in an anterior direction can occur due to contraction of superior lateral pterygoid muscle combined with elongation of discal collateral ligaments, inferior retrodiscal lamina, main cause being trauma. When the anterior pull of superior lateral pterygoid is constant, thinning of posterior border of the disc can occur, positioning the disc more anteriorly. Since condyle is located in a more posterior position to the disc, during mouth opening, condyle makes an abnormal translatory shift over the thinned posterior border resulting in a click (single click) or during both opening and closing (reciprocal click). Clinical examination reveals joint sounds during opening and closing. Traumatic history is usually seen associated with the onset of joint sounds.

It has been observed that hard splints were more effective in the treatment of intracapsular disorders compared to soft splints[4,5]. So we decided to give a hard anterior repositioning splint, a removable appliance made of hard acrylic that fits over the occlusal and incisal surfaces of the teeth in one arch and creates precise occlusal contact with the teeth of the opposing arch with the mandible in a slightly protruded position from centric relation. This position is the shortest anterior position from centric relation position which eliminates the symptoms like pain and clicking.[1] They can also be used to introduce an optimum occlusal condition that reorganizes the neuromuscular reflex activity and this in turn reduces abnormal muscle function[6,7,8]. Occlusal appliances in effect protect the teeth and supportive structures from abnormal forces that may create breakdown, tooth wear, or both[9,10].

Successful management of a case of intracapsular disorder depends on early diagnosis and management. Traumatic history is usually present. In this case, the patient biting on a hard object between left upper and lower teeth might have caused the disease and patient's preference to chew on the left side surely aggravated this condition. The anterior repositioning splint has proved to be effective in providing good pain relief. The supportive therapy aided in the faster recovery of the patient by preventing the masticatory muscles from being overworked in fatigued condition.

Conclusion

Since TMD is the most common cause of orofacial pain, every practising dentist must understand its signs, symptoms and its possible collateral effects on the teeth, the TMJs and the musculature. Thorough careful history taking, examination, diagnosis and treatment planning of each TMD case, we can surely ameliorate the sufferings of these patients.

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Nanotechnology in Dentistry

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Abstract

Current trends in developing novel technology for medical and dental patient care has evolved nano particle, which has solved many critical problem where conventional materials, drugs were unsucessful. Thorough research had applied nanotechnology in various fields of dentistry to enhance and maximize patient care. The name nano implies very small or tiny, small tiny molecules less than size of nucleus of a cell can perform vast majority of functions.

Key words: nanotechnology, nanoparticles

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Introduction

Researchers are looking for ways to use microscopic devices entities to perform tasks that are now done by hands or with equipment. This concept is known as nanotechnology. Tiny machines, known as nano assemblers, could be controlled by computer to perform specialized jobs. The nano assemblers could be smaller than a cell nucleus so that they could fit into places that are hard to reach by hand or with other technology. Used to destroy bacteria in the mouth that cause dental caries or even repair spots on the teeth where decay has set in, by use of computer to direct these tiny workers in their tasks. This saves time, energy, space needed for the machine, cost effective, durability.

The various nanoparticles are

1. Nanopores
2. Nanotubes
3. Quantum dots
4. Nanoshells
5. Dendrimers
6. Liposomes
7. Nanorods
8. Fullerenes
9. Nanospheres
10. Nanowires
11. Nanobelts
12. Nanorings
13. Nanocap

Diagnosis and treatment will be customized to match the preferences and genetics of each patient. Treatment options will become more numerous and exciting. It will demand, even more than today, the best technical abilities, professional skills that are the hallmark of the contemporary dentistry. Developments are expected to accelerate significantly Technology is be able to target specific cells in a patient suffering from cancer or other life threatening conditions. Toxic drugs used to fight these illnesses would become much more direct and consequently less harmful to the body.

Oral medicine radiology

Nano diagnostics – is the use of nano devices for the early disease identification or predisposition at cellular and molecular level. In ***in-vitro*** diagnostics, nano medicine could increase the efficiency and reliability of the diagnostics using human fluids saliva or tissues samples by using selective nano devices, to make multiple analyses at sub cellular scale, In ***in vivo*** diagnostics, nano medicine could develop devices able to work inside the human body in order to identify the early presence of a disease, to identify and quantify toxic molecules, tumor cells. The non pyrogenic nanorobots used in vivo are bulk teflon, carbon powder and monocrystal sapphire. Pyrogenic nanorobots are alumina,silica and trace elements like copper and zinc. If inherent nano device surface pyrogenicity cannot be avoided, the pyrogenic pathway is controlled by in vivo medical nanorobots. Nanorobots may release inhibitors, antagonists or down regulators for the pyrogenic pathway in a targeted fashion to selectively absorb the endogenous pyrogens, chemically modify them, and then release them back into the body in a harmless inactivated form.

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Oral surgery

. When the first micro-size dental nanorobots can be constructed, dental nanorobots might use specific motility mechanisms to crawl or swim through human tissue with navigational precision, acquire energy, sense, and manipulate their surroundings, achieve safety to penetration and use any of the multitude techniques to monitor, interrupt, or alter nerve impulse traffic in individual nerve cells in real time.These nanorobot functions may be controlled by an on board nanocomputer that executes preprogrammed instructions in response to local sensor stimuli. Alternatively, the dentist may issue strategic instructions by transmitting orders directly to *in vivo* nanorobots via acoustic signals or other means they can specifically useful in treating MPDS, Trigeminal Neuraligias, early cancer detection

Local nanoanaesthesia. In the era of nanodentistry a colloidal suspension containing millions of active analgesic micron-size dental robots will be instilled on the patient's gingiva. After contacting the surface of crown or mucosa, the ambulating nanorobots reach the pulp via the gingival sulcus, lamina propria and dentinal tubules. Once installed in the pulp, the analgesic dental robots may be commanded by the dentist to shut down all sensitivity in any particular tooth that requires treatment. After oral procedures are completed, the dentist orders the nanorobots to restore all sensation, to relinquish control of nerve traffic and to egress from the tooth by similar pathways used for ingress.

Prosthodontics

Impression materials. Nanofillers are integrated in vinyl polysiloxanes, producing a unique addition of siloxane impression materials. The material has better flow, improved hydrophilic properties and enhanced detail precision. Nanotechnology has improved the properties of various kinds of fibers Polymer nanofibers with diameters in the nanometer range, possess a larger surface area per unit mass and permit an easier addition of surface functionalities compared to polymer microfibers. Polymer nanofiber materials have been studied as drug delivery systems, scaffolds for tissue engineering and filters. Carbon fibers with nanometer dimensions showed a selective increase in osteoblast adhesion necessary for successful orthopedic/dental implant applications due to a high degree of nanometer surface roughness, Nano fillers are integrated in the vinyl siloxanes, producing a unique addition siloxane impression material. Better flow, improved hydrophilic properties, hence fewer voids at margin and better model pouring, enhanced detail precision.

Implants..the most frequent cause of failure of implants is insufficient bone formation around the biomaterial immediately after implantation. consequently most recent modification in implant design have been geared towards reducing the need to wait before loading. current surfaces chemistry and morphologies are controlled at best on the micron level, but the tissue response is mainly dictated by process controlled at nanoscale level. understanding and controlling interfacial reaction at nano level are vital to developing new implant surface but will prevent rejection and promote adhesion and integration to surrounding tissues.

First promising avenue is through surface engineering that would include nanoscale topography and or coatings for better and faster osseointegration of implants designed to function at the lifetime of the individual. Second challenge is to develop a new generation implant materials that will combine the advantage of ceramics, in particular their inertness with a mechanical response comparable to the dental implant alloy. Poor fracture resistance has hampered their commercial use. This is problem when designing porous implants or implants with rough and porous surface for better osseointegration. Through new fabrication technologies disadvantages may be overcome. Programmed dissolution rates is novel coatings of implants surface can be programmed to dissolve at different rates. The presence of highly soluble phase markedly decreased mechanical stability of the coatings in vivo but some solubility of coatings material expediates fixation. Graded coatings designs with soluble surface to facilitate loading to bone and an insoluble layer is in contact with the metal to provide adhesion, corrosion resistance and long term mechanical stability. Drug delivery provide local dose of anti-inflammatory agents that' is gradually released from a coatings on the surface of implanted device, adavantage is that drug can be released at the implant site without travelling blood stream. mainly transforming growth factor tgf b may be delivered locally.

Anodic oxidation, glass coatings, plasma spray, radiofrequency glow discharge, sol-gel interactions, these techniques apply this layers of coatings of osteogenic potential materials. Thin coatings are more resistant to cracking and delamination as coatings are at submicron level..l.

Orthodontic treatment.

Orthodontic nano robots could directly manipulate the periodontal tissues, allowing rapid and painless

tooth straightening, rotating and vertical repositioning within minutes to hours. optiflex impregnated with nano composite materials is revolutionary in orthodontics.. complete orthodontic realignments during a single office visit

Periodontics, Dental hypersensitivity. Natural hypersensitive teeth have eight times higher surface density of dentinal tubules and diameter with twice as large than non sensitive teeth. Reconstructive dental nanorobots, using native biological materials, could selectively and precisely occlude specific tubules within minutes, offering patients a quick and permanent cure On reaching the dentin, the nanorobots enter dentinal tubular holes that are 1 to 4 ¼m in diameter and proceed toward the pulp, guided by a combination of chemical gradients, temperature differentials and even position of navigation, all under the control of the onboard nano computer as directed by the dentist. There are many pathways to travel nanorobots from dentin to pulp. Because of different tubular branching patterns, tubular density may present significant challenge to navigation. Assuming a total path of length of about 10 mm from the tooth surface to the pulp and a modest travel speed of about100 ¼m\second. Nanorobots can complete the journey into the pulp chamber in approximately 100 seconds. The presence of natural cells that are constantly in motion around and inside the teeth including human gingival, pulpal fibroblasts, cementoblasts, odontoblasts, and bacteria inside dentinal tubules,lymphocytes with in the pulp or lamina propria suggests that such journey be feasible by cell-sized nanorobots of similar mobility

As nanorobots pass through the journey of enamel, dentin reaches into pulp. Once installed in the pulp, having established control over nerve impulse traffic, the analgesic dental nanorobots may be commanded by the dentist to shutdown all sensitivity in selected tooth that requires treatment. When the dentist passes the icon for the desired tooth on the hand held controlled display monitor, the immediately anesthetized. After the oral procedure are completed, the dentist orders the nanorobots via the same acoustic data links to restore all sensation, to relinquish control the nerve traffic and to retrieve from the tooth via similar path. This analgesic technique is patient friendly as it reduces anxiety, needle phobia, and most important one is quick and completely reversible action Nanorobotic dentifrice (dentifrobots) delivered by mouthwash or toothpaste could patrol all supragingival and subgingival surfaces at least once a day metabolizing trapped organic matter into harmless and odorless vapors and performing continuous calculus debridement

Conservative dentistry

Nanodentistry will make possible the maintenance of comprehensive oral health by employing nanomaterials, including tissue engineering, and ultimately,dental nanorobots. New potential treatment opportunities in dentistry may include: local anaesthesia, dentition renaturalization, and permanent hypersensitivity cure, visit, covalently bonded diamondised enamel, and continuous oral health maintenance using mechanical dentifrobots

Nanocomposites. Nanoproducts Corporation has successfully manufactured non agglomerated discrete nanoparticles that are homogeneously distributed in resins or coatings to produce nanocomposites. The nanofiller used include an alumino silicate powder having a mean particlesize of 80 ran and a 1:4 M ratio of alumina to silica and a Superior hardnes Superior flexural strength, modulus of elasticity andtranslucency50% reduction in filling shrinkage Excellent handling properties are advantages tooth. reimplanataion, tooth revasularisation,tooth stem cells preservation are all possible through nano technology.nano technology creates an atmosphere similar to in vivo biologic environment conducive for neo tooth formation.Dentin bonding agents using nanotechnology bond with dentin and composite restorative material forming firm bond,better then the conventional ones.

Tooth durability and appearance. Durability and appearance of tooth may be improved by replacing upper enamel layers with covalently bonded artificial materials such as sapphire or diamond, which have 20-100 times the hardness and failure strength of natural enamel or contemporary ceramic veneers and good biocompatibility. Pure sapphire and diamond are brittle and prone to fracture, can be made more fracture resistant as part of a nanostructured composite material that possibly includes embedded carbon nanotubes.

Conclusion

Nanotechnology will change dentistry, healthcare, and human life more profoundly than many developments of the past. As with all technologies, nanotechnology carries a significant potential for misuse and abuse on a scale and scope never seen before. However, they also have potential to bring about significant benefits, such as improved health, better use of natural resources, and reduced environmental pollution.eco green dentistry.. Current work is focused on the recent developments, particularly of nanoparticles and nanotubes for

periodontal management, the materials developed from such as the hollow nanospheres, core shell structures, nanocomposites, nanoporous materials, and nano membranes will play a growing role in materials development for the dental industry. Nano medicine needs to overcome the challenges for its application, to improve the understanding of pathophysiologic basis of disease, bring more sophisticated diagnostic opportunities, and yield more effective therapies and preventive properties. Technology has been boon to medical and dental sciences..the on going research by scientist explores various methods to minimize cost, save energy, space for the material, coast effective, less pollution, less time consuming. The evolution of nanotechnology will help the dentist and dental graudates with more precission made materials, drugs, equipments, by which patient compliance and safety are enhanced.. Molecular technology is destined to become the core technology underlying all of 21st century medicine and dentistry.

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Foleys assisted excision of dermoid cyst of the floor of mouth

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Abstract

In this article, we present a case of excision of dermoid cyst in the floor of the mouth facilitated by the use of a Foleys catheter.

Keywords: Dermoid cyst, Foleys Catheter

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Introduction

Dermoid cysts are developmental cysts arising from entrapped midline ectodermal tissue lined by epidermis with skin appendages in the fibrous wall. They are uncommon in the oral and maxillofacial region [only 2% of all dermoid cysts[1]. Taylor et al [1966] reported a frequency of 6.5% in the floor of the mouth. Longo et al [2003] reported a male: female ratio of 3:1[2]. Surgical excision is the treatment of choice as the cyst can create difficulty in speaking, eating, breathing, closing the mouth and affect aesthetics. There are also reports of carcinoma arising from the cyst lining.[3] Excision resolves a dermoid cyst without recurrence.[1]

Case report

A 17 year old girl presented with a swelling in the floor of the mouth and below the chin of 1 month duration. There was no history of trauma. On examination, a single, soft, nontender, nonfluctuant swelling was seen in the floor of the mouth crossing the midline of 4x3 cm size. Mucosa over the swelling was normal. [fig 1] Swelling was palpable in submental region. A USG examination showed 4.5cm x4.3cm x 4.1cm thick walled cystic lesion with low level internal echoes deep to mylohyoid with no significant vascularity. An incision biopsy was done via floor of mouth revealing a cheesy material and cystic lining. HPR suggested dermoid cyst. Surgical excision of the lesion was planned.

Under GA, incision was placed on the floor of the mouth extending from 34 to 44 region. Soft tissue dissection was done and Cystic lining identified. The cyst however had a ruptured lining due to the incision biopsy. Dissection was further complicated by fibrous adhesion of the cyst to the surrounding tissues. To ease dissection, a 10F Foleys catheter was inserted through the ruptured lining and inflated with saline. This helped in restoration of the contour of the cyst as well as holding the cyst during dissection.[fig 2] The cyst was removed in toto. [fig3, fig4]. Closure was done using 3-0 vicryl. Postoperative period was uneventful. HPR revealed dermoid cyst.

Discussion

There are several ways of facilitating the intraoral excision of dermoid cyst. Dermoid cyst can be excised using endoscopic approach intraorally[4]. Some authors describe aspiration of the fluid contents to ease the excision of large cysts[5]. Yet others describe injecting the cyst with soft tissue liner or alginate to reinflate it facilitating its removal.[3]

The Foleys catheter has several applications in oral and maxillofacial surgery. It has been used for control of postnasal bleeding,[6] retraction for operations in the floor of mouth and tongue[7], zygoma fracture stabilization[8], midface fracture reduction[9], orbit floor reconstruction [10], tamponade of facial hemorrhage[11], tissue expansion procedures[12] etc. Introducing the foleys into ruptured cysts and inflating it restores the contour of the cyst and aids in dissection and excision. There are several advantages of using this procedure. The balloon can be inflated of deflated at will for easy surgical removal. Using soft tissue liners or alginate can become cumbersome as there are chances of extrusion of the same

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Fig 1: Dermoid Cyst in the floor of the mouth

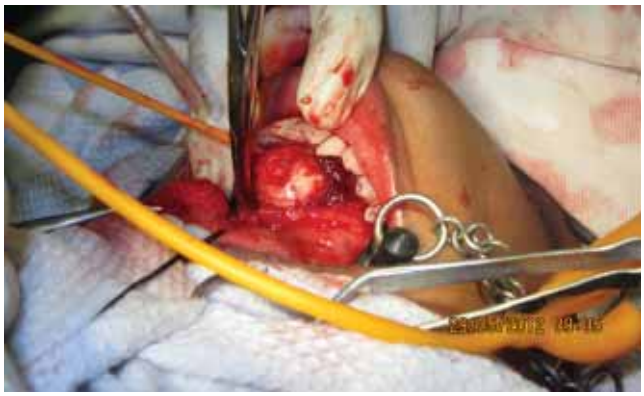

Fig 2: Foley assisted dissection of the cyst

Fig 3: Inflated Foleys balloon in the cyst

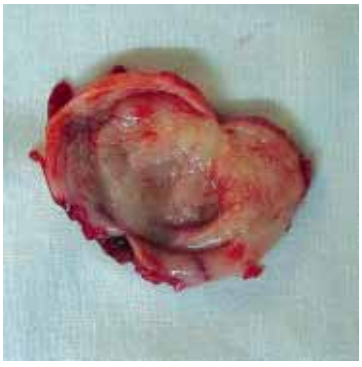

Fig 4: Excised Dermoid Cyst

into the adjacent soft tissues if the cyst lining has undetected perforations. Further allergic reactions to alginate have been reported.[13]

Conclusion

The uses of Foleys catheter are versatile. There may be several unpublished uses of the Foleys catheter. The Foleys catheter can also be used for aiding the dissection of soft tissue cysts not only in the oral cavity but also in other regions of the head and neck.

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Management of failures in crown and Bridge – over view

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Abstract

With a high level of maintenance, it is said that a fixed partial denture or crown will have the duration of a decade on an average. The signs and symptoms of fixed partial denture failures are varied and often complex. The success rate is not only dependent upon the clinician's skill, but also needs patient's co-operation to a greater extent. So the clinician has to educate the patient about the importance of good oral hygiene and recall check ups.

Key Words: fixed partial denture, failures

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Introduction

Fixed prosthodontic failures are varied and complex in cause and effect. Fixed prosthodontic failures can be frustrating and complex in terms of both diagnosis and treatment. One can define failure as an inability to meet or satisfy objectives[1]. The objectives of fixed prosthodontic treatment include: (1) preservation or improvement of related hard and soft tissue structures: (2) preservation or improvement of oral functions (3) improvement or restoration of esthetics; (4) ensuring restoration, retention, resistance, and stability; (5) providing restorations with mechanical or structural integrity; (6) preserving or improving patient comfort; and (7) designing restorations for maximum longevity.

When a crown or FPD fails, the primary question is whether the problem can be easily resolved, or requires extensive rehabilitation and reconstruction[2,3]. A mild failure may be considered one that is generally correctable with out having to remake the restoration. More severe failures can result in the loss of supporting teeth. If a patient is fortunate, other teeth may be available to serve as abutments for an FPD replacement. Occasionally, the loss of a strategic tooth results in a situation in which a conventional fixed prosthetic replacement is no longer possible. Other means of replacement, such as a removable partial denture or dental implants, may be considered.

Classification

A system for classifying fixed prosthodontic failures is important for a variety of reasons. Thorough assessment of the cause and severity of failure is valuable for patient education and retreatment planning. Also, a comprehensive classification system[4,5,6,7] would facilitate interoperator discussions and offer an improved method for standardizing studies and surveys concerned with failures. Failures can be grouped into 6 categories, with severity increasing from Class I to Class VI (Table I).

Prevention of failures

- Caution at the planning stage
- Refusal to construct crown or bridge in the circumstances where risks are considered to be unacceptable.
- Careful planning after examination of the patient, the radiograph, study casts and an effective communication with technician.
- Recognizing the pre-operative problems such as caries and periodontal diseases

Causes of FPD failures and their management

This article briefly discusses nine general factors that cause F.P.D. failure and their management.

1. Caries

This is the most common cause of an F.P.D. failure. This can result from poor oral hygiene, diet, and poor design and fit of a crown and bridge. The dentist should look for oral hygiene and effectiveness of plaque control on every recall check ups and also changes in diet i.e. increased intake of sugar, sticky foods like chocolates, pastries etc.

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Class	*Description*
Class I	Cause of failure is correctable without replacing restoration
Class II	Cause of failure is correctable without replacing restoration, however supporting tooth structure or foundation requires repair or reconstruction
Class III	Failure requiring restoration replacement only. Supporting tooth structure and/or foundation acceptable.
Class IV	Failure requiring restoration replacement in addition to repair or reconstruction of supporting tooth structure and/or foundation
Class V	Severe failure with loss of supporting tooth or inability to reconstruct using original tooth support. Fixed prosthodontic replacement remains possible through use of other or additional support for redesigned restoration.
Class VI	Severe failure with loss of supporting tooth or inability to reconstruct using original tooth support. Conventional fixed prosthodontic replacement is not possible

Table I.: *Grading of failures based on severity*

As a result of poor fit of crown, carries can develop in the exposed regions of the abutment tooth. Sometimes the extent of caries becomes problematic, in such cases the entire carious dentine should be removed after removing the crown and replace with entire new restoration. Incidences of root caries are also becoming more nowadays and are seen in exposed root surfaces. Some studies show that an organism called Actinomycoses viscoses causes these, and it is said that it is seen in filiform papillae of tongue. Some investigators suggest that tongue brushing twice a day can be of some use. An interesting fact is that majority of root caries are seen in elderly patients. Xerostomia caused by aging or radiation or reaction of some medicine can also cultivate a friendly habitat for caries development. Cultivating a disease-free oral environment is most important.

2. Periodontal Problems

In crown and bridge restorations with faulty margins, periodontal problems are sure to happen. Even the perfect crown surface margins that are placed subgingivally can sometimes elicit periodontal problems due to accumulation of plaque[8]. Like wise over contoured restoration encroaching on periodontium causes stagnation of food particles and plaque accumulation resulting in gingival inflammation leading to periodontal breakdown. So on patient recall visits the clinician should check for signs sulcular hemorrhage, furcation involvement and plaque formations.. Such conditions unnoticed will lead to periodontal break It is wise to recontour or replace faulty or over contoured restorations for a good oral harmony.

3. Pulpal and Periapical Problems

This happens due to an unattended deep caries or a secondary caries or loss pulp vitality as a result of chronic inflammation during cementation that leads to pulp degeneration[9]. In such suspected cases the vitality should be checked through thermal tests etc. If it is to be treated provided the margins are caries free and the cement seal is intact, root canal treatment should be done through the crown surface without removing the crown.

4. Failure due to inadequate proximal contacts

When proximal contacts are not properly maintained, food impaction will take place in proximal spaces, leading to inflammation of periodontal ligaments resulting in drifting of tooth causing occlusal disharmonies. This can cause undesirable deleterious forces on dentition that make the condition worse.

5. Failure due to cementation

Failure due to cementation can be divided into three for convenience

a. Wrong cement used for cementation

b. Incorrect cementation procedures.

c. Loosing of retainers from abutment due to inadequate retention.

6. Failure due to mechanical breakdown of components

In a metal ceramic restoration fracture can occur in the metal joint due to inadequate thickness. Fracture of porcelain facing can occur due to biting on a hard object or when opposing cusps comes in contact as result of generation of unpleasant leverage or in contact sports[10]. Overbuilt porcelain with unsupported metal substructures in a metal ceramic crown can fracture due to cohesive failure within the porcelain.

7. Failure due to flexure of retainers

This happen mainly with retainers made of gold alloys[11]. This occurs when retainers are too thin or

covers only a part of tooth. In such cases occlusal stresses flexes the restorations resulting in breakage of cement seal.

8. Failure due to occlusal disharmony

A faulty occlusion means a bridge is in supraocclusion or premature contacts in conditions other than normal, then the torque or forces directed towards restoration and periodontium will be very hazardous resulting in eventual failure of restoration[12]. So providing harmonious occlusion is very important for the success of the restoration.

9. Failure due to wear and tear

Failure due to wear and tear is nobody's mistake. It happens over a period of time. It can be enhanced due to chewing habits, parafunctional habits like bruxism, and type of diet.

Bridge failures

In the case of bridges, compared to single unit crown more periodontal tissues and greater surface area are involved, so additional problems and possibilities of failure exists.

1. Loss of retention

This is one of the most common failures. This is due to the unequal occlusal loads and leverage on different parts of bridge. It is better for the tooth without crown than to have a loose retainer. The combined effect of plaque, saliva and pushing action of loose retainer invites caries and leads to the destruction of the abutment tooth. Another cause of loss of retention is lack of near parallelism of abutment walls or too short walls that are subjected to adverse stress during mastication[13].

2. Caries

As discussed earlier the caries of any of the abutment is another reason for bridge failures. Patients should be educated well regarding plaque control and other measures to practice good oral hygiene in order to prevent caries.

3. Design faults

Design faults like overextended restoration and inadequate spacing of retainer and pontic can cause destruction of supporting tissues[14]. If adequate space is not given for interdental papilla, it can cause food impaction leading to soft tissue damage and carries

4. Failure seen in resin bonded bridges

In the case of resin bonded bridges, the commonest failure is retainer debonding. Appropriate case selection, adequate tooth preparation, correct bonding techniques, and establishment of correct occlusal contacts are very important to avoid this mistake. The debonding can occur in metal resin interface or cohesive failure in resin cement. If failure is identified correctly the bridge is corrected or remade completely and cemented.

Conclusion

After the cementation of a fixed partial denture, recall appointments are to be planned to monitor patient's dental health, encourage meticulous plaque control habits, identify any incipient disease and implement corrective treatment measures before irreversible damage occurs. Restored teeth require more diligent plaque removal and maintenance than healthy unrestored teeth. If we recognize and avoid the factors that cause failure, we can look forward to a long term durable fixed restoration.

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The lower vertical trapezius myocutaneous flap for the reconstruction of posterior head and neck defects - A tertiary cancer centre experience

* Shaji Thomas, ** Bipin T. Varghese, *** Shiv Prasad Sharma, **** Paul Sebastian

Abstract

Radical resections for head and neck tumours can lead to devastating cosmetic and functional morbidities causing a major impact on the quality of life of the survivors. Reconstruction of major defects of head and neck region continues to be demanding and challenging for the plastic surgeons. Free flaps and pedicled pectoralis major flaps are the commonest reconstructive options for these major defects. Vertical lower trapezius myocutaneous flap is a safe and reliable option for reconstructing defects in the posterior neck, occipital region and parotid region with minimal morbidity and good cosmetic outcome.

Keywords: Trapezius, myocutaneous flap, Head and neck reconstruction

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Introduction

The trapezius muscle is the source of three myocutaneous flaps used in head and neck reconstruction: the superior trapezius flap, the lateral island trapezius flap, and the inferior or lower island trapezius flap (1). These flaps are used for lateral neck and lateral skull defects when a free vascularized flap is not considered. A great deal has been written about the vascular supply to the trapezius and the overlying skin. The transverse cervical artery is the branch of thyrocervical trunk arising from the first part of subclavian artery. It divides into superficial and deep branches at the posterior aspect of the posterior triangle.

The superficial branch gives an ascending and descending branches on the under surface of the muscle. The former supplies the superior trapezius along with the occipital and paraspinous vessels. The descending branch supplies mid and lower trapezius muscle along with the overlying skin. The deep branch, also called dorsal scapular artery runs under the rhomboid muscles. This may have a separate origin than transverse cervical from subclavian artery. This artery sends a branch into the trapezius, which emerges between the rhomboid major and minor contributing to the blood supply of lower trapezius muscle and overlying skin (1,2).

Materials and Methods

The lower trapezius myocutaneous flap was used for reconstructing major defects in the posterior aspect of neck, occipital and parotid region for nine patients after resecting tumours of these regions from December 2006 to December 2011. Of this 4 patients had recurrent squamous cell carcinoma, 3 patients had soft tissue sarcoma in scalp and posterior neck and 1 had fungating parotid tumour involving pinna and 1 patient had radical excision for a recurrent skin appendageal tumour in the posterior scalp and nape of neck. Five patients were males and 4 were females.

Reach of the flap, flap survival, cosmetic and functional outcome and donor site and functional morbidities were assessed. All nine

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Fig. 1 Clinical appearance of the tumor

Fig. 2 MRI view

Fig. 3a Intra-op view

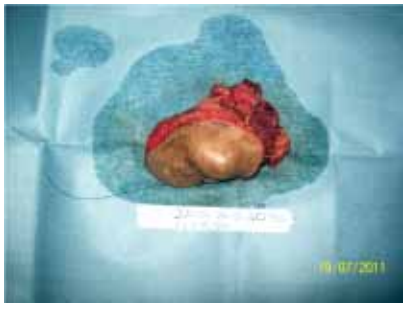

Fig. 3b Surgical specimen

Fig. 3c Recipient site after radical excision

Fig. 4a Donor area marked

flaps survived well. One patient had prolonged serous drainage through the drain. All donor sites were closed primarily after mobilization. The upper fibres of trapezius were preserved in all these patients. All patients had good cosmetic and functional outcome. Two patients with soft tissue sarcomas developed local recurrence in the follow up period.

Flap Elevation

The lower trapezius myocutaneous flap skin island is designed in the inferior part of the trapezius muscle between the vertebral column and the scapula. When greater reach is needed lower part of the island can be extended over the latissimus dorsi muscle as a random area. The skin island is incised up to the muscle. The medial muscle fibres of trapezius are divided after exposing the muscle and the flap is elevated towards the neck. At the inferior angle of scapula care must be taken to separate the trapezius fibres from the rhomboid muscles. Then the flap is elevated proximally. Whenever possible, the superior fibres of the muscle between the skull base and the acromio-clavicular joint has to be kept intact, to preserve the trapezius muscle function. In patients who had a prior neck dissection the status of the transverse cervical artery has to be confirmed. Whenever in doubt, doppler study or angiography may be done to confirm the patency of the vessel. In almost all cases donor defect can be closed primarily.

Discussion

Reconstructive options in head and neck must take into account various anatomic, esthetic and functional aspects. Since last decade, myocutaneous flaps have appeared among the most versatile and safest options for the reconstruction of defects caused by large oncological resections, in the head and neck area (3). The trapezius myocutaneous flap has a definite role in head and neck reconstruction but less widely used than pectoralis major myocutaneous flap. The primary blood supply originates from the transverse cervical artery, a branch from the first part of subclavian artery. The artery enters the lower part of neck and bifurcates in to ascending and descending branches. The descending branch of the vessel runs along the deep surface of the trapezius muscle between the scapula and the vertebral column. The perforators from the descending branch of transverse cervical artery can support island from spine of scapula to many centimeters below the inferior angle of scapula (3, 4-6).

Lower trapezius myocutaneous flap is thin, pliable and simple with a long pedicle and wide arc of

Fig. 4b Trapezius flap harvested

Fig. 5a Defect repaired

Fig. 5b After Final closure

rotation, and it is preferred for reconstructing huge soft-tissues defects in the head and neck regions simultaneously. The lower trapezius island flap is a myocutaneous flap with a constant pedicle which ensures safe flap elevation. This flap has the potential for a wider acceptance due to minor donor site morbidity, large arc of rotation, and an ample range of clinical applications in the head and neck area as an island flap as well as a free flap.

In our series of cases the flap has proved to be reliable and has a good reach for reconstruction of lower posterior scalp defects, nape of neck defects and mastoid area defects. This could be an alternate myocutaneous flap in regions not covered by pectoralis major or in females where prevention of distortion of the breast territory is desirable. There are several advantages of this flap compared to the pectoralis myocutaneous (PMC) flap. It has a thin vascular pedicle, and thus does not add excessive bulk to the neck, as the PMMC can. Also, the skin island has less subcutaneous tissue and therefore more pliability than the pectoralis major flap, which is a definite advantage for oral cavity and oro-pharyngeal defects. The trapezius flap generally has less hair than the PMMC flap, and the donor scar is better hidden. The one disadvantage could be that the patient has to be placed in the lateral decubitus position, but considering the site of defects this disadvantage can be overcome most of the times as both the resection and reconstruction can be performed without changing the position of the patient intra-op.

Conclusion

The trapezius myocutaneous flap has proved to be a beneficial adjunct in the reconstruction armamentarium for surgeons treating head and neck cancers. The flap has its greatest utility in closure of lateral craniofacial, skull base and posterior scalp defects. The lower trapezius flap is a safe, reliable flap with a constant vascular pedicle which can be raised safely. The donor site does not require skin grafting and can be closed primarily with minimal morbidity. The vertical lower trapezius myocutaneous flap is a safe and reliable reconstructive option for major defects of posterior and lateral neck and scalp defects and in the parotid region.

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Fabrication of overdenture with ceramic teeth fused to cast metal base

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Abstract

Overdentures reinforced with metal framework face constraints of space in accommodating denture base resin and teeth. In such situations, ceramic teeth can be directly built on the cast framework. A case is reported where maxillary posterior teeth were fabricated by fusing ceramic directly on to the metal base of the overdenture.

Key words : Overdentures, ceramic teeth, metal framework.

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Introduction

Overdenture is a removable partial or complete denture that covers and rests upon one or more remaining natural teeth, roots or/ and dental implants; a prosthesis that covers and is partially supported by natural teeth, tooth roots, or/and dental implants. Overdentures using natural tooth roots have several advantages, such as prevention of alveolar ridge resorption and periodontal sensory receptors. As the height of the crown is reduced and the crown-root ratio is improved, the biting force is transmitted along the long axis of the tooth[1]. The modified coronal portion of the tooth which is protected by a coping occupies considerable space in the denture base and as a result the denture base is subjected to thinning which may lead to deformation or fracture[2]. Darber et al found that the most frequent fractures of resin denture bases occurred in areas adjacent to abutment teeth in overdentures[3]. These copings may also serve as fulcrum around which the overdenture rotates and greatest strain was observed on the denture surface adjacent to the copings. Jagger et al[4] suggested that reinforcement of the denture base on top of the coping would be effective in reducing overdenture strain. These include reinforcement of acrylic with metal wire and glass fibres or by the use of a high impact resin. These reinforcements prevent fracture of the denture, distribute occlusal stress to the underlying denture-bearing areas as uniformly as possible and improve functional rigidity and stability. Very often, a metal framework is used in clinical practice to provide rigidity and reinforcement to the acrylic resin overdenture[5,6]

Overdentures reinforced with metal framework face constraints of space in accommodating denture base resin and teeth. In such situations, the only option left is to build ceramic teeth directly on the cast framework. A case is reported where maxillary posterior teeth were fabricated by fusing ceramic directly on to the metal base of the overdenture.

Case Report

A 54yr old female patient reported to the clinic with a history of frequently fractured acrylic overdentures. On examination it was found that the frequent fracturing was due to limitation of interarch space measuring 4mm(Fig. 1) Hence it was decided to incorporate cast metal framework and to make porcelain teeth directly fused to the metal base. The advantages being, it prevents fracture, improves functional rigidity and stability, and distributes occlusal stresses uniformly. As porcelain was directly fused to the metal base, the thickness of the denture including both base and teeth could be limited to 1.5mm.The anterior teeth were fabricated in acrylic. The mandibular denture was also an overdenture but there was no history of fracture related to that and hence it was decided to fabricate it exclusively in acrylic.

The clinical and laboratory steps involved in the fabrication of the cast metal reinforced overdenture with porcelain teeth fused to the

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Fig. 1 Minimal interarch space present

Fig. 2 Maxillary impression

Fig. 3 Mandibular impression

Fig. 4 Face bow transfer done

Fig. 5 Teeth arranged in a semi-adjustable articulator

Fig. 6 Trial done

Fig. 7 Resin pattern with occlusal build up

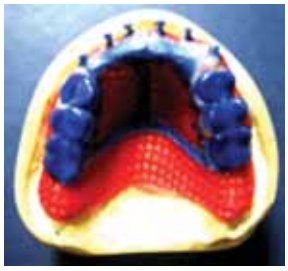

Fig. 8 Finished resin pattern for cast framework

metallic base are given below:

1. Primary impressions of maxillary and mandibular arches were made of putty elastomeric impression material.
2. Special trays for the maxillary and mandibular arches were fabricated in auto polymerizing acrylic resin, bordermoulding was done with putty elastomer and secondary impression made with light body elastomeric impression material. (Fig. 2,3)
3. Occlusal rims were made and tentative jaw relation was obtained.
4. Face bow transfer was done and maxillary cast was mounted in a semi-adjustable articulator-Hanau Wide Vue-II. (Fig. 4)
5. Centric relation was registered at established vertical dimension and the lower cast was mounted.
6. Acrylic Teeth were selected, trial denture made and it was tried on the patient. (Fig. 5,6)
7. Once the trial was approved, a putty index was made over the trial denture so that the anterior teeth could be related to the cast framework at a later stage.
8. 0.5mm thick wax spacer was adapted on the upper cast and it was duplicated.
9. On the duplicated cast a resin pattern was made for the metal framework.
10. Occlusal build up was done with inlay wax for the posterior teeth and it was placed in the articulator to check the vertical dimension. Then cutback was done to accommodate the porcelain. Pattern wax was adapted on the palate and retention tags were extended towards the anterior teeth (Fig. 7,8)
11. The finished pattern was removed from the cast, sprues were attached and invested. (Fig. 9)
12. After burn out process porcelain compatible Co-Cr alloy was used to cast the metal framework. (Fig. 10)
13. The finished metal framework was placed on the maxillary working cast and putty elastomeric impression material was adapted along the borders. Using self cure acrylic resin posterior occlusal stops were built so that vertical dimension could be verified. (Fig. 11,12)
14. The cast metal framework was then tried in the patient and relations were verified(Fig. 13)
15. Posterior occlusal stops were removed and ceramic teeth were built up directly on the metallic base. (Fig. 14)
16. After porcelain firing was completed trial was done on the patient to verify relations. (Fig. 15)
17. Acrylic anterior teeth were arranged using the putty index previously made and a complete upper and lower trial was done
18. The upper and lower dentures were processed using heat cure acrylic resin. (Fig. 16)

The maxillary overdenture with ceramic teeth fused to the cast metal framework and mandibular acrylic denture was inserted. Patient was recalled after 3 months and no complaint was raised.

Fig. 9 Sprue attached

Fig. 10 Cast metal framework

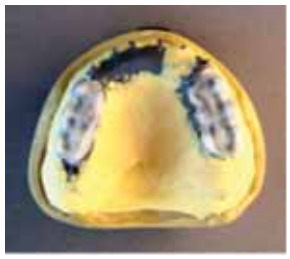

Fig. 11 Cast framework with resin occlusal stops

Fig. 12 Verifying vertical dimension

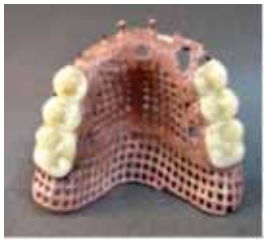

Fig. 13 Ceramic teeth built directly on the metallic base

Fig. 14 Trial done in patient to verify relations

Fig. 15 Complete upper and lower trial done

Fig. 16 Processed dentures in occlusion

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Peripheral ossifying fibroma

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Abstract

Gingiva is often the site of localized growths. Suddenly appearing and slowly enlarging gingival overgrowths interfere in normal masticatory functions besides raising suspicion about pathogenicity of the lesion and causing undue distress to the patient. Therefore, correct diagnosis and prompt treatment are essential. This article presents a clinical case of Peripheral Ossifying Fibroma (POF) in a 17 year old girl. After etiotropic therapy, the lesion was excised. The excised specimen was sent for histopathological examination which confirmed the diagnosis of POF.

Key Words: Gingiva, gingival overgrowth, peripheral ossifying fibroma, management.

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Introduction

Solitary gingival enlargements are relatively common findings usually manifesting from a reactive response to local irritation. One such condition is peripheral ossifying fibroma (POF) which appears in the oral cavity as an overgrowth of gingival tissues.[1] The condition was described by Menzel in 1872 and named as ossifying fibroma by Montgomery, in 1927. The term POF was coined by Eversole and Rovin in 1972.[2] POF is a reactive lesion composed of cellular fibroblastic connective tissue stroma, associated with the formation of randomly dispersed foci of mineralized product consisting of bone, cementum like tissue, dystrophic calcification or a combination of the aforementioned products.[1] Ossifying fibrous epulis, ossifying fibroma with calcification, cemento- ossifying fibroma and calcifying fibroma are the other terms used to describe this overgrowth.[3,4]

There are two types of ossifying fibromas; central and peripheral. The central type originates from endosteum or periodontal ligament adjacent to root apex, causing expansion of the medullary cavity, while the peripheral type occurs solely on soft tissues covering the root bearing areas of jaws.[5] POF accounts for 3.1% of all tumors and 9.6% of gingival lesions. It is more prevalent in whites (71%) compared to blacks (36%).[6] The lesion predominantly affects adolescents and young adults, with a peak prevalence between 10 to 19 years. Female to male ratio reported in literature varies from 1.22: 1 and 1.7: 1 to 4.3:1.[7] Approximately 60% of POF's occur in maxilla, more often in incisor- cuspid region (55 to 60%).[8] POF is a solitary slow growing nodular mass, either pedunculated or sessile. The surface mucosa may be smooth or ulcerated and pink to red in color. Migration of teeth with interdental bone erosion has been reported in certain cases.[6,7] The lesions usually measure less than two cm in diameter but cases up to six cm and nine cm have been reported.[1,5]

This article presents a case report of POF with emphasis on the importance of discussion of reasonable differential diagnosis with the patient.

Case Report

A healthy 17 year old girl presented to the Department of Periodontology, Himachal Pradesh Government Dental College, Shimla, with a swelling "behind her upper left front teeth." The lesion was of one month duration, slowly increasing in size. Discomfort in the involved area and mild pain was perceived on eating, when lower teeth came in contact with the swelling. No history of bleeding from the lesion either spontaneous, on brushing or while eating was elucidated. It was visibly apparent that the patient was concerned about the pathogenicity of the lesion and had to be reassured. Clinical examination revealed a nodular gingival enlargement in relation to palatal aspect of 22 & 23; originating inter-proximally;

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Fig. 1 Baseline view of the lesion.

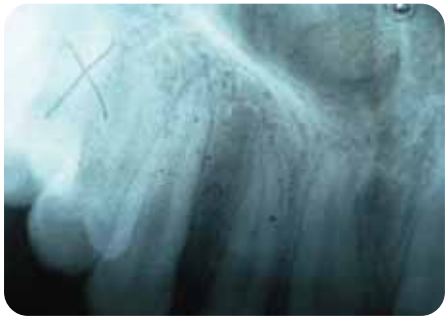

Fig. 2 Intraoral periapical radiograph of 22, 23 region showing no abnormal findings.

Fig. 3 1 week after oral prophylaxis.

approximately 1.5 x 1.2 cm in diameter and red to pink in color with areas of white discoloration (Fig. 1). The lesion was firm in consistency, was pedunculated with a broad base, freely movable from the underlying bone and was tender on palpation. The teeth associated with the lesion i.e. 22 & 23 were non tender on percussion. Plaque Index (Silness and Loe 1964) scores demonstrated moderate plaque accumulation whereas Gingival Index (Loe and Silness 1963) showed moderate inflammation of the involved area. A pocket depth of six mm and seven mm was recorded on the palatal aspect of 22 & 23 respectively and bleeding on probing was evident. The intra oral periapical radiographic examination of 22 & 23 region (Fig. 2) was within normal limits, with no evidence pertaining to involvement of maxillary alveolar bone or pathologic migration of teeth. Following clinical and radiographic examination, a provisional diagnosis of chronic inflammatory gingival enlargement was made. The differential diagnosis consisted of traumatic fibroma,[8] pyogenic granuloma,[3] peripheral ossifying fibroma and peripheral giant cell granuloma.[1]

Initial treatment included complete oral hygiene instructions followed by supra- and subgingival scaling. After one week interval, the swelling had become more firm and fibrous, with a reduced size, measuring approximately 1.2 x 1.0 cm in diameter (Fig. 3). A routine haemogram done prior to the excision of the lesion demonstrated normal blood values. An excision biopsy of the lesion was then performed under local anesthesia using lignocaine hydrochloride solution with adrenaline (1:80,000). 22 & 23 were subjected to thorough subgingival scaling and curettage to ensure complete removal of the lesion from its base and root surfaces free of any residual accretions (Fig. 4). The surgical site was irrigated with 2% povidone iodine and normal saline solution, and periodontal dressing was given. Antibiotics (Ofloxacin 200 mg plus Ornidazole 500mg twice daily for five days) and analgesics (Ibuprofen 400 mg three times daily for three days) were prescribed. Oral hygiene instructions were reinforced and the patient was recalled after 1 week for reevaluation. The excised specimen was preserved in 10% formalin solution and sent for histopathological analysis. Microscopic examination revealed ulcerated stratified squamous epithelium with cellular fibrous connective tissue and areas of bone formation (Fig. 5). Thus, a final diagnosis of peripheral ossifying fibroma was made. After one week (Fig. 6), the surgical site appeared to be healing well (by secondary intention). Three months post operative examination revealed a completely healed surgical site. There was no evidence of recurrence of the lesion and the patient was asymptomatic during a six months follow up interval (Fig. 7).

Discussion

POF is a common gingival growth that is thought to be either reactive or neoplastic in nature.[7] Literature suggests various terms to describe this clinical entity such as fibrous epulis,[5] peripheral fibroma with calcification,[4] peripheral ossifying fibroma,[1] calcifying fibroblastic granuloma,[4] peripheral cementifying fibroma,[2] peripheral fibroma with cementogenesis[6] and peripheral cemento- ossifying fibroma.[9] The sheer number of names used for fibroblastic gingival lesions indicates that there is much controversy surrounding the classification of these lesions.[3,7,9] According to Kumar et al.[7] the term "peripheral odontogenic fibroma" has been designated by the World Health Organization (WHO) as the rare and extraosseous counterpart of central odontogenic fibroma. Therefore, it is a separate clinical entity. Another nomenclature that describes the lesion as "cemento-ossifying fibroma" is now considered to be outdated and scientifically inaccurate. The so called cementicles in POF are not from cementum but instead represent dysmorphic round basophilic bone particles within ossifying fibroma.[8]

Although the etiopathogenesis of POF is uncertain, an origin from the cells of periodontal ligament has been suggested.[7,8] The reasons for considering

Fig. 4 Intra-operative view following excision of the lesion.

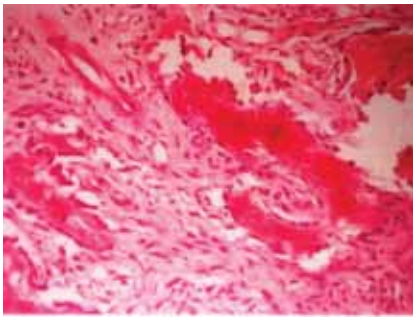

Fig. 5 Histopathological picture.

Fig. 6 One week post operative image.

Fig. 7 No recurrence at 6 month follow-up interval.

periodontal ligament origin of POF include: exclusive occurrence of POF in gingiva (interdental papilla), proximity of gingiva to the periodontal ligament, presence of oxytalan fibers within the mineralized matrix of some lesions and the fibro- cellular response in POF which is similar to other reactive gingival lesions of periodontal ligament origin. Classically, local factors such as trauma or irritants like dental plaque, calculus, microorganisms, masticatory forces, ill- fitting dentures and poor quality restorations are implicated in POF induction or progression.[1,4] Chronic irritation of the periodontal and periosteal membrane causes metaplasia of the connective tissue and resultant initiation of bone formation or dystrophic calcification.[8] Serum estrogen and progesterone concentrations render the gingival tissue more susceptible to chronic irritation caused by plaque and calculus. Since POF has an obvious predilection for females and occurs in specific periods of life such as puberty and pregnancy, the existence of hormonal factors in the development of POF has been suggested in literature.[9] Unfortunately, little is known with respect to the pathogenesis and molecular or genetic profiles of these lesions. Therefore, Kumar et al.[7] recommend further analysis of the patient such as karyotyping, which may give insight into any chromosomal or genetic abnormalities that could be present, and whether or not these are constitutional and can be passed on to off-springs. The differential diagnosis for POF has been described in literature. Clinically, POF may be misdiagnosed as pyogenic granuloma or peripheral giant cell granuloma. Traumatic fibroma and other odontogenic tumors must also be considered. In general, the pyogenic granuloma presents as a soft, friable nodule that bleeds with minimal manifestations, but tooth displacement and resorption of the alveolar bone are not observed. Although, peripheral giant cell granuloma has clinical features similar to those of POF, the later lacks the purple or blue discoloration, commonly associated with peripheral giant cell granuloma.[1,3]

In the present clinical study, the patient was a female in second decade of her life and the possible cause of lesion occurrence could have been a reactive response of the gingival tissues to locally accumulated irritants i.e. plaque and calculus. Similar clinical findings as present in this case have been observed in other cases reporting POF, [4,5] though some reports have mentioned POFs ranging from 4 cm to 9 cm in diameter.[2,3] Radiographic features of the POF vary and have been described. Radiopaque foci of calcifications have been reported to be scattered in the central area of the lesion, but not all lesions demonstrate radiographic calcifications. Underlying bone involvement is usually not visible on a radiograph. In rare instances superficial bone erosion may be noted. However, in untreated cases, as the tumor advances, alveolar bone destruction with displacement of adjacent teeth ensues. In our case, radiographic examination was within normal limits, with no findings pertaining to maxillary alveolar bone destruction. This is in agreement with Farquher et al,[4] Das and Azher.[1]

A confirmatory diagnosis of POF is made by histopathological evaluation of biopsy specimens. The following features are usually observed during microscopic examination: (1) intact or ulcerated stratified

squamous epithelium; (2) benign fibrous connective tissue with varying number of fibroblasts; (3) sparse to profuse endothelial proliferation; (4) mineralized material consisting of mature lamellar or woven osteoid, cementum like material or dystrophic calcification; (5) acute or chronic inflammatory cells in lesions.[7] Most of the described features were present in this case. Treatment consists of complete surgical excision of the lesion including the involved periodontal ligament and periosteum, as was done in the present case. Although POF is a benign, reactive lesion, a fairly high recurrence rate (8%- 20%) has been reported.[4,10] The patient must be reassured that prompt treatment will lead to uneventful healing of the swelling. However, periodic reevaluation (including rechecking for plaque, calculus, inflammation, other traumatic factors and thorough oral prophylaxis) of the surgical site is necessary, to alleviate any chances of recurrence.[4] In the present study, 6 months follow up did not demonstrate recurrence of the lesion.

Conclusion

POF is a slowly progressing lesion, the growth of which is generally limited. A slowly growing pink soft nodule in the anterior maxilla of an adolescent should raise the suspicion of a POF. Discussion of the differential diagnosis should be done tactfully to prevent unnecessary distress to the patient. Treatment consists of judicious excision of the lesion including periosteum. Close post operative follow up is essential because of the growth potential of incompletely removed lesions and a high rate of recurrence.[4]

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Dentistry- exploring newer horizons!!!

* Manikandan G.R., ** Roopesh

Abstract

Dentistry had changed a lot from earlier times with the advent of new materials, new technology and treatment modalities. Apart from earlier times patients of modern days are more aware of the different treatment options available through sources such as Internet. There are different areas like alternative dentistry where areas are yet to explore. Dentists should be aware of the newer technologies and treatment should be patient centric rather than symptom centric. This paper reviews the different newer branches and revolutions that may change the face of dentistry to advanced levels.

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Introduction

When we look back, many of our actions, prescriptions, and treatments seem to be obsolete, underdeveloped, and sometimes absurd. And the reason for this is the huge number of discoveries and inventions that bring us ever closer to destinations as yet unknown to us. By the end of the 20th century, science had successfully unlocked the secrets of the atom, unraveled the molecules of life, and created the electronic computer. These three fundamental discoveries triggered the quantum revolution, the biomolecular revolution, and the computer revolution. The relationship between these revolutions is in fact a dynamic one. When an impasse is reached in one area, a totally unexpected development in another field is often found to contain the answer. Seemingly impossible obstacles have been overcome by a synergistic interaction between these three fundamental revolutions. We will have a brief review of some of the newer innovations in each branch of dentistry.

(1)Conservative Dentistry & Endodontics

(A)Diagnodent

DIAGNOdent technology uses a simple laser diode to inspect your teeth, comparing reflection wavelength against a known healthy baseline wavelength to uncover decay. First, we aim the laser onto one of your healthy enamel tooth surfaces to give us a benchmark reading. Then, we continue on around your mouth, shining the laser into all suspected areas. As the laser pulses into grooves, fissures and cracks, it reflects fluorescent light of a specific wavelength. This light is measured by receptors, converted to an acoustic signal, evaluated electronically to reveal a value between one and 100, then displayed on a screen. Anytime the laser encounters a surface that reads differently than the healthy baseline value, it stimulates emission of fluorescent light of a different wavelength. A reading of 10-20 indicates some enamel softening, pointing to a potential problem area that merits close monitoring. A reading of 21-100 indicates a definite area of decay requiring a filling.

(B) Ozone therapy

Ozone has found to have various applications in dentistry. One of them is in root canal therapy. The basic principle is disinfection. In root canal therapy the steps are,

1. Remove old restoration or create access. Bubble Ozone for cavity disinfection.

2. Ozone in conjunction with Sodium hypochlorite is what we advocate. Fill root canal partially with Sodium hypochlorite and bubble Ozone into root canal for 20-40 seconds. Repeat several times. Please make sure that the pH is about 11.

(c) Carisolv

Carisolv is a chemo-mechanical method ideal for use on most types of carious lesion. The method is minimally invasive and affects only the carious part of the tooth. As the tooth lasts longer, the risk of complications is reduced and patient comfort is enhanced. It contains amino acids-glutamic acid, lysine & leucine.

(d) D-Carie Mini

The D-Carie mini is a lightweight, easy-to-use, cordless device that can be used as an aid for clinicians to quickly locate and diagnose caries. The D-Carie mini uses Light Emitting Diode (LED) and fiber optic technologies to accurately detect both occlusal and interproximal caries. The device requires no calibration and is easy to sterilize

* General Dental Practitioner, Trivandrum, ** Senior Lecturer, Department of Oral and Maxillofacial Surgery, Azeezia College of Dental Science and Research, Meeyannoor, Kollam

(2) Periodontics

(A)Electronic Nose

The electronic nose was developed in order to mimic human olfaction that functions as a non-separative mechanism: i.e. an odor / flavor is perceived as a global fingerprint. Essentially the instrument consists of head space sampling, sensor array, and pattern recognition modules, to generate signal pattern that are used for characterizing odors. Electronic noses include three major parts: a sample delivery system, a detection system and a computing system.

(B)Nanorobotics

Nanorobotic dentifrice (dentifrobots) delivered by mouthwash or toothpaste could patrol all supragingival and subgingival surfaces at least once a day metabolizing trapped organic matter into harmless and odorless vapors and performing continuous calculus debridement. Properly configured dentifrobots could identify and destroy pathogenic bacteria residing in the plaque and elsewhere, while allowing the 500 species of harmless oral micro flora to flourish in a healthy ecosystem. Dentifrobots also would provide continuous barriers to halitosis, since bacterial putrification is the central metabolic process involved in oral malodor.

(C)Periodontal Regeneration With GEM 21s

Gem 21S® (Fully Synthetic Growth-factor enhanced Matrix) is a fully synthetic regeneration system for the treatment of periodontal bone defects and associated gingival recession. GEM 21S® is composed of the tissue growth factor, recombinant human platelet derived growth factor (rhPDGF-BB), and a synthetic bone matrix, beta tricalcium phosphate (β-TCP). It is the first totally synthetic product combining a purified recombinant growth factor with a synthetic bone matrix to be approved by the FDA for human application. The combinations of the two components (rhPDGF-BB and β-TCP) are keys to the overall effectiveness of the product. The rhPDGF-BB provides the biological stimulus for tissue repair by stimulating the proliferation and in-growth of osteoblasts, cells responsible for the formation of bone, while the β-TCP provides the framework or scaffold for new bone growth to occur.

3. Orthodontics

(A) Invisalign

Invisalign is a series of clear, removable teeth aligners that both orthodontists and dentists use as an alternative to traditional metal dental braces. Used to treat a wide range of clinical situations, Invisalign treatment options address simple to complex cases and post-treatment retention.

(B) Orthodontic Softwares

Viewbox is advanced software for cephalometric analysis. Developed over the period of many years, Viewbox has evolved into one of the leaders in the field and is now in use in Orthodontic Departments around the world. Designed for professional use, Viewbox can be customized to almost any task. Points, measurements and analyses are not 'hard-wired', enabling you to go beyond the confines of cephalometric radiographs and perform measurements on any kind of radiograph, photograph or other two-dimensional image. Furthermore, sophisticated algorithms are included for image enhancement, facilitation of point identification and morphometric analysis.

4. Prosthodontics

(A)Flexible Dentures and BPS Dentures

Flexible partial dentures are the comfortable, beautiful, and affordable choice. It was long thought that removable partial dentures had to be rigid to be effective. The innovation of the Valplast Flexible Partial allows the restoration to adapt to the constant movement and flexibility in your mouth. This is the underlying thinking behind Valplast's innovative flexible, removable partial denture. The flexibility, combined with strength and light weight, provides total comfort and great looks! The preparation is relatively simple because your natural teeth don't need to be altered in any way. The Valplast partial is virtually invisible because there are no telltale metal clasps and the material itself blends with the tissue in your mouth so that the only thing that shows is your beautiful smile.

BPS® Dentures are precision dentures that provide optimum function while eating, speaking or laughing. The BPS® system utilizes a modular and standardized approach to denture construction. Following a strict protocol to assure success of the prostheses. Ivoclar teeth such as "SR Vivodent PE" are natural like teeth that recreate the character of your smile. They are made of three layers of cross linked or double cross linked acrylic reins that contribute to their life like appearance and well known resistance to wear. BPS® impressions are made utilizing the Accu-Dent impression system. A Stratos 200 or 300 Ivoclar articulator is used to strategically position the teeth. BPS® Dentures are made using the SR Ivocap processing system. This unique system uses continues heat and injection to produce dentures that are comfortable and functional.

(B)Maxillofacial Prosthetics And Implants

Maxillofacial prosthodontics is subspecialty of prosthodontics that rehabilitates patients with acquired and congenital defects of the head and neck. These

defects may result in minor cosmetic defects to major functional disabilities or cosmetic disfigurement. This branch had got wide application in the movie industry also.

A dental implant is a titanium "root" device used in dentistry to support restorations that resemble a tooth or group of teeth to replace missing teeth. Virtually all dental implants placed today are **root-form endosseous implants**, i.e., they appear similar to an actual tooth root (and thus possess a "root-form") and are placed *within* the bone (*end-* being the Greek prefix for "in" and *osseous* referring to "bone"). The bone of the jaw accepts and osseointegrates with the titanium post. The osseointegration is the component of this implant procedure that makes it resemble the look and feel of a natural tooth.

5. Oral & Maxillofacial Surgery

(A)Wand System

The Wand is essentially a computer-controlled dental injection. The flow rate of the local anaesthetic is controlled by a computer. This means that the injection is guaranteed to be slow and steady and therefore comfortable. Even though Milestone Scientific – the manufacturers of the Wand – now calls their products CompuDent and STA (Single Tooth Anesthesia) System, we'll still call it the Wand here – because a lot of people with needle phobia describe it as their "Magic Wand"!

(B)Botox Therapy

Botox has useful clinical uses as an adjunct in bruxism and temporomandibular joint (TMJ) cases, even more so for patients with chronic facial and TMJ facial pain. When Botox is typically given in half the amount that is normally used for a smoothing treatment for facial wrinkles, it can greatly decrease the strength of the muscle contractions that contribute significantly to facial and TMJ pain and provide dental patient significant pain relief.

(C)Gamma Knife Surgery

Gamma knife radiosurgery has in recent years become the treatment of choice for people unresponsive to medical therapy. Recent advances in imaging and increased experience with its use, have underscored the importance of gamma knife as a treatment for trigeminal neuralgia. Side effects of gamma knife radiosurgery are limited primarily to facial paresthesias or sensory loss. In most reports the rate of such complications is less than 10 %.

6.pedodontics & Preventive Dentistry

(A)Probiotics

Recent experimental studies and results from randomized controlled trials have shown that certain gut bacteria, in particular species of Lactobacillus and Bifidobacterium, may exert beneficial effects in the oral cavity by inhibiting cariogenic streptococci and Candida species. Probiotics have been successfully used to control gastro-intestinal diseases. They also appear to alleviate symptoms of allergy and diseases with immunological pathology. The mechanisms of probiotic action appear to link with colonization resistance and immune modulation. Lactic acid bacteria can produce different antimicrobial components such as organic acids, hydrogen peroxide, carbon peroxide, diacetyl, low molecular weight antimicrobial substances, bacteriocins, and adhesion inhibitors, which also affect oral micro flora.

(b) Advanced Pit & Fissure Sealants

It contains no Bisphenol A and no Bis-GMA.The unique feature is wet-bonding - moisture tolerant resin chemistry. It is tooth integrating - seals against microleakage.It is margin-free, so no chipping, pitting, or staining. Also no bonding agents are required and it takes only fewer steps, which saves time and money. The manufacturer states that Embrace WetBond incorporates di-, tri-, and multi-functional acrylate monomers into a hydrophilic, **resin acid-integrating network (RAIN).** The material is activated in the presence of moisture and is recommended for slightly moist surfaces. When activated, the material is acidic. In the cured state, the **RAIN** network is no longer affected by water so the cured material has a neutral pH and low water solubility

(c) Plantibodies and Caries Vaccine

A team of researchers at Guy's Hospital Dental School in London conducted a preliminary clinical trial using the genetically engineered antibody produced by Planet Biotechnology, Inc., a research firm in Mountain View, Calif. Led by Dr. Julian Ma and professor Tom Lehner, the team completed the study in April using a secretory IGA (SIgA) monoclonal antibody named CaroRXJ, produced in genetically altered plants called "plantibodies" designed to prevent infection by the oral bacteria *Streptococcus mutans*. The plantibody works by blocking the adherence of the *S. mutans* bacteria to the teeth.

(d) KEEP 32

Two scientists have discovered a molecule that kills the bacteria that can cause tooth decay, meaning a treatment for cavity-proof teeth could be on the way. Jose Cordova of Yale University and Erich Astudillo from the University of Chile named the molecule "Keep 32" — a reference the number of teeth in the human mouth — and now the duo is waiting to begin performing trials on humans. The molecule targets Streptococcus Mutans, the bacteria that turns sugar into

the lactic acid that affects tooth enamel and can lead to decay.The dentists say that "Keep 32" can be added to any dental care product including toothpastes, mouthwash and chewing gum to make them "super cleansers." could kill bacteria in about 60 seconds. A single application of "Keep 32" is guaranteed to keep teeth "cavity proof" for several hours.

(e) Angelus Alligator

Hiding needles from children is often a difficult thing to achieve, and if not done well can lead to stressful and often unsuccessful experience. However, the effectiveness of the Angelus Alligator was presented during a poster session at the recent International Association for Dental Research (LADR) meeting in San Diego along with some accompanying clinical data. With the Angelus Alligator, the only thing a child will see prior to receiving local anesthesia is a cartoon-looking device made of flexible rubber that fits over the needle and syringe, hiding them from young patients' eye. The Angelus Alligator has been tested by dentists, especially pediatric dentists, and they realized that it is easy to use, safe, and does not interfere with the correct application of anesthetic techniques.

7. Oral Medicine

(A) Salivary Pacemakers & Artificial Saliva

Neuroelectrostimulation had been tried in treatment of hypo salivation and xerostomia in Sjögren's syndrome, which is called to be a salivary pacemaker. (FP5-EU Saliwell Project). Many types of artificial saliva products are available in the market based on carboxy methyl cellulose and other components. An artificial saliva composition comprising at least one buffering compound selected from the group consisting of chitins and chitosans in a medium. The artificial saliva composition has a pH buffering capacity similar to natural saliva and an excellent caries preventing effect.

(B) Vizilite

ViziLite® Plus with TBlue® is the leading oral cancer screening system that was developed to help oral healthcare professionals identify, evaluate, monitor and mark abnormal oral lesions suspicious for pathology including precancerous cells and cancer that may be difficult to see during a regular visual exam. With ViziLite® Plus with TBlue®, oral healthcare professionals now have a diagnostic aid that helps them identify, evaluate, monitor and mark abnormal oral lesions that may be going through these dysplastic changes. The pre-rinse solution in ViziLite® Plus with TBlue® slightly desiccates the cells to make the nuclei more prominent, and, therefore, more visible. The low intensity light from the handheld light source is reflected off of these abnormal cells down to the basement membrane where the nuclei have been rendered more prominent, and appear to "glow" – making abnormal cells easier to see.

Conclusion

There are wide arena of alternative dentistry where there is still more to explore like herbal dentistry,aromatherapy,tibetan medicine, relaxation dentistry,reiki etc.Efficiency in treatment and better outcome are the advantages, but the cost of these technologies may be a disadvantage. More such innovations should be made available in the public sector health care so that economically backward patients can get quality healthcare. By the year 2020, perhaps with a certain degree of artificial intelligence, the "apparatus" or, more correctly, the "dental robot" will know exactly to what depth to obturate in the case of root canal treatment and at which location and to what depth to penetrate in implant surgery. Dentists should be aware of the newer possibilities and sources by which they can render their patients quality health care. The complete well being of the patient and a person centric rather than symptom centric approach would be the watchword in this regard.

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Diagnose

* M.S. Deepa

I. A 42 year old male patient presented with a chief complaint of a slowly enlarging swelling in the left lower side of the face since 3 months. Extra oral examination revealed a diffuse swelling on left lower face around 5x4 cm.Intra oral examination revealed a diffuse smooth surface swelling in lower left buccal vestibule extending from 35 to 38 region obliterating the buccal sulcus. Swelling was firm, non tender, non fluctuant and non compressible. Mucosa over the swelling appeared normal with no sinus tract or any discharge. Among the hard tissue findings were grade 11 mobility of 36 and caries exposed 46.

Investigations:

1. Hemogram showed all the values to be in the normal range.
2. Aspiration of the lesion was carried out which was nonproductive.
3. IOPA revealed radiolucent lesion in relation to 35,36 and 37; root resorption of 35 and 36.
4. Lateral oblique view – unilocular radiolucent lesion 3x2 cm extending from distal aspect of 34 to distal root of 37. The lesion has a well defined continuous sclerotic border.
5. Panoramic radiograph showed normal maxilla and mandible except to the unilocular radiolucent lesion in the left side body of mandible.

A. What is the differential diagnosis in this case?

6. Histopathology revealed epithelium proliferating strands and chords within the connective tissue stroma. The strands are composed of peripheral ameloblast like cells with central cells mostly polyhedral and in some areas stellate. Moderately collagenous CT stroma in some areas and densely in others. Vascularity is high and minimum infiltration of inflammatory cells.

B. What is the final diagnosis?

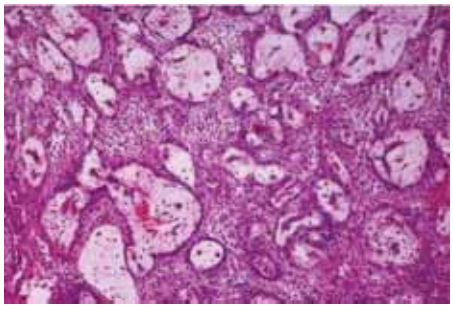
Extra oral radiograph

Intra oral radiograph

IOPA

Lateral oblique view

Panoramic view



Photomicrograph

Answers

A.odontogenic Kerato Cyst, Calcifying Epithelial Odontogenic Tumor, Ameloblastic Fibroma

B. Plexiform Ameloblastoma.

* HOD, Dept. of Oral Medicine and Radiology, Azeezia College of Dental Sciences and Research, Kollam

Secretary's report and association news

My dear members,

At the outset let me thank all the members of IDA Kerala for giving me an opportunity to serve you as Hon.Secretary. I would like to congratulate my predecessor Dr. Shibu Rajagopal and his team, treasurer Dr. Anilkumar, joint Secretary Dr. Manoj Augustine and Asst secretary Dr. Joseph Edward for the wonderful effort put in by them over the past three years. I am sure that my job will be much easier dueto their efficient handling of office.

I know that I have an enormous task over the next three years, but I am sure that with the whole hearted support of all the members, me and my trusted lieutenants Dr. Rameshan as treasurer, Dr. Anilkumar as joint secretary and Dr. Naveed Sait as assistant secretary would be able to surmount all hurdles and bring the same efficiency to the office if not better.

IDA Kerala state has been witnessing a giant leap of activities and is having an important say in every policy matters of government regarding new dental colleges, unethical practice, pollution control board, clinical establishment bill, appointment of doctors in government hospital, labour problem, waste disposal....etc. We must strive to keep up this momentum.

The KDJ is improving by leaps and bounds with every issue and kudos to the editor Dr. Nandakumar for the fentastic effort he has put in to maintain the high standard of the journal and for the various awards bagged at the national level. I ensure him whole hearted support of the state office.

Once again let me thank all the members for having bestowed upon me this responsibility and I assure that I will be available 24/7 to attend any of the problem regarding IDA.. thanking you.

Dr. O.V. Sanal
Hon. Secretary, IDA Kerala State

ACQUIRE 2013

The Presidents' and Secretaries' seminar ACQUIRE 2013 was conducted in Kannur at Hotel Malabar Residency on 17th Feb. Sunday from 9.30am to 5.30pm.

In an impressive inaugural function, the Chief Guest Dr. P P Venugopalan, Dean, Kannur Medical College, inaugurated the seminar by lighting the traditional lamp.

After the opening remarks by IPP Dr. M Raveendranath & Dr Nizaro Siyo, State President Dr. Antony Thomas and State Secretary Dr. O V Sanal elaborated on the Projects and programmes for 2013. Classes were taken by Past President Dr. Santhosh Sreedhar, Imm. Past Secretary Dr. Shibu Rajagopal,CDE Convener Dr. Anil G,HOPE Secretary Dr. Samuel K Ninan , Website Chairman Dr. Rajeev Simon,WDC president Dr Thaj S Prasad&Secretary Mercy Jogi.

The star attraction of the day was Adv. Vaman Kumar, a trainer of international repute, who made the audience spellbound by his presentation on the topic 'ENJOY YOUR ENDEAVOUR' which was split into two sessions. Equally impressive was our very own member Dr. Lateef KH ,who surprised everyone by his eloquence and knowledge of 'CHEMISTRY OF RELATIONSHIPS'.

Almost all the branches of IDA Kerala State were represented at this seminar. The lectures and classes were monitored and moderated by Dr. C V Pradeep, Dr.C K Ashokan and Dr. M Raveendranath, all from the host branch. The efforts & arrangements made by IDA Kerala State office & the host IDA North Malabar Branch were appreciated by all the delegates and a very special thanks to all the host branch members from the State Office.

Dr. Dinesh Nambiar
Chief Co-ordinator

CDE Report

Dr Anil G.
CDE Convenor, IDA Kerala State

My warm greetings to all IDA members. First of all, let me thank you all for electing me as the CDE convenor for this year.

To improve the quality of dental practice, it is important to be aware of new technologies in dentistry. That is where the role of CDE programmes comes into play. Also, in case of doubts, to avoid patient errors and to know about a new disease and its adverse effects CDE programmes are of undeniable value. It is not to be forgotten that credit points are given for registration renewal.

It is nice to know that some of our local branches have already started CDE 's. My congratulations to IDA Kollam branch for hosting the first local CDE and IDA Malappuram for hosting first inter branch CDE this year. Next upcoming CDE's are hosted by IDA branches of Attingal, Thiruvalla and Malappuram. The details are available in IDA website.

It is with great pleasure I inform you that the first state CDE pragramme will be conducted on April 7th, which will be hosted by IDA Mavelikkara branch. All our members are requested to attend the CDE and make it a huge success. All further CDE programmes' dates will be made available in our IDA website later. There is a new development in our CDE programme. A panel of post graduate doctors is being formed. During any emergencies in practice or in any other problematic situation or even if it is a case of doubt, you can directly consult with a specialist doctor.

Once again I thank you and welcome you all to our first CDE programme.

Dr. Civy V Pulayath
CDH Chairman, IDA Kerala State

CDH Report

SUSMITHAM 2012-13 – An Update
(A Research study on Oral Health Problems In Kerala conducted by IDA Kerala and KDC.)

WHAT WE HAVE DONE TILL DATE...??

1. Started survey office with all necessary infrastructure and staff
2. Initiated Media Publicity through press meets & TV interviews
3. Coordination with KDC and Health department
4. Program Inauguration by Chief Minister and Health Minister
5. Sponsorship discussions with Muthoot fincorp
6. Meeting of Ida branch presidents, secretaries and CDH chairmens
7. Discussions with Dental college Principals
8. Survey materials send to dental colleges
9. Dental college visit to train interns for survey
10. Professional calibration of examiners
11. Public Health Dentistry department co ordination
12. Appointed assembly constituency co ordinators
13. Send letters to all MLA & MP
14. Individual clinic co ordination
15. Printing of booklet, request letters and survey form
16. Survey material posted to 4500 IDA Members
17. Supply of materials to non ida members
18. Survey sticker to dental clinics
19. Telephonic SMS services to participants
20. Data entry and analysis of 3000+ recorded data forms

(Recieved back 183 from individual members and 2867 from colleges)

Dr.Civy V Pulayath, Chairman, CDH, IDA Kerala
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Website Report IDAKerala.com

Dr. Rajeev Simon K.
Website Chairman, IDA Kerala State.

Dear Friends,

I am extremely happy being the Website Chairman of IDA Kerala State for the fourth year continuously with a full fledged website catering all online needs of IDA Kerala State. The commitment of real time updating, interactivity, content management & presentation have made this website attractive. Real time 24hrs updating is the highlight of the website. Our efforts have been recognized by the head office all these years winning us several national awards.

I thank you all for your support.

Dr. Rajeev Simon K

Report of 45th Kerala State Dental Conference (KSDC)

45th Kerala state dental conference (KSDC) was hosted by Indian Dental Association, Kodungallur branch on 11-13 January 2013 at Lulu International Convention Centre. This was the first time that KSDC was hosted in an international venue with all proper arrangements for hosting an event of this magnitude. It was also a conference which saw a record participation from traders, with more than 155 stalls. Almost 1500 delegates participated in this edition of the conference.

The Mega event Kicked off on 10th January with preconference sessions. 6 different preconference sessions were conducted for the participants.

The event was officially inaugurated on 11th January 2013 by Honourable Minister for Excise, Port and Fisheries – Sri K Babu in a grand gala function. Worshipful Mayor of Trichur – Sri Tony Paul and MD and CEO of Federal Bank- Sri Shyam Srinivasan were the guests of honour. President IDA Kerala State Dr Raveendranath, Secretary IDA kerala State Dr Shibu Rajagopal, Immediate Past President IDA kerala State- Dr Santhosh Sreedhar, President Elect IDA kerala State- Dr Antony Thomas, Conference Secretary IDA kerala State- Dr Pratap Kumar, Organising Chairman- Dr G Premkumar, Organising Secretary – Dr Shaji P H, President IDA Kodungallur – Dr Prasannakumar and Secretary IDA Kodungallur- Dr Nazir P M were the dignitaries on the dias. Inaugural session was followed by entertainment performed by students of Amritha Dental College, Kochi and Dinner.

Apart from the different sessions for students, Post Graduates, Faculty and Private practitioners presenting papers on various topics of interest, keynote lectures on a varied topics were also delivered by national and international speakers. For the first time in KSDC history, this conference witnessed a conference course by Dr Hans Malstrom of the university of Rochester. Eminent Oncologist Dr V P Gangadharan delivered the prestigious Jacob Zachariah Memorial Oration. Saturday night also featured a grant gala banquet with entertainments performed by different artists.

The event concluded on Sunday with election of new office bearers. Colgate was the principal sponsor of the event. The official banker was Federal Bank and Scientific partners were PMS Dental College and Knowledge partner was Malabar Dental College.

PATHANAMTHITTA BRANCH

January 2013

1. First executive committee meeting of IDA Pathanamthitta was held on 7th January 2013 at Hotel Hills Park, Pathanamthitta at 7 30 pm. Sixteen executive committee members attended the meeting and decisions on conducting installation ceremony and project inauguration for the year was taken.

2. Installation of IDA Pathanamthitta branch for the year 2013 was held on 20th January 2013 at Hotel Hills Park, Pathanamthitta. Chief guest of the programme was Sri. Raju Abraham MLA. IDA Kerala state president Dr. Antony Thomas was the guest of honour and IDA Kerala state first vice president Dr. K N Thomas was the Special guest.

Sri Raju Abraham MLA inaugurated the programme and activities for the year 2013 including the mega project " Dental Clinic Accreditation Programme. IDA State president Dr Antony Thomas installed the newly elected President Dr Binu Chacko and his team of office bearers. Annual edition of the journal "EXRACT" was released by state vice president Dr K N Thomas by handing over the journal to Dr. Antony Thomas. 110 peoples attended the programme including the branch members, their families, neighbouring branch members and special invities from various clubs like Rotary and JCI. IDA members from neighbouring branches like Central Kerala, Kottayam, Thiruvalla, Mavelikara and Kottarakkara made their presence to make the event a grand success.

Charter president of the branch and former president of IDA Kerala state, Dr.Ommen George and charter secretary Dr Sony Thomas was special invites. Senior most member of the branch Dr. Daniel Varghese was awarded life time honourary membership of IDA Pathanamthitta branch by charter President and Secretary. The meeting was followed by dinner, fellowship and various cultural programmes by members and their families.

MALABAR BRANCH

Activity report for the month of February

Installation, magazine release & family get together on 3rd February 2013 Venue: hotel malabar palace, calicut. 125 members were present in the meeting.

TRIVANDRUM BRANCH

Report of Annual General body 2012 and Installation ceremony

AGM was conducted on the eve of 24th January, 2013 at Trans Towers, Vazhuthakadu. Chief Guest of the session was Dr. Antony Thomas, Honorable President –IDA Kerala State and Guest of honor Dr.Anil, State CDE convener. Meeting was call to order by President Dr.CP John who welcomed the auspicious family gathering of about 250 members. Incoming President Dr.Krishnakumar was introduced by Dr.Suresh Kumar. After Collaring ceremony of the new President Dr.Krishnakumar elaborated his vision about IDA 2013. State President Inaugurated the Activities of the new team by lighting the lamp and expressed his plans in the state level. Guest of honor Dr.Anil felicitated the new office bearers. Meeting was attended by invited members from Attingal branch and Kollam Branch. Session was concluded with vote of thanks from Dr. Santhosh Kumar Secretary IDA 2012. The gathering enjoyed ganamela and gala dinner.

Office bearers IDA Trivandrun 2013

President- Dr.Krishnakumar; Immediate Past President-Dr.CP John; President Elect- Dr.Sanal Kumar; Vice President- Dr. Sandeep Krishna P, Dr.Sumesh Chandran; Honorable secretary- Dr. Mathew Jose; Honorable Joint Secretary- Dr. Benoy Stanley; Honorable Ass.Secretary-Dr.Philip John; Treasurer- Dr.Sangeeth Cherian; Editor- Dr. Vivek; Convener CDE- Dr.Achuthan Nair; Convener CDH- Dr. Tharun. V Jacob; Rep. Hope-Dr.Aseem.H; Rep –Image Dr. Santhosh Kumar; Executive committee members- Dr.Abraham John, Dr.Akshay V Gopal, Dr.Arun R DrAsif Shaha, Dr.Shibu A, Dr.Siddarth V Nair, Dr.Sreelal, Dr.Subramanium, Dr.Kamala Lekshmy; Rep to state - Dr.Anoop Haris, Dr.Asok S, Dr. Gopakumar, Dr.Suresh Kumar; Ladies wing- Bobbie Joseph, Sangeetha Kurup; Rep to state- Jenny Linkovoor

KODUNGALLUR BRANCH

The installation of office bearers of IDA kodungallur branch for 2013 was held on Saturday 17th Nov 2012 at Dr.Prasanna Kumar's residence Irinjalakuda. Dr.Alias Thomas IDA past national vice president was chief guest.

The new office bearers are: President - Dr.Prasanna Kumar; Secretary- Dr.P.M. Nazeer; Treasurer - Dr.Ajith Kumar. The meeting was a attended by large number of members, families and was followed by dinner sponsored by Dr.Prasanna kumar.

First General Body meeting of kodungallur IDA branch was held on 19th Dec 2012 at rotary hall meeting was sponsered by Federal bank. A large number of members attended the meeting

A Dental camp was conducted on 26-11-2012 at OLFS school, Mathilakan mare than 200 number of students were examined at the camp by Dr.Ahajaz and team.

14 new members joined in IDA kodungallur branch this year.

2nd General Body meeting of kodungallur IDA branch was held on 2nd Jan 2012 at IMA hall about 40 members attended the meeting which was mainly focused on CONKOD 2013 conference preparations meeting was followed by CONKOD COC and dinner.

QUILON BRANCH

Installation and Family Get together
IDA Quilon Branch Installation was on 15-12-2012 at Harbour IB Thangasseri, Kollam. Dr. Samuel K. Ninan Past State President installed Dr. Sunil George and his team of office bearers for the year 2013. Guest of honor of the function was Dr. Shibu Rajagopal Hon. State Secretary IDA Kerala State. The function was well attended by our members and members from neighboring branches. Followed by variety of cultural programs were there. During the function all the senior members and past president of the branch were honored by Chief Guest Dr. Samuel K Ninan. The function adjourned at 10.30 pm.

Ist Executive Meeting: Ist Executive meeting was held at Hotel Ritz Kollam on 4-01-2013, total 21 members were present in the meeting. President Dr. Sunil George announced future projects for the year.

Ist General Body Meeting: Ist General Body meeting of IDA Quilon Branch was held at Hotel Vaidya Kollam, on 19-01-2013, the meeting was well attended. Also there was a CDE on Back Pain in Dental Practice by Dr. Jayakumaran MS., Mch.

Ist CDE Programe: Ist CDE Programme of IDA Quilon Branch was by Dr. Jayakumaran MS Mch, consultant Neuro Surgeon, Bishop Benziger Hospital, Kollam on 19-01-2013 at Hotel Vaidya. CDE was well attended by our members. He explained about "back pain" a common health hazard faced by Dentist.

Ist CDH PROGRAMME: Ist CDH of IDA Quilon Branch was on 06-02-2013 Dental Checkup Camp and a class on Dental Awareness was organized at S.N.College Kollam. Prof. Lee Principal S.N.College was Chief Guest of the function, Dr. Sunil George President IDA Quilon Branch and Dr. Anil Murali Secretary IDA Quilon Branch, spoke about the importance of conducting such functions at Schools and Colleges. Dr. Shibu Rajagopal spoke about Dental awareness. And about 15 Doctors of IDA Quilon Branch conducted the Dental Checkup Camp for almost 100 students. Free medicines, mouthwashes, fluoride toothpaste, etc where distributed to the participants. CDH chairman Dr. Deepu Mohandas organized the programme.

KOTTARAKKARA BRANCH

The installation ceremony of new office bearers of Ida Kottarakara branch was held on 26th January, 7pm at Hotel Nila Palace, Cheerancavu, Ezhukone in a colourful manner. Dr Reji M John was installed as the new branch president. Dr.M. Jayakrishnan as the Hon.Secretary and Dr. HABEEB MOHAMMED as Treasurer

Adv. Aishapotti M L A Kottarakara was the Chief Guest. Dr.Oommen George (Past President - IDA Kerala) was the installing officer. The function was followed by a cultural programme involving members and their family. Prizes were distributed to the members and their family members for outstanding performance in the field of dentistry, arts, sports, social activity etc.

COASTAL MALABAR BRANCH

Installation Ceremony: 15-12-2012:The installation of the office bearers of IDA-Coastal Malabar Branch was held on the 15th of December 2012 at Hotel C-Mount, Cheruvathur at 7.30 p.m. Dr. P.K. Jayakrishnan was installed as the President of the branch and Dr. Rajesh E as secretary. Dr. Antony Thomas, President Elect, IDA Kerala State was the Chief guest of the function and Dr. Santhosh Sreedhar, Immediate Past President, IDA Kerala State was the Guest of Honour. Entertainment programmes were conducted after the installation ceremony.

First Executive Meeting: 4-1-2013:First executive meeting was held at Hotel Taste Buds, Cheruvathur. Plans and policies for the year 2013 were discussed.

Second Executive Meeting: 3-2-2013:Second executive meeting was held at Sreeprabha Auditorim, Payyanur. IDA Coastal Malabar Branch decided to host the Dentist Day state level programme. Various committees were formed for the smooth conduct of the programme.

First CDE Programme: 3-2-2013: The first CDE programme for this year and inaugural function of the CDE programme of IDA Coastal Malabar Branch was held at Sreeprapha Auditorium, Payyanur. It was inaugurated by Dr. K.P.O Sulaiman, IMA President, Payyanur. The faculty for the first CDE programme was Dr. C.H Mahabaleshwara, Reader, Dept of Oral and Maxillofacial Surgery, KVG Dental College, Sullia. The topic was : Minor Oral Surgical Procedures.

Release of Contact number directory: A directory containing the contact numbers of all the members of IDA Coastal Malabar Branch was released on during the inauguration of the CDE programme by the Chief guest, Dr K.P.O Sulaiman. The first copy of the directory was handed over to Charter President, IDA Coastal Malabar Branch, Dr. K.T Suresh.

Installation of Office Bearers of Women's Wing: 3-2-2013: The installation of the office bearers of the Women's Wing of IDA Coastal Malabar Branch was held at Sreeprabha auditorium, Pauyannur. The Chairperson for the year 2013 was Dr. Swetha Sooraj and Secretary was Dr. Ranju Vinay. The chief guest of the function was Dr.Lizzy Mathew, Director, Sanskrit University, Payyanur centre.





ATTINGAL BRANCH

Report of Installation Ceremony 2013: The 13th installation ceremony of ida attingal branch was held on 20th Jan 2013 at Technopark club, Technopark, Trivandrum, 7.00 pm. Dr. O.V. Sanal (Hon. Sec. IDA kerala state) was the chief guest and Dr. Shibu Rajagopal (Imm. Past. State sec.) was the guest of honour. The new President, Dr. Dinesh.N, was installed as the President of IDA Attingal branch by the outgoing President, Dr. Abhilash G.S.

Dr. Shibu Rajagopal, the guest of honour, was honored with a Ponnada for his contributions and achievements as state secretary by Dr. Dinesh .N. Felicitations were given by the neighboring branch office bearers, Dr. Anish .P (Kerala Dental Council member), Mr. Albert (Area Sales Manager of Medopharm Pharma) and Mr. Krishna Kumar (Manager of Federal Bank, Attingal br.). Vote of thanks was bestowed by Dr. Rudy A. George, sec. of IDA Attingal branch. Musical entertainment night and dinner followed. More than 140 delegates attended the event.

Report of Ist Executive meeting: The 1st executive meeting of IDA Attingal branch was held on 2nd Feb 2013 at Attingal club, Attingal, 7.30pm. The various proposed projects and programmes for the year 2013, on behalf of the ida attingal calendar was read out by the secretary, Dr. Rudy A. George.

Feb 2nd, the Charter day for IDA Kerala state was honored and to celebrate the anniversary, the secretary & the President had invited the Charter President of IDA Attingal branch, Dr. Harshan R.D to cut the IDA cake. The Charter President did the honor of cutting the cake and gave the first piece to the charter secretary of IDA Attingal branch, Dr. Biju A. Nair.


KASARAGOD BRANCH

An installation meeting of the new office bearers for the year 2013 was held on 20-12-2012 at I M A hall wherein Dr Harikrishnan Nambiar took over as President,Dr Avinash Mahadev as secretary and Dr Umamaheshwari as treasurer. As intimated by the head-office officials from THE FEDERAL BANK briefed the members about the various customised packages of the bank for I D A members. The meating was well-attended and was followed by dinner.

MALAPPURAM BRANCH

Installation ceremony of new office bearers for IDA, Malappuram branch for 2013 was held at Hotel Surya Regency, Malappuram on 29th December 2012. Sri A.P. Anilkumar, Hon. Tourism Minister of Kerala was the chief guest and Dr.Antony Thomas President-Elect of I.D.A Kerala State was the installing officer, Dr.Shibu Rajagopal (Hon. Secretary, IDA Kerala State), Sri. Musthafa (Muncipal Chairman, Malappuram), Smt. K.M.Girija (Vice Chairperson, Malappuram Municipality) were the Guests of Honour.

Dr.Joy Thomas, president IDA Malappuram presided the ceremony. Dr.Antony Thomas President-Elect of I.D.A Kerala State installed the New Team of office bearers under president-ship of Dr.Rajesh Raveendranathan. Installation ceremony was followed by new year celebrations & culiminated with mouth watering cusines.

CDH Activities 1. As a curtain raiser for current year activities launched community dental health program "THATHWAMASI" (organ donation project by our CDH wing in collaboration with MalayalaManorama) was inaugurated by the Chief Guest.

2. As part of thefirst phase of Bright Smile 2013- The zero cavity year celebration, a poster -"Save 6 @7 & 7 @13" was released.

3. 1st CDH Camp (Screening & Treatment Camp) of the year was conducted on 27/12/2012 at Cholakkund, Parappur in association with CASC Parappur and MED Dental College. 7 doctors attended.

4. On 06/01/2013 2nd CDH Camp (Awareness class for children and parents) was conducted at AUP School Chembrasseri. Awareness classes were taken by Dr. Sumod Namboothiripad and Dr. Bijula. It was followed by oral screening for the children. 321 students with their parents attended the camp.

5. 3rd CDH Camp was held at Thavanur on 2/02/2013 in association with Nila Samrakshana Samithi. 55 patients were examined by 7 doctors.

CDE Activities 1. First time in the history the whole year's CDE calendar was released on the installation day by Dr. Shibu Rajagopal.

2. 1st Inter branch CDE was held at Hotel Surya Regency, Malappuram on Suday 24th Jan 2013 from 3.00pm to 9.00 pm. The CDE included lecture, demo & hands-on on Bleaching, Crown preparation, Impression taking & Temporisation by Dr. Sujit Bopardikar.

Day Celebrations / Observation

1. Pain and Palliative day was observed at Pain & Palliative Centre, Wandoor

2. IDA Kerala Charter Day was celebrated

3. World Cancer Day was observed. Members of IDA Malappuram attended a rally organized by IMA held at Perinthalmanna in connection with the world cancer day.

The MIDA Women's Wing (MIDA LOTUS) and our website (www.idamalappuram.com) were also inaugurated.

Executive committee meetings: 1st Executive committee meeting held on 4/01/13 8pm. onwards at Soorya Regency, Malappuram.