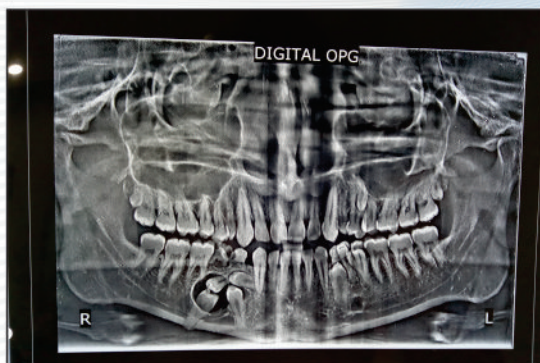
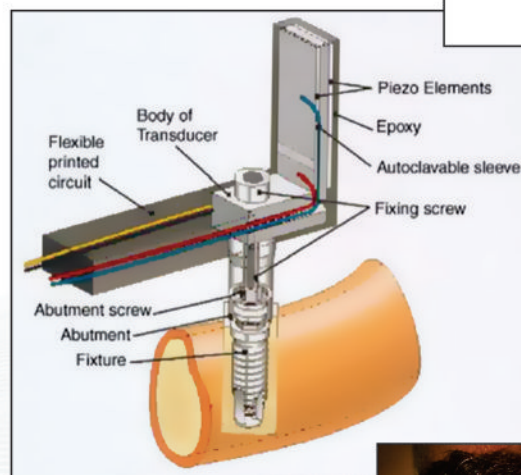


CHHATRAPATI SHAHU MAHARAJ SHIKSHAN SANSTHA'S
DENTAL COLLEGE & HOSPITAL
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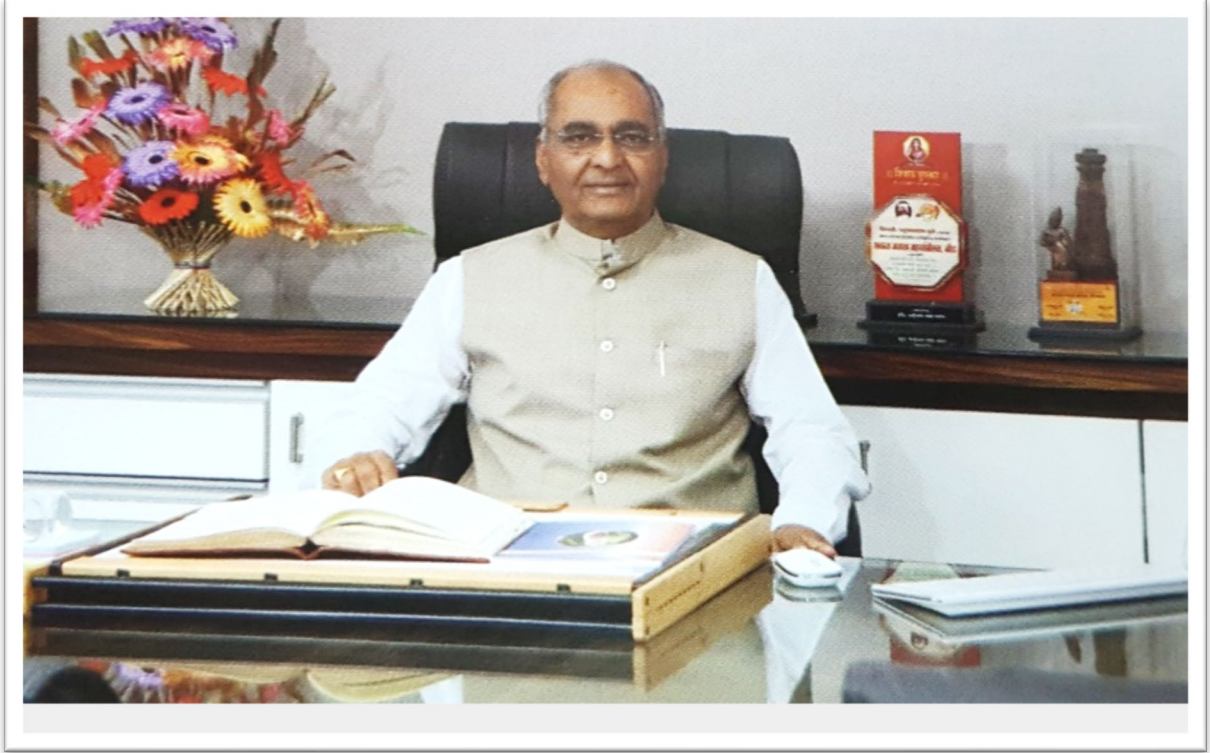




राजर्षी छत्रपती शाहू महाराज

धन्य धन्य तू शाहूराया, तुजसम राजा तुच एकला ।
तूच शिवाजी, बुध्द देव तू, तूच हरी सावळा ॥

OUR INSPIRATION



Hon. Shri. Padmakarji H. Mulay,
Secretary, CSMS Sanstha, Aurangabad

MESSAGE FROM THE PRESIDENT



Chhatrapati Shahu Maharaj Shikshan Sanstha is one of the leading educational society in the State of Maharashtra. Since its inception, this Sanstha has been a benchmark of development. To see a dream becoming a reality is a very heart warming and exciting feeling. The 'Dentovision' Journal of CSMSS Dental college is one of such dreams. This issue of journal is a sign of consistency and hardwork shown by each and every person related to it. It will keep serving the idea of reinforcement and allows increased awareness, improved interaction and integration among all of us.

I congratulate all the students and faculty members of CSMSS Dental College & Hospital for taking initiatives and carrying this noble task ahead.

Hon. Shri. Ranjeet P. Mulay

**President, CSMS Sanstha
Aurangabad**

MESSAGE FROM THE TRUSTEE



I congratulate Chhatrapati Shahu Maharaj Shikshan Sanstha's Dental College & Hospital, for bringing out 'Dentovision' Journal again. I was delighted to see the last issue of this publication. This is a mark of pride that the journal is now entering its next issue. I extend my best wishes to our researchers especially, Post-Graduate students and faculties of Dental College & Hospital. I wish them all the success for this Endeavour.

Hon. Shri. Sameer P. Mulay

**Trustee, CSMS Sanstha
Aurangabad**

MESSAGE FROM THE ADMINISTRATIVE OFFICER



Chhatrapati Shahu Maharaj Shikshan Sanstha was established in 1986, and the dental college under this sanstha was established in 1991. This sanstha has always focused on providing platform to many students and teachers to explore their skills. It is very essential to mention here, that these skills are beneficial to all the patients in need of healthcare. Promotion of scientific activities including scientific lectures, research oriented programmes as well as publishing scientific journals has been an integral part of this sanstha.

I congratulate and give my best wishes to the Dean, Editorial Board members, teaching staff members and the students of CSMSS Dental College and Hospital for publishing this issue of such an informative journal.

Dr. Shrikant Deshmukh

**A. O. CSMS Sanstha
Aurangabad**

MESSAGE FROM THE DEAN



Publication of journals is a vital part of academic development as well as promotion of research activities in the institution. 'Dentovision Journal' is entering its next issue. This journal is a sign of dynamic approach by all the teaching staff as well as students both Under-Graduates and Post-Graduates. I hope this journal flourishes with years to come and sets an example for academic growth.

I congratulate and give my best wishes to the 'Dentovision' Journal team as well as teaching staff and students for their efforts in publishing this scientific journal.

Dr. S. C. Bhoyar

**DEAN, CSMSS Dental College & Hospital
Aurangabad**

Say... No to Tobacco



Editorial

Innovation is the very basics of progress and unless you innovate, you will remain stagnant. Innovation of today will be the history of tomorrow. But the motivation to innovate should be still into the young mind.

Periodontia is the most important speciality that addresses the problem in oral hygiene and diseases. In a populous country like ours, oral hygiene remains as an ignored and unrealized social problem. This is possibly because people are not aware and effort made by the dental professionals are not enough. There is absolute need for focusing on the prevention of oral diseases rather than the treatment aspect.

The masses should be made aware that the oral hygiene is essential for healthy living and therefore educating them is crucial. It is true that this is a colossal task but it is the need of the hour.

Tobacco in its various forms is of great concern and needs to be dealt with utmost commitment at various stages and levels. The use of Tobacco is one of the greatest threats to global health today.

Tobacco use is one of the major preventable causes of premature death and also a common risk factor to several general chronic diseases and oral diseases. The negative impact relates not only to smoking but use of smokeless tobacco. In addition to smoking tobacco, smokeless tobacco is widely used in a number of countries of the world depending on socio-cultural conditions.

World No Tobacco Day is observed around the world every year on **31st May**. It is intended to encourage a 24 hours period of avoid from all forms of tobacco consumption around the globe. The day is further intended to draw attention to the widespread prevalence of tobacco use and it's negative health effects. As per WHO updates, which has been shown that more than 7 million deaths occur each year world wide, of which 890,000 are the result of non-smokers being exposed to second hand smoke.

In India, 275 million tobacco users are the highest levels of tobacco consumption in the world. The member of states of the WHO created World No Tobacco Day in 1987. In past thirty two years, it has been met with both enthusiasm and resistance around the globe from Governments, Public Health Organisation, Smokers Growers and Tobacco Industries.

The effects of tobacco use in populations oral health are alarming. The most significant effect of smoking on the oral cavity are, pre-cancers lesions, oral cancers and increased severity and extent of periodontal diseases as well as poor wound healing.

Helping patients to stop smoking may be the single most important service that a dentist can provide for their patients' complete oral and general health.

The clear link between oral diseases and tobacco use provides an ideal opportunity for oral health professionals to partake in tobacco control initiatives and cessations programmes.



Prevention is clearly the most cost effective measure. Tobacco control protect the rights and health of non-smokers, especially babies, children, youth and pregnant women. **Ash trays with fresh flowers are common symbol of World No Tobacco Day. Let us come together and educate the people to 'Say... No to Tobacco'.**

The tracking of knowledge remains an everlasting dream of every individual and it is no different at CSMSS Dental College, where thirst for knowledge is ingrained in the students.

Once again Journal '**Dentovision**' is being acclaimed by one and all for its unique presentation and publications. As usual, Dentovision invites innovative review, original research papers and case reports from all fields of Dental Sciences for its forthcoming issues.

I, once again acknowledge the continuous support extended by Management, A. O. Sanstha. Our Dean and last but not least, all HOD's, Teaching Staff, PG & UG Students.

Dr. Maya Mhaske

Professor & HOD

Department of Periodontology

CSMSS Dental College & Hospital, Kanchanwadi, Aurangabad

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Modified Closed Cap Splint for Minimally Displaced Paediatric Mandibular Fracture

Dr. Subhash Bhojar¹, Dr. Uma Mahindra², Dr. Reshma Rathod³,
Dr. Snehal Vangikar⁴, Dr. Sayalee Vardam⁵, Dr. Govind Changule⁶



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Abstract :

Mandibular fracture in younger children is most common facial fracture among all the facial fracture in the sequence of condyles followed by symphysis/ parasymphysis and body of the mandible. Symphysis/ parasymphysis fracture of mandible can be minimally displaced or severely displaced depending upon severity of injury. Management of mandibular fractures in children, though complex have to be treated very efficiently without damaging the underlying permanent tooth crypts or altering the mandibular growth which has a great significance on future facial development. This case report highlights a conservative approach which is relatively simple yet efficient and reliable for minimally displaced mandibular fractures i.e Modified closed cap splint for stability of the fracture segment in paediatric patients

Key Words : Modified splint, Cap splint, Parasymphysis fracture

Introduction :

Paediatric fractures are rare when compared with fractures in the adult population and is estimated to occur in 5% of all maxillofacial traumas.¹ Mandibular fractures are the most common (56%) facial skeletal injury in hospitalized paediatric trauma patient.² Patients with a fracture of the mandible were most likely to have a dental injury (39.3%).³ Boys are affected twice as frequently as girls.⁴ The general principles of the management of maxillofacial trauma are similar in both children and adults, but the ongoing developmental changes in the growing face

of a child must be taken into consideration. Open reduction with rigid fixation is not commonly used in paediatric cases. Fracture of the mandible may be associated with or without loss of both hard and soft tissues depending on the severity of the injury. The goal of the treatment of these fractures is to restore the bone architecture in a stable position as less invasively as possible to restore the function and aesthetic impairment.⁵

CASE REPORT

A 10 year old boy reported to the Department of Oral and Maxillofacial Surgery with chief complaint of pain in lower left back region. Patient had history of trauma 10 days prior to the reporting. There was no history of loss of consciousness or vomiting. Intraoral examination revealed slight asymmetry of the mandibular arch. Tenderness and step deformity were observed in the left deciduous canine and first molar region. The preoperative OPG confirmed a left mandibular parasymphysis fracture (Fig.1). Following which primary impressions were taken with alginate and two sets of casts were poured. A modified closed acrylic cap splint was fabricated with one anterior and two posterior opening.

Under local anaesthesia the fractured segments were reduced (Fig.2) over which the modified cap splint was cemented with help of luting GIC (Fig.3). Postoperative instructions were given to the patient and routine analgesics were prescribed. The splint was removed after a period of 1 month at which point the patient didn't report any pain.

An OPG at the 1 month follow-up showed satisfactory healing of the fractured site. (Fig.4)



Fig.1 Preoperative OPG showing left mandibular fracture



Fig.2 Reduction of mandibular left parasymphysis fracture.



Fig.3 Modified closed cap splint cemented with luting GIC



Fig 4 Post-operative OPG after 1 month follow-up

DISCUSSION

Paediatric patients present a unique challenge to oral surgeons because of anatomic variation and changes in the mandibular growth. The management of paediatric mandibular fractures also depends upon the patient cooperation during the treatment. Healing period is also faster in children aided by the well vascularized tissue and blood supply of the face.⁶⁻⁷

Factors to be considered in the definitive treatment of the dentoalveolar injury include, age and cooperation of the patient; duration between trauma and treatment; location or extent of the injury; injury to primary or

permanent dentition; stages of root development; presence of fracture of supporting bone; periodontal health of remaining teeth.

There are various techniques which were utilized in management of paediatric fractures like Tape Muzzles, Circumferential wiring, acrylic Splint, percutaneous skeletal fixation, open reduction, resorbable plates, orthodontic resin, modified orthodontic brackets, rubber elastics in combination with orthodontics brackets, nickel titanium staples depending upon the minimally/severely displaced fractures.⁸

Fractured jaws with open reduction require longer periods of immobilization. Such prolonged maxillomandibular fixation deprives the maxillofacial structures of their normal function and causes the patient considerable difficulty in eating and speech.

In some instances, fractured jaws can be treated efficiently with splints attached to a single dental arch with no maxillomandibular wiring. The functional activity promotes healing through activation of circulation. In addition, the patient is saved the discomfort of circumferential wiring and the difficulty in removing cemented splints.

In a minimally displaced parasymphysis / symphysis fracture acrylic cap splints are ideal. They not only avail support from the adjacent teeth, but also from bone. They are easy to fabricate and are economical.

Following splint placement and during the entire period of the splint in situ, a strict protocol for diet and maintenance of oral hygiene is followed. Liquid or semisolid diet should be advised initially, and hard foods should be completely avoided. Maintenance of oral hygiene poses a problem, particularly with children and more so with the splint in place. The child is advised to use regular mouth rinses containing 0.2% chlorhexidine

gluconate. Alternately, parents are trained and advised to irrigate the oral cavity with warm saline in a 10cc disposable syringe following any food intake. Following removal of the splint, a careful examination of the teeth and the fractured fragment is carried out to confirm satisfactory healing of the fracture. It is also imperative to monitor such cases over a prolonged period so that future eruption of the permanent dentition can be closely observed.

Conclusion

Mandibular fractures most commonly involve dental injury. In treating paediatric patients, it is of paramount importance to take in consideration the developing tooth buds and devise a treatment plan that achieves reduction, immobilisation and fixation of fracture with minimal disturbance to developing tooth buds and the developing mandibular bone. Modified cap splints can effectively be used in treating non-displaced or minimally displaced mandibular fractures of symphysis and parasymphysis region in comparison to severely displaced, comminuted or otherwise complicated fractures that may need open reduction and rigid internal fixation. Modified cap splint can be recommended in mandibular symphysis/parasymphysis fracture in paediatric patients

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Dentigerous Cyst: A Case Report

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Abstract :

Dentigerous cysts are the second most common odontogenic cysts after radicular cysts and are most commonly seen in association with impacted maxillary and mandibular third molars and maxillary canines. Only 5% of dentigerous cysts involve supernumerary teeth, of which mesiodens is the most frequent type. Such cyst remains initially completely asymptomatic unless when infected and can be discovered only on routine radiographic examination. This paper presents a case of 35 year old patient with a dentigerous cyst associated with impacted right mandibular premolars and supernumerary teeth that caused painful swelling in the lower buccal vestibule. The patient was treated surgically by enucleation of a dentigerous cyst in toto with surgical extraction of premolars and supernumerary teeth under local anaesthesia followed by primary wound closure

Key Words : Dentigerous cyst, Impacted tooth, Supernumerary tooth, Platelet-rich Fibrin, Bone Graft

Introduction :

The dentigerous cyst is the second most common cyst of the jaws comprising 14–20% of all jaw cysts, and they are more frequent in males and more common in mandible^[1-4]. By definition, this lesion is attached to the cervix of an impacted tooth and results from proliferation of reduced enamel epithelium after the enamel formation. Dentigerous cysts enlarge as a result of the accumulation of fluid between the crown of an impacted tooth and the reduced enamel

epithelium^[5]. Dentigerous cysts are usually discovered on routine radiographic examination or when radiographs are taken to determine the reason for failure of a tooth to erupt. They are always radiolucent and usually unilocular, although large lesions occasionally show a scalloping multilocular pattern^[3,4,6,7]. In case of mandibular third molars, the frequency of impaction is roughly the same as that of cyst formation, whereas maxillary third molars have a much higher frequency of impaction than cyst

involvement, suggesting that this tooth has a much lower relative risk of developing a dentigerous cyst than its mandibular counterpart^[8]. Similarly, the risk of cyst formation around the crowns of unerupted mandibular first premolars, maxillary incisors, or mandibular second molars is very high, although the frequency of failure of eruption of these teeth is extremely low^[9]. Most dentigerous cysts are asymptomatic but may attain large size with resorption of the roots of teeth till it manifests clinically or radiographically. Treatment of cyst consists of cystic enucleation and removal of impacted tooth. Prognosis is excellent and recurrence is rare if completely removed.

Case Report:

A 35-year-old male patient reported to our department with chief complaint of intraoral painful swelling in the lower right region which was present since 12 months. The patient gave history of pain in that region with respect to 84 and 85 since 15-20 days. Extraoral examination revealed no swelling. Intraoral examination revealed a swelling extending anteriorly from distal surface of mandibular right canine to distal surface of 1st molar posterior, inferiorly obliterating vestibule and superiorly up to the gingival margin [Fig. 1]. Slight tenderness was noticed on percussion with carious 84 and 85.

The panoramic radiograph [Fig.2] showed radiolucency involving impacted right premolars which was large unilocular, well-circumscribed radiolucent lesion enveloping the unerupted premolars and two supernumerary teeth. Based on the aforementioned findings, it was provisionally diagnosed as dentigerous cyst with a differential diagnosis of

odontogenic keratocyst or radicular cyst for which enucleation was considered as treatment option alongwith the removal of all unerupted teeth. Under local anesthesia, maxillomandibular fixation using arch bars was done as a preventive measure for preventing pathologic fracture. Carious 84 and 85 were extracted and a full thickness mucoperiosteal flap was raised anteriorly from mandibular right lateral incisor to right second molar posteriorly [Fig.3]. Surgical exposure of pathologic lesion was done [Fig.4] and cystic lining was enucleated in toto alongwith the removal of all unerupted associated teeth [Fig.5]. Platelet rich Fibrin (PRF) and bone graft placed in the bony defect FIG 6: Platelet-Rich Fibrin (PRF) and bone graft [Fig.7] and mucoperiosteal flap was sutured with 3-0 black braided silk suture (BBSS).

[Fig. 8] Regular follow up was done for uneventful post-operative healing. On the basis of clinical and radiographic findings, the present case was diagnosed as dentigerous cyst involving the unerupted right mandibular premolars.

Preoperative photograph showing intraoral swelling; FIG 1 : FIG 2: Preoperative radiograph showing radiolucency with sclerotic border involving 4 premolars; FIG 3: Full thickness mucoperiosteal flap reflected; FIG 4: Exposure of premolars; FIG 5: Cystic enucleation; FIG 6: Platelet-Rich Fibrin (PRF) and bone graft; FIG 7: PRF and bone graft placed in the bony defect; FIG 8: Wound closure done using 3-0 BBSS.



Fig 1: Preoperative photograph showing intraoral swelling; **Fig 2:** Preoperative radiograph showing radiolucency with sclerotic border involving 4 premolars; **Fig 3:** Full thickness mucoperiosteal flap reflected; **Fig 4:** Exposure of premolars;

Fig 5: Cystic enucleation; **Fig 6:** Platelet-Rich Fibrin and bone graft; **Fig 7:** PRF and bone graft placed in the bony defect; **Fig 8:** Wound closure done using 3-0 BBSS.

Discussion:

Dentigerous cysts are developmental cyst of odontogenic origin and the most prevalent, comprising 14 to 24% of the entire jaw cyst^[10,11]. Since cysts can attain considerable size with minimal or no symptoms, early detection and removal of the cysts is important to reduce morbidity. Although evidence in the literature suggests that dentigerous cysts occur more frequently during the second decade of life,^[12,13] these lesions can also be found in children and adolescents. The incidence of dentigerous cysts is twice as high in male patients compared to female counterparts^[14,15] Whites are more affected than blacks^[16]. Dentigerous cysts are usually solitary, slow growing, asymptomatic lesions that are incidentally found during routine radiographs taken to identify a missing tooth. They can occur at any location of the jaw but frequently seen in relation to impacted mandibular third molars followed by the maxillary canines and maxillary third molars^[16,17,19]. Occasionally these cysts become painful when infected causing swelling and erythema. The cyst is usually small but when large, results in the expansion and thinning of the cortex leading to pathological fracture^[16,18]. Although the clinical presentations are classical of a dentigerous cyst, in our case it was associated with impacted mandibular premolars and supernumerary teeth. Radiographic features are specific to the lesion characterized by a well defined radiolucency circumscribed by a sclerotic border, associated with the crown of an impacted or unerupted tooth. The borders may be ill-defined when infected. Rarely may they be found with odontoma or a supernumerary tooth^[17,18]. Although they

mimic a normal tooth follicle, literature suggest any follicular space of more than 4 mm to be a dentigerous cyst^[16]. Radiographically the cyst is classified according to its relation with the involved tooth crown as central, lateral and circumferential type. The central type is the most common and presents surrounding the crown. The lateral dentigerous cyst is that, which partially surrounds the crown and extends along the side of the root. The circumferential variant surrounds both the crown and the root of the involved tooth^[17].

Histologically, the lumen is lined by 2 to 4 cell layers of cuboidal to flattened nonkeratinized epithelial cells but may form keratin by metaplasia^[20]. The connective tissue is more collagenous when inflamed and contain varying degree of chronic inflammatory cell infiltration^[16,18]. Dentigerous cysts are treated most commonly by Enucleation^[11], Marsupialization^[22] and decompression of cyst by fenestration^[13]. The most preferred treatment is enucleation with the removal of impacted tooth. Large dentigerous cyst may be treated with marsupialization followed by enucleation. The prognosis is excellent when the cyst is enucleated in toto and recurrence is rare. As the lining epithelium has the pluripotential capacity, these lesions may progress to ameloblastoma, mucoepidermoid carcinoma and squamous cell carcinoma^[16].

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Tobacco Addiction And Cessation: A Review

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Abstract :

The addictive nicotine substance of tobacco makes it a difficult process for the patient, the counselor and the clinician through the entire process of tobacco cessation. Whether the patient consumes smoked form or smokeless tobacco, withdrawal symptoms are encountered during this process of quitting. This review highlights the important protocols in a concise form regarding tobacco cessation.

Key Words : Tobacco cessation, Addiction, Quit tobacco, Nicotine.

Introduction :

The Portuguese introduced tobacco to India 400 years ago and established the tradition of tobacco trade in their colony of Goa. Two hundred years later the British introduced commercially produced cigarettes to India and established tobacco production in the country.¹ Tobacco-related mortality in India is among the highest in the world, with about 700,000 annual deaths attributable to smoking in the last decade.² Annual oral cancer incidence in the Indian subcontinent has been estimated to be as high as 10 per 100,000 among males and oral cancer rates are steadily increasing among young tobacco users.³ The use of tobacco is harmful to general health, as it is a common cause of

addiction, preventable illness, disability and death.¹ Tobacco smoking consists of drawing into the mouth, and usually the lungs, smoke from burning tobacco. The type of product smoked is most commonly cigarettes, but can also include cigarillos, cigars, pipes or water pipes.

‘Smokeless’ tobacco is also popular in some parts of the world. This typically involves using tobacco preparations for chewing, sniffing into the nose or placing as a wad in the mouth between the cheeks and gums. Smokeless tobacco use has features that are similar to smoking and can carry significant health risks.⁴ A ‘premature death from smoking’ is defined as a death from a smoking-related disease in an individual who

would otherwise have died later from another cause. On average, these premature deaths involve 10 years of life years lost.⁵ It has been estimated that if adult consumption were to decrease by 50% by the year 2020, approximately 180 million tobacco-related deaths could be avoided.⁶

In order to reduce tobacco-related deaths and diseases, current users must quit tobacco use. Although this is a critical step in tobacco control, special efforts will be required to help current users quit tobacco use.³

The Methods of Tobacco cessation:

The AAFP's tobacco cessation program, "Ask and Act," encourages family physicians to ASK their patients about tobacco use, and then ACT to help them quit. (Figure 1). This easy-to-remember approach provides the opportunity for every member of a practice team to intervene at every visit. Interventions can be tailored to a specific patient based on his or her willingness to quit, as well as to the structure of the practice and each team member's knowledge and skill level.⁷

The five A's recommended in the Guideline.⁷

Ask: Identify and document the tobacco use status of every patient at every visit.

Advise: In a clear, strong, and personalized manner, urge every tobacco user to quit.

Assess: For the current tobacco user, is the user willing to make a quit attempt at this time?

For the ex-tobacco user, how recently did he/she quit, and are there any challenges to remaining tobacco free?

Assist: For the patient willing to make a quit attempt, offer medication and provide or refer for counseling or additional behavioral treatment to help the patient quit.

For patients unwilling to quit at this time, provide interventions designed to increase future quit attempts.

For the patient who recently quit and for the patient facing challenges to remaining tobacco free, provide relapse prevention.

Arrange: For the patient willing to make a quit attempt, arrange for follow-up contacts, beginning within the first week after the quit date.

For the patient unwilling to make a quit attempt at this time, address tobacco dependence and willingness to quit at next clinic visit.

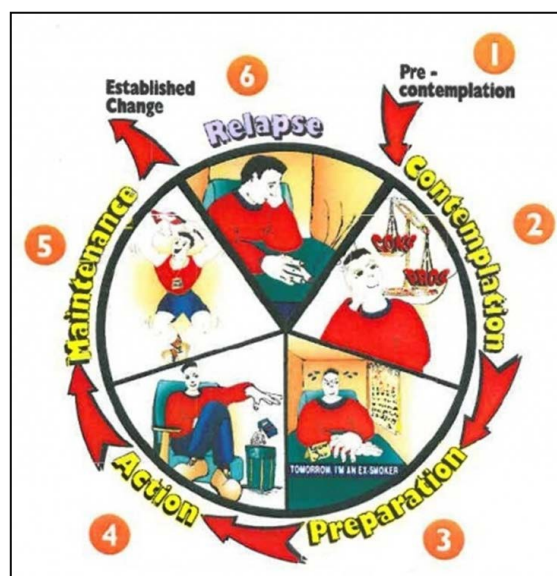


Figure 1: Stages of readiness to quit smoking.⁸

There are two major types of medication available that may be able to relieve withdrawal symptoms: nicotine replacement therapies (NRTs) and non-nicotine replacement therapies. NRTs include nicotine patch and gum or other oral preparations, whereas non-nicotine therapies include medications like bupropion and varenicline.⁹ Nicotine Replacement Therapy (NRT) is the most widely used therapy for smoking cessation and comprises a range of products with passive (transdermal patch) and instantaneous nicotine delivery (eg, gum, nasal spray, inhaler) with the rationale of providing a slow and steady supply of nicotine to achieve constant concentration levels of nicotine in order to relieve craving

and withdrawal symptoms. NRT has been associated with odds ratios of 1.5–1.8 for successful quitting. A combination of NRTs appears to work better than a single NRT for smokers. The abuse potential of NRTs has been described to be low.³

Bupropion is an antidepressant drug. It is believed to act as an antagonist by blocking nicotine receptors in the brain and affecting the brain's reward/pleasure system. Bupropion approximately doubles the odds of success in quitting. Nortryptiline, a second-generation tricyclic antidepressant and clonidine, an alpha-agonist antihypertensive are recommended as second-line medications.³

The Five R's⁷

Relevance. Why is quitting relevant to this patient? For example, maybe he or she has had a personal health scare, such as a recent heart attack, or has a child who has asthma.

Risk. Ask the patient to list negative effects of their tobacco use. These may include short-term risks, long-term risks, and environmental damage.

Rewards. Ask the patient to list benefits of quitting. These may include being healthier, saving money, setting a good example, or having better self-esteem.

Roadblocks. Ask the patient to identify barriers to quitting. Then, talk about ways to address these barriers. For example, if a patient is worried about withdrawal symptoms, ease his or her fears by describing medication options that can help.

Repetition. The health care team should repeatedly follow up with the patient, keeping in mind that it may take repeated attempts to quit, especially for patients with a behavioral health disorder.

It is commonly thought that smokers with mental health problems are using cigarettes to 'self-medicate' or treat their psychological

symptoms. However, the evidence indicates that neither nicotine nor smoking improves psychological symptoms, and people with serious mental health disorders who stop smoking do not experience a worsening of mental health.⁴

Finally, tobacco control efforts are more likely to be bolstered when incorporated into existing national, state, and district-level health structures linked with current positions and accountability processes. The attempt to do so under the National Tobacco Control Program must be sustained and strengthened.³

Conclusion:

Prevention of addiction could be the best possible measure to interfere this cycle of addiction and cessation related to smoke and smokeless forms of tobacco. During the complete process of cessation, establishment of doctor patient trust plays key role along with the clinicians' therapeutic and organized approach.

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Chronic Suppurative Osteomyelitis Of Maxilla : A Case Report

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Abstract :

Though now-a-days the prevalence Osteomyelitis is decreasing, it still remains a challenging clinical entity. In recent times there is an increasing incidence of systemic diseases that compromise the host immunity such as diabetes mellitus, HIV infection etc. In the present cases of maxillary osteomyelitis secondary to odontogenic infection among immune compromised individual is reported.

Key Words : Maxillary osteomyelitis, sequestrum , suppurative osteomyelitis .

Introduction :

Osteomyelitis of the maxilla is a rare condition, the gravity of which was appreciated by Hippocrates as long ago as the 5th century BC [1]. Thin cortical bone rich in vascularity makes the maxilla scarcely vulnerable to osteomyelitis as compared to mandible[2]. After the introduction of antibiotics, acute phases of osteomyelitis are often concealed by antimicrobial drugs without fully eliminating the infection. [3,4]. Suppurative osteomyelitis can involve all three components of bone: Periosteum, cortex and marrow. In established suppurative osteomyelitis, symptoms include

deep pain, malaise, fever and anorexia. Within 10-14 days after onset, teeth in the involved area begin to loosen and become sensitive to percussion. Pus exudes around the gingival sulcus or through mucosal and cutaneous fistulae[4]. Factors which contribute to osteomyelitis are systemic diseases which compromise the immune system of an individual such as diabetes mellitus, HIV, malnutrition, and use of chemotherapeutic agent.[4].The goal of treatment is to remove dead bone and eliminate or at least attenuate the proliferating pathogenic microorganism through a combination of surgery, antibiotic

and supportive care for healing[2]. Here we present a rare case of chronic suppurative osteomyelitis of anterior maxilla with sequestration and its management.

Case Report :

A 40 year male patient reported in the Department of Oral and Maxillofacial surgery with the chief complaint of intermittent pain and pus drainage in upper anterior region since one and a half month. Patient was poorly built and malnourished and weighed 45 kg. Patient was advised to go for radiological, blood and serological investigation. Radiological investigation revealed multiple radiopaque and radiolucent lesions (moth eaten appearance) from 16 to 25 region.



Fig 1 : Preoperative OPG showing multiple radiopaque and radiolucent lesions

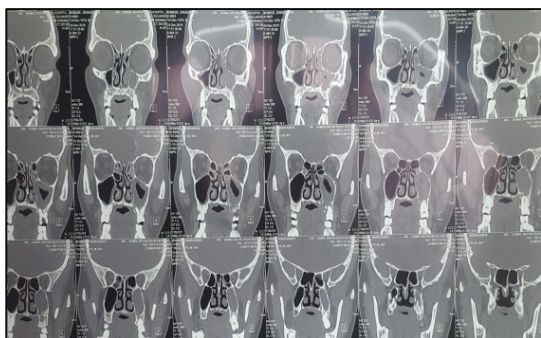


Fig 2: preoperative CT scan showing bone destruction in anterior maxilla

Diabetes was detected in blood investigation. Based on the clinical and radiographic examination, a final diagnosis of chronic suppurative maxillary osteomyelitis was

made. A course of antibiotics was given and surgery was scheduled for 3 days later.

Under all aseptic precautions and local anesthesia with 1: 80,000 adrenaline crevicular incision was given from 16 to 26 region ,full subperiosteal flap reflected, sequestromy of anterior maxilla along with extraction of teeth from 16 to 25.



Fig 3: showing resected anterior maxilla clinically



Fresh bleeding was induced, sound bone was smoothen, betadine soaked ribbon gauge was placed and wound was closed with 3.0 mersilk. Ribbon gauze was changed everyday for consecutive 7 days, healing was uneventful. Palatal obturator was given after 15 days to restore the speech , and to provide support to soft tissues.



Fig 4: showing Postoperative suturing



Fig 5: Showing Palatal obturator



Fig 6: Showing Healing after giving palatal obturator



Fig 7: showing immediate Postoperative OPG

Discussion :

Osteomyelitis (OM) of maxilla is a rare entity with the advent of antibiotics, improved nutrition, dental care, early diagnosis and intervention based on new imaging modalities [3,6]. OM is a challenging disease for clinicians and patients, despite many advances in diagnosis and treatment planning.

The principles of treatment are evaluation and correction, to the extent possible, of

compromised host defense along with empirical administration of culture-guided antibiotics, removal of loose teeth and sequestra, debridement, decortication, resection and reconstruction. Adjunctive hyperbaric oxygen therapy (HBO) for nonradiation OM may be considered in refractory infections and among medically compromised with no HBO contraindications[6-9].

Conclusion :

To conclude, on one hand occurrence of osteomyelitis seems to have become rarer with the advent of newer antibiotics, imaging techniques and better social conditions, but on the other hand with the increasing prevalence of immunocompromised conditions like diabetes mellitus, HIV infection, etc which act as predisposing factors osteomyelitis seems to be on the rise. The cause of this disease is multifactorial and its presentation varies. Infection of the maxilla can cause serious complications for the patient such as infection of cranial cavity and brain. Thus, it is essential that any maxillary osteomyelitis be treated aggressively to avoid subsequent dreaded consequences.

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Irritation Fibroma – Case Report

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Abstract :

Irritational fibroma is a reactive lesion that is among the most common oral soft -tissue lesions, caused due to local trauma or irritation by plaque, calculus, overhanging margins, and restorations, that may cause aesthetic and functional problems. This article addresses the diagnosis, histological features and treatment of a case of irritational fibroma.

Key Words : Fibro-Epithelial Hyperplasia; Irritational Fibroma;

Introduction :

Irritational fibroma is a common, benign, slow- growing, soft tissue tumor. It usually presents as an asymptomatic mass, “which gradually increases in size. It is usually characterized by a slow, painless growth that increases over a period of months or years. Clinically, the growth is localized, with a smooth surface and a hard consistency usually with normal colored mucosa, sessile, or pedunculated base.

Case Report :

A 57 year old male patient reported to the department of Oral Medicine and Radiology with the chief complaint of overgrowth in his

left back region of jaw since 2 months, which was initially smaller in size. Patient gave history of continuous trauma to same region on mastication following which the overgrowth rapidly enlarged in size to the present condition

On extraoral examination, the face appeared bilaterally symmetrical, with competent lips and the lymph nodes were not palpable. On intraoral examination, single ovoid growth seen on left buccal mucosa extending from mesial of 26 to distal of 27 and vertically from cervical aspect of 26 till cervical aspect of 36. size approximately 1cmX 1cm It has ulcerative surface, erythematous surrounding mucosa

(Fig 1). On palpation the growth is pinkish, firm sessile and tender. Hard tissue examination revealed grade II mobility with 26. Localized gingival inflammation in lower anterior region. Lingual aspects of lower anterior teeth shows calculus deposits.

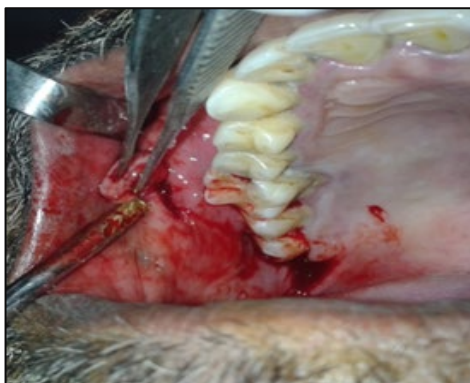


Intraoral Picture (Fig 1)

On the basis of the history and clinical findings a provisional diagnosis of irritational fibroma on left buccal mucosa was made.

Differential diagnosis Hyperplastic fibroma, peripheral giant cell granuloma, peripheral ossifying fibroma, pyogenic granuloma was considered in differential diagnosis. Due to the presence of local factor like trauma on mastication, the clinical appearance and the site of the lesion, a final diagnosis of irritational fibroma was considered.

Treatment – excisional biopsy of the lesion along with extraction of 26 (Fig 2, 3 & 4)



Surgical Removal (Fig 2)

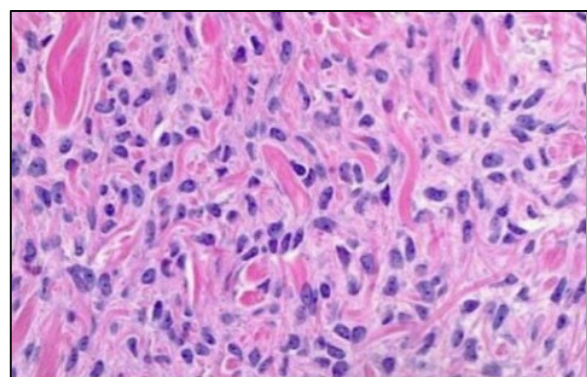


Extraction 26 (Fig 3)



Specimen (Fig 4)

Histopathological examination – the overall histopathological features were suggestive of fibroepithelial hyperplasia which were suggestive of irritational fibroma. (Fig 5)



(Fig 5)

Discussion :

Traumatic or irritational fibroma is a common, benign, exophytic, and reactive oral lesion that develops secondary to injury and constitutes about 7.4% of

oral soft -tissue lesions.^{2,3} Irritational fibroma is also known as focal fibrous hyperplasia, oral fibroma, or fibromatosis fibroma . It shows female predilection than males and is seen more frequently in the third and fourth decade of life.^{1,4} Approximately, 60% of irritation fibromas involve the maxilla and more often found in the anterior region, with 55 - 60% present at the incisor-cuspid region.^{1,5} In the present case, the lesion was present on left buccal mucosa with respect to 26 region. Clinical features comprise sessile or pedunculated masses with smooth or injured surfaces and are seen in different colors ranging from pale to bright pink to red. The size of these reactive hyperplastic masses can be greater or lesser, depending on the components of the inflammatory reaction and healing response exaggerated in the particular lesion. Irritational fibroma can also produce migration of teeth with destruction of the interdental bone.⁶ Differential diagnosis includes pyogenic granuloma, peripheral giant-cell granuloma, and peripheral ossifying fibroma, which may also arise as a result of irritation due to plaque micro organisms.⁶

Treatment of irritation fibroma aims at elimination of etiological factors followed by scaling of adjacent teeth and total surgical excision along with involved periodontal ligament and periosteum to minimize recurrence. Any identifiable irritant should be removed. If left untreated, it may increase in size and may affect the mastication, speech

and aesthetics. On infection, may cause pain, bleeding and may lead to abscess formation.⁶

Conclusion :

Irritational fibromas are one of the most common oral fibromas. A thorough history, clinical, radiographic and histologic examination should be carried out to rule out other oral lesions and arrive at an accurate diagnosis. Early detection, elimination of the irritations and the treatment of the lesions

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A Case Report Of Oral Lipoma

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Abstract :

Consisting primarily of adipose tissue and generally a non-threatening tumor of fat, lipomas are reported mostly as a painless swelling by the patient. Its location on the oral mucosa is rare, representing 1% to 5% of benign oral tumors although it is the most common mesenchymal tumor of the trunk and proximal portions of extremities. Lipoma of the oral cavity may occur in any region. Its location on the oral mucosa is rare, representing 1% to 5% of benign oral tumors although it is the most common mesenchymal tumor of the trunk and proximal portions of extremities. Lipoma of the oral cavity may occur in any region. Here we intend to report one such case of an oral lipoma.

Key Words : Oral lipoma, Oral benign tumor, Epulis

Introduction :

Lipoma is defined as a benign, slow growing neoplasm composed of mature fat cells.¹About 15 to 20% of the cases involve the head and neck region, while 1–4% affect the oral cavity, an uncommon site for the occurrence of lipoma.²They are usually reported in middle aged individuals with some authors reporting male predilection.³Lipoma of the oral cavity may occur in any region. The buccal mucosa, tongue, and floor of the mouth are among the common locations..They are commonly present as slowgrowing asymptomatic lesions with a characteristic yellowish color and soft, doughy feel in the buccal mucosa,

floor of the mouth and tongue.⁴Along with clinical correlation, histopathology remains a gold standard to rule out a definitive diagnosis. Here we report a case of an intra-oral lipoma.

Case Report:

A 48yr old male patient from rural region reported to the outpatient department with a chief complaint of missing teeth in lower front region of jaw. Patient lost the prosthesis & wanted to get a new one. He also noticed a soft swelling in maxillary posterior region which frequently disturbed during mastication. Patient had no significant medical history except for a

history of dental extractions for mobile teeth. He was an obese individual. On intra-oral inspection, there were missing teeth with 31, 32, 41, and 42. A single, well defined, pedunculated soft tissue overgrowth was seen on muco-gingival junction on buccal aspect associated with 26 region (figure 1). It was pale pink in color with normal overlying & adjacent mucosa. On palpation it was solitary, soft overgrowth in left mucobuccal region associated with 26 attached to the mucogingival region. It was pedunculated with a tiny stalk originating in mucobuccal region of size 1 mm in length as well as circumference. The size of growth was approx 1 cm in diameter. It was soft and compressible, with slippery texture & smooth surface, non tender and did not show blanching or pus discharge or any tendency to bleed during it manipulation. There was generalized gingival recession along with heavy deposits of calculus all over the teeth present. Thus the periodontal status of the patient looked compromised. A provisional diagnosis for the intra-oral soft tissue growth was considered as epulis, with differential diagnosis considered as irritational fibroma, lipoma. A complete haemogram revealed no abnormal findings. Patient was advised surgical excision of the lesion along with complete oral prophylaxis and prosthetic rehabilitation. The soft tissue lesion was excised and sent for histopathologic examination which revealed that the H&E stained tissue sections shows a covering of stratified squamous epithelium (figure 2). The underlying connective tissue shows a lobular arrangement of adipocytes separated by connective tissue septa. Hence, a final diagnosis of Oral lipoma with maxillary left mucobuccal region was

established.⁶ Patient was recalled after 3 months for follow-up and it showed no recurrence on buccal aspect associated with 26 region (figure-3).

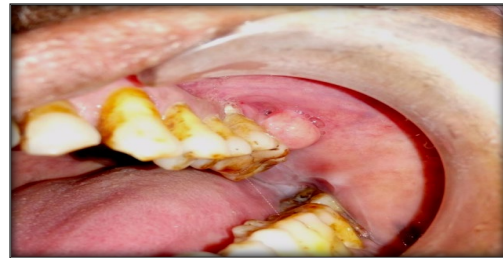


Figure 1: Clinical appearance intra-orally.



Figure 2: Excised tissue.



Figure 3: Post op follow up.

Discussion:

Lipomas are the most common mesenchymal tumors especially in trunk and proximal portions of the extremities but they are rare tumors of oral cavity.⁵ Lipoma was first described by Roux in 1848 in a review of alveolar masses where he referred it as “yellow epulis”. The etiology of intraoral lipoma remains unclear, but the suggested pathogenic mechanisms include the “hypertrophy theory” which states that obesity and inadvertent growth of adipose tissue may contribute to formation of these oral lesions. This theory is less convincing in explaining those lesions occurring in areas devoid of preexisting adipose tissue.⁷ The “Metaplasia theory”

suggests that the lipomatous development occurs due to aberrant differentiation of mesenchymal cells in lipoblasts. Other mechanisms such as trauma, infection, chromosomal abnormalities or hormonal imbalances have also been proposed.⁸Lipomas have been reported in all parts of the body including regions of back, shoulder, neck, and extremities.⁹Intra orally lipomas are commonly located on buccal mucosa (53.7%), buccal sulcus (14.6%), and tongue (9.8%). They are encapsulated, but may present an infiltrating growth if capsule is absent. These are slow-growing, painless, and asymptomatic lesions, which may interfere with speech and mastication.¹⁰Signs and symptoms may include a feeling of fullness and discomfort. Rarely various functional problems like dysphagia, difficulty in speech, and mastication have also been encountered in large sublingual lipomas. Literature review has shown that 5% of the cases were multiple.²Histologically they can be classified as simple lipoma, fibrolipoma, spindle cell lipoma, intramuscular lipoma, chondrolipoma, pleomorphic lipoma, myxoidlipoma, angioliipoma and sialoliipoma.⁸Other connective tissue lesions such as granular cell tumor, neurofibroma, traumatic fibroma, and salivary gland lesions (mucocele and mixed tumor) might be included in the differential diagnosis.⁴Circumscribed but not encapsulated aggregate of mature adipocytes with large clear cytoplasm in the absence of vascularity is the diagnostic features of a classical lipoma. Techniques like xeroradiography and echography are often used to delineate the anatomical extent of intraoral lesions but have limited capacity to precisely determine the extent

of the lesion. Computed tomography and magnetic resonance imaging enable the diagnosis of these tumours to be made quite readily.²The most accepted treatment is surgical excision, but medical management has also been proposed.⁸ Medical management of lipomas, which is now common, includes steroid injections that result in local fat atrophy, thus, shrinking the tumour size. Average volume of steroid used may range from 1 to 3ml depending on the size of tumor. Liposuction using a 16-gauge needle and large syringe are useful in small or large lipomatous growth where scarring should be avoided.²

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Case Report – Atrophic Lichen Planus Clinical Presentation And Its Management

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Abstract :

Lichen planus is an autoimmune mucocutaneous disorder. Orally the most commonly involved sites are buccal mucosa, tongue and gingiva. About 10% of the patients with oral lichen planus have lesions confined to the gingiva. The purpose of this paper is to report two cases of atrophic lichen planus of gingiva in 30 & 50-year-old female patient with chief complaint of burning sensation in the oral cavity from past one year. Histopathological examination was carried out to confirm the diagnosis. The patient was treated with topical corticosteroids using occlusal tray. Following which the lesions and symptoms of burning sensation in the mouth resolved. Thus, this case report highlights the correct diagnosis and the treatment plan and timely management of such cases.

Key Words : Oral lichen planus, Gingiva, Atrophic lichen planus.

Introduction :

Oral lichen planus (OLP) is a chronic, inflammatory muco-cutaneous disease of unknown etiology, with a prevalence rate of 0.2- 4% in the population. ⁽¹⁾ It is more frequently seen in women, with a male to female ratio of 2:3. ^(2,3) OLP occurs usually between the ages of 30 and 70 years. Children and adolescents are rarely affected.

Intra-orally, the buccal mucosa is the nearly all commonly affected site (64.3%), however, the gingiva may be involved with a similar frequency (59.8%), in approximately 10% of the patients the oral lesions are confined to the gingiva ⁽⁴⁾ Varying in its clinic appearance, OLP can appear keratotic

(reticular or plaque-like), annular erythematous, atrophic, hypertrophic, and ulcerative, and is often accompanied by skin lesion. About 40% patient had mucosal and skin lesions, 35% had skin lesions while 25% had mucosal lesions only. ^(5,6,7) This mucocutaneous disease can manifest as desquamative gingivitis, asymptomatic Wickham striae or plaques, or severe, painful erosions or ulcerations anywhere in the oral cavity.

The cause of LP remains unclear. Current evidence suggests that OLP is a T-cell-mediated process. Lesional LP tissue shows massive local activated T-cell populations, with an increased local expression of

cytokines and altered adhesion molecule expression. (8,9) Mental stress, malnutrition, infection (viral), mechanical trauma and tobacco use are the precipitating factors of OLP.

OLP with manifestation confined to the gingiva may be clinically characterized by the presence of erythema (atrophic lichen planus), the presence of ulcerations (erosive and/or ulcerated lichen planus), or vesiculobullous lesions (bullous lichen planus).⁽¹⁰⁾ The oral manifestation of lichen planus generally has typical clinical aspects and distribution, but the atrophic and erosive forms may be challenging even for the most experienced dental practitioner. ⁽¹¹⁾ Frequently, the atrophic and erosive forms of lichen planus cause pain and burning in the affected area. Difficulties in the establishment of the diagnosis of gingival lichen planus may arise if gingivitis and periodontitis are superimposed on the lesions. Here we present a case of gingival atrophic lichen planus with special emphasis on its clinical and microscopic features along with management.

Case report 1 :

A 30-year-old female patient reported to the department of oral medicine and radiology CSMSS dental college, Aurangabad with the chief complaint of burning sensation in the mouth for one year with severity increasing while taking spicy food substances. Oral examination showed the presence of multiple bilateral erythematous and desquamative areas on both upper and lower buccal gingival mucosa, involving marginal and attached gingiva with distinct white striations at the periphery. On right buccal mucosa hyperkeratotic white striations seen in the reticular pattern extending 2.5cm from the

corner of mouth till retro molar pad, which were non-tender, non-scrapable on palpation. (Fig-1) On examination, the patient did not report relevant medical history or any history of allergy to amalgam or other dental materials. She had no history of any skin lesions. An incisional biopsy was performed from the posterior upper gingival lesion.

The histopathologic examination of the gingival lesion showed a flattened epithelium with a band of acute and chronic inflammatory cell infiltrate was noted in the sub epithelial portion of connective tissue. The diagnosis was gingival atrophic lichen planus according to both clinical and histopathological pattern while reticular lichen planus with right buccal mucosa. The patient was treated with a corticosteroid applied topically to the gingiva twice daily using soft occlusal splints (clobetasol propionate 0.05% along with orabase as adhesive). (Fig-2) The complete remission of lesions was observed after two months and one-year follow-up did not detect exacerbation of the lesions. (fig-3)



Figure 1: Clinical Picture: First Day



Figure 2: Clinical Picture: During Treatment.



Figure 3: Clinical Picture: Follow up.

Case report 2 :

A 50-year-old female patient reported to the department of oral medicine and radiology CSMSS dental college, Aurangabad with chief complain of burning sensation in mouth on consumption of spicy food for 1 year and pain in lower right back region of jaw for 1 month. On intraoral examination gingiva presented with erosive erythematous areas were observed over the upper and lower attached gingiva on buccal and lingual aspect presenting with persistent, irregular areas of redness. No ulcerations were seen. The erosive area showed mild tenderness on palpation(desquamative gingivitis). (Fig-4) On clinical examination of buccal mucosa, an interlacing white keratotic striae giving a web-like appearance were seen on right buccal mucosa and left buccal mucosa and vestibular region. Intra orally keratotic striae extending from retro molar area on left side of buccal mucosa and more prominent in

retro molar area on right sides of buccal mucosa. (Fig-5, a&b) The lesions on both sides were found to be non-scrapable and also mildly tender over the left buccal mucosa. Patient didn't have any history of skin lesion or allergy to amalgam or any other restorative material. At the time of consultation, she was under considerable stress due to some relevant issues.

Blood investigation for hemoglobin and sugar levels did not presented with any other significant findings. The diagnosis was made of Reticular lichen planus of right and left buccal mucosa and Erosive lichen planus of upper and lower gingiva. The patient was treated by stress management and topical corticosteroid was applied to gingiva thrice daily using occlusal splints (triamcinolone acetonide 0.1%), with through scaling& polishing. The prognosis was excellent and after a period of just 1 months the lesion had regressed completely and the patient's oral mucosa was back to normal. (fig-6)



Figure 4: Clinical Picture: First Day.



Figure 5a: Clinical Picture: Right Buccal Mucosa.



Figure 5b: Clinical Picture: Left Buccal Mucosa.



Figure 6: Clinical Picture: Follow up

Discussion :

Lichen planus is a chronic T-cell mediated autoimmune disease, which affects the oral mucosa, skin, genital mucosa, scalp, and nails. ⁽¹²⁾ Among the various forms of OLP (reticular, patch, atrophic, erosive, and bullous), atrophic lichen planus although not as common as the reticular form, but it is of more significance for the patient as such lesions are usually symptomatic. In the present case, the patient showed atrophic, erythematous areas on the gingiva. The periphery of the atrophic regions was bordered by fine, white striations. Correlating with clinical picture definitive diagnosis of atrophic lichen planus was given after histopathologic examination. ⁽¹³⁾

The presence of gingival erosive lichen planus in women may be associated with the vulvo-vaginal-syndrome. The vulvovaginal-gingival syndrome is a variant of mucosal

lichen planus characterized by erosions and desquamation of the vulva, vagina, and gingiva. ⁽¹⁴⁾ All patients presenting oral lesions of lichen planus should be questioned about and examined specifically for signs of genital involvement. The clinical appearance known as desquamative gingivitis is not pathognomonic of oral erosive lichen planus and may represent the gingival manifestation of many other diseases such as cicatricial pemphigoid, pemphigus vulgaris. In such condition, another biopsy sample for direct immunofluorescent study should be obtained to confirm the diagnosis. In the present case, the patient did not have any other signs, except for the gingival lesions and due to the characteristic clinical appearance of white striations at the periphery of lesions, which is highly suggestive of oral lichen planus, the second biopsy was not performed in our case. The possibility of lichenoid drug reaction which shows similar clinical and histologic findings to OLP was ruled out as there was no specific association of administration of a drug, contact with a metal, foodstuff, or systemic disease.

The mainstay of treatment for OLP remains topical corticosteroids, owing to their action of suppressing cell-mediated immunity. So, it is commonly used to reduce pain and inflammation. Even in our case-patient had a good response to topical steroids which were given in a soft splint that covers gingiva which helped in the sustained effect of steroids. Significant reduction in erythema and burning sensation was reported at follow up visit after one month. The complete remission of lesions was observed after two months and a one-year follow-up did not detect exacerbation of the lesion. Although such application of topical steroids requires the close monitoring due to side

effects like candidiasis and effects of systemic absorption.

Topical or systemic corticosteroid is the mainstay of the treatment for mild to moderate symptomatic lesions of OLP, and it functions by modulating the patient's immune response. This is done primarily by suppressing the T-cell activity. Following are the common topical formulations listed according to decreasing potency:

1. 0.05% clobetasol propionate gel
2. 0.1% or 0.05% betamethasone gel
3. 0.05% fluocinonide gel
4. 0.1% triamcinolone acetonide ointment.

In the condition recalcitrant to topical therapy, intralesional injections of the steroid can be effective. Occasionally, systemic steroids are indicated for the brief treatment of severe exacerbations or for short periods of treating recalcitrant lesions that fail to respond to topical therapy. Alternative treatment includes fluocinonide, chloroquine, cyclosporine, retinoids, azathioprine, tacrolimus, surgery, photodynamic therapy and carbon dioxide (CO₂) laser. ⁽¹⁵⁾

The range of malignant transformation of OLP per year, as described in the literature, is between 0.04% and 1.74%⁽¹³⁾ It is generally accepted that the malignant transformation or development of malignancy in the presence of OLP is more likely to occur in atrophic, erosive, or ulcerative lesions. Clinically, it is important that patients with OLP undergo regular follow-up evaluations and repeat biopsy should be performed when indicated. This strategy seems most important with patients who have erosive and atrophic lichen planus.

Conclusion :

This paper highlights the classic picture of atrophic lichen planus, its diagnosis, and its timely management. The prognosis was good post-medication, as in both cases topical application presented with good results. Considering the malignant potential of OLP, it must be emphasized that a strict follow-up of atrophic lichen planus is necessary.

Furthermore, strategic care should be taken when counseling and educating such patients about this chronic disease and its clinical course, so as to avoid the build-up of excessive stress that would only worsen the clinical picture.

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Magnets In Prosthodontics

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Abstract :

Magnets have generated great interest within dentistry. Earlier use of magnets was limited due to the unavailability of small size magnets, but after the introduction of rare earth magnets and their availability in smaller sizes, their use has increased considerably. They can be placed within prostheses without being obtrusive in the mouth. Their main use in prosthodontics has been in maxillofacial prosthesis and in overdentures as retentive aids.

Key Words : Magnets, overdenture, magnets classification.

Introduction :

The numerous applications of magnets is useful in dentistry. Its after the introduction of the powerful cobalt-samarium magnets in the sixties, their use has increased, and the fabrication of these magnets in smaller dimensions is now possible i.e. a few millimeters in width and height conventional magnets have been used as retentive devices for removable partial dentures, obturators and also the maxillofacial prosthesis. The retentive forces and the compactness of the rare earth magnets particularly have resulted in their widespread use for overdentures.

HISTORICAL BACKGROUND: More than 20 centuries ago, an iron-ore called Magnates was discovered. The ancients

termed it as load stone. It attracts tiny bits of iron. The action was attributed to be an the invisible effect called magnetism named after magnesia, the area in ancient Greece where this type of rock was found. The use of magnets in medical literature was documented back in early 19th century. Magnets are also being extensively used by the orthopedic surgeons to overcome the non-union of fractures.¹ Prosthodontists were the first to recognize the value of these magnets in dentistry. The few enlisted applications of the past were, magnetic alloys used for fixation of dentures (Freedman 1953, Thompson 1964 & Winkler 1967), surgical incorporation in the edentulous mandible for retention of the complete dentures at the molar region (Behrman

1960), and also used in sectional dentures (Fredrick 1976)^{1,2} additionally, they were also implied in maxillofacial prosthesis for the fabrication of obturators, restoring eyelid and lip closure (Nadear 1956, Robinson 1963, Javid 1971, Orlay and Cher 1981).

CLASSIFICATION OF MAGNETS:

A. Based on Alloys used

1. Those comprising cobalt
Examples are Alnico, Alnico V, Co-Pt, Co5Sm
2. Those not comprising cobalt
Examples are Nd-Fe- B, Samarium Iron Nitride.

B. Capability to retain magnetic properties (intrinsic coercivity or hardness)

1. Soft (easy to magnetize or demagnetize) (less permanent)
Examples are: Pd- Co-Ni alloy, Pd-Co alloy, Pd-Co-Cr alloy, Pd, Co-Pt alloy, Magnetic stainless steels, Permendur (alloy of Fe-Co), CrMolybdenum alloy.
2. Hard (retain magnetism permanently).
Examples are: Alnico alloys, Co-Pt, Co5Sm, Nd- Fe-B.

C. Type of surface coating (materials may be stainless steel, Titanium or palladium)

1. Coated
2. Uncoated

D. Based on the type of magnetism:

- 1.Repulsion
- 2.Attraction

E. Based on type of magnetic field

1. Open field
2. Closed field
3. Rectangular closed-field sandwich design
4. Circular closed-field sandwich design

F. By the number of magnets in the system

1. Single
2. Paired.

G. Based on the arrangement of the poles

1. Reversed poles
2. Non reversed poles.

H. Based on number of magnets in the system:

1. Duo-system open field
2. Mono-system open field
3. Mono-system closed field

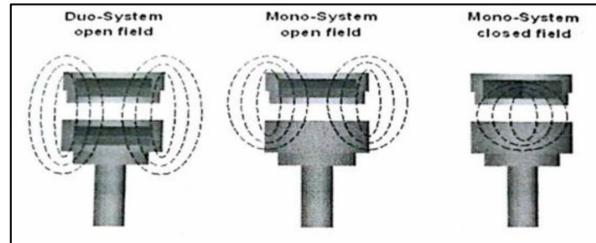


Fig: Based on number of magnets in the system

COMPONENTS: The standard magnetic retention unit is a two component system: Magnetic retention element and keeper element. The magnetic retention element is made up of paired magnets, an attached keeper, and two protective plates covering the paired magnet faces. The magnetic retention element is oval in shape and is 5mm long, 3.2mm wide and 3mm high. The keeper element is a detachable, oval shaped, magnetizable preferred disk or a cast root cap. The keeper element is prepared with a magnetizable alloy, which is not a magnet but it acts as a magnet(induced magnet) when it comes in contact with magnetic retention of element. The alloy used is Pd-Co-Ni alloy or stainless steel alloy.⁴

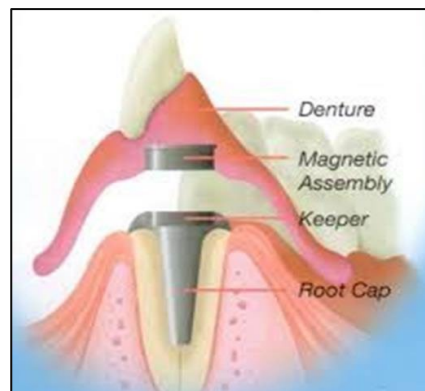
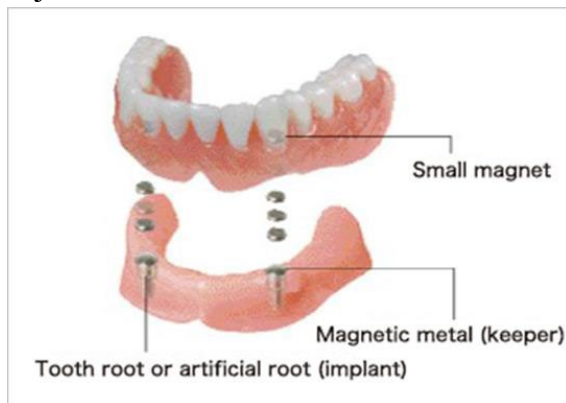


Fig: Components of Keeper System

MAGNETS CAN BE USED IN VARIOUS APPLICATIONS:

A. Magnets retained tooth supported overdenture: The magnetic retention unit consists of a denture retention element and a detachable “keeper” element. Its denture-retention element has paired, cylindrical, cobalt samarium magnets, are magnetized in axial direction with their opposite poles adjacent.⁵



B. Magnets retained implant supported overdenture: The various problems reported by the complete denture wearers can be eliminated with implant supported fixed prostheses or removable overdentures

C. Magnets in Maxillofacial Prosthesis: The use of magnets is the most efficient means of providing combined prosthesis with retention and stability in patients with deformities requiring complex rehabilitations. The majority of prosthesis are designed with using sectioned magnets with magnets in section.⁶

D. Magnetic retention for sectional dentures: Application of cast iron-platinum keeper to collapsed denture for a patient with constricted oral opening.⁷

ADVANTAGES OF MAGNETS:

1. Magnets provide both retention and stability.

2. Rotates a functional 12 degrees, allowing for up to 24 degrees of abutment divergence.
3. This also provides for an easy non-critical path of prosthesis insertion and removal.
4. Parallelism of the roots or implants is not must .
5. Soft tissue undercuts may be engaged.
6. Potentially pathologic lateral or rotated forces are eliminated providing maximum abutment protection.
7. Enables automatic reseating of the denture if dislodged during chewing.
8. Shorter roots equal to 3mm of bone support also are adequate and can function abutments with magnetic appliances.
9. The root abutments are not subjected to direct stress².

DISADVANTAGES OF MAGNETS:

1. Corrosion is the main problem associated with the use of magnets as retentive .The SmCo and Nd-Fe-B magnets¹⁶ possessing the properties brittleness and susceptibility to corrosion, more seen in chloride containing environments such as saliva and the presence of bacteria increases the corrosion of Nd Fe-B magnets.
2. The breakdown of the encapsulating material.
3. Diffusion of moisture and ions through the epoxy seal.
4. Deep scratches and gouges caused due to wear on the surface and also by debris and other particles that become trapped between the magnet and the root.
5. The abrasive nature of the titanium nitride-coated soft magnetic tooth keeper which is also used with some implant system may lead to excessive wear of the magnet.

FUTURE IMPROVEMENTS :

The lifetime of dental magnetic attachments depends on several factors, but the main problem is the inadequate protection of the encapsulation materials; once they are breached, rapid corrosion of the internal magnet occurs. Improvements in sealing techniques (namely, laser welding) have resulted in more effective sealing of magnet encapsulations. However, further work is required to find more corrosion-and wear-resistant encapsulation materials.⁸

SUMMARY:

Magnets provide a useful method for attaching dental prostheses to either retained roots or osseointegrated implants. Magnetic technology is constantly improving: currently available magnets based on Nd-Fe-B are small (which allows them to be incorporated into dentures) and have attractive forces that enable them to provide retention.

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Occlusal Concepts In Full Mouth Rehabilitation: A Review

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Abstract :

Full mouth rehabilitation poses a significant challenge to dentistry, to get good functional and esthetic results we have to follow various prosthodontic principles. The goal of dentistry is to increase the life span of the functioning dentition, just as the goal of medicine is to increase the life span of functioning individual. Apprehensions involved in reconstruction for debilitated dentitions are heightened by widely divergent views concerning the appropriate procedure for successful treatment. Most philosophies and associated techniques for full mouth rehabilitation shows similar characteristics based on an author specific philosophy of occlusion. This review describes briefly about the occlusal concepts and principle behind each philosophy.

Key Words : Full mouth rehabilitation, occlusion

Introduction :

The objective of full mouth rehabilitation is not only the reconstruction and restoration of the worn out dentition, but also maintenance of the health of the entire stomatognathic system. Full mouth rehabilitation should re-establish a state of functional as well as biological efficiency where teeth and their periodontal structures, the muscles of mastication, and the temporomandibular joint (TMJ) mechanisms all function together in synchronous harmony ¹. Proper evaluation

followed by definitive diagnosis is mandatory as the aetiology of severe occlusal tooth wear is multifactorial and variable. Careful assessment of the patient's diet, eating habits and/or gastric disorders, along with the present state of occlusion is essential for appropriate treatment planning ². Various classifications ^{3,4} have been proposed to classify patients requiring full mouth rehabilitation, however, the classification most widely adopted is the one given by Turner and Missirlian ⁵.

According to them, patients with occlusal wear can be broadly classified as follows:

Category-1: Excessive wear with loss of vertical dimension of occlusion (VDO)

The patient closest speaking space is more than 1 mm and the interocclusal space is more than 4 mm and has some loss of facial contour and drooping of the corners of the mouth. All teeth of one arch must be prepared in a single sitting once the final decision is made. This makes the increase in VDO less abrupt and allows better control of esthetics.

Category-2: Excessive wear without loss of VDO but with space available

Patients typically have a long history of gradual wear caused by bruxism, oral habits, or environmental factors but the occlusal vertical dimension (OVD) is maintained by continuous eruption. It might be difficult to achieve retention and resistance form because of shorter crown length and gingivoplasty may be needed. Enameloplasty of opposing posterior teeth may provide some space for the restorative material.

Category-3: Excessive wear without loss of VDO but with limited space

There is excessive wear of anterior teeth over a long period, and there is minimal wear of the posterior teeth. Centric relation and centric occlusion are coincidental with a closest speaking space of 1 mm and an interocclusal distance of 2–3 mm. In such cases vertical space must be obtained for restorative materials. This can be accomplished by orthodontic movement, restorative repositioning, surgical repositioning of segments, and programmed OVD modification.

After evaluating and classifying the patient's existing clinical situation but before beginning the reconstruction procedure, the clinician must decide upon the occlusal approach and choose an appropriate occlusal scheme.

Occlusal Approach:

Occlusal approach for restorative therapy can be either conformative approach (often advisable) or a reorganised approach.

In conformative approach⁶, occlusion is reconstructed according to the patient's existing intercuspal position. It is adopted when small amount of restorative treatment is undertaken.

It includes two situations:

- 1) Occlusion is untouched prior to tooth preparation although small changes can be made on restorations such as elimination of the non-working contacts.
- 2) Occlusion is modified by localized occlusal adjustments before tooth preparation that is shortening of an opposing cusp, elimination of non-working side interferences and removal of a deflective contact on tooth to be restored.

In reorganised approach, new occlusal scheme is established around a suitable condylar position which is the centric relation position. The patient's occlusion may be reorganised if the existing intercuspal position is unacceptable and needs to be changed or when extensive treatment is to be undertaken to optimize patient's occlusion. Indications for reorganised approach are loss of vertical dimension, repeated

fracture/failure of teeth or restorations, severe bruxism, lack of interocclusal space for restorations, trauma from occlusion, unacceptable function and esthetics, presence of temporomandibular disorders or developmental anomalies.

Occlusal Schemes:

The ideal occlusion for eccentric movements can be classified by three schemes according

to the tooth contact condition; mutually protected articulation, group function, and balanced articulation. The balanced occlusion concept is applied to complete denture patients while mutually protected occlusion and group function are applied for natural dentition.

Choice of Occlusal Concepts and Philosophies:

S. No.	Occlusal concept/philosophy	Salient features	Limitations
1.	Gnathological concept (McCollum, Stuart, Stallard) ^{14,15,16}	<ul style="list-style-type: none"> · Mutually protected occlusion · Point centric concept · Maximum intercuspation coincides with centric relation (RUM position) · Cusp to fossa relationship with tripodism · Narrow occlusal table 	<ul style="list-style-type: none"> · Point centric and cusp-to-fossa tripodization complicate the need to obtain precise gnathologic restorations · Need for a fully adjustable articulator · Cast metal transitional restorations had limitations related to cost, inability to increase occlusal vertical dimension, and changes in mandibular position that cannot be equilibrated easily to a new maximum intercuspation relation

<p>2.</p>	<p>Freedom in centric concept (Schuyler)⁷</p>	<ul style="list-style-type: none"> · Balancing contacts are deleterious and must be avoided in natural dentition · Incisal guidance is a predominating factor for selection of posterior guiding tooth inclines than condylar guidance so it should be the first step of occlusal rehabilitation · Antero-posterior freedom of movement must be incorporated in the restoration 	<ul style="list-style-type: none"> · According to gnathologists, the task of adjusting maximum intercuspation contacts in two different positions on an articulator to achieve freedom in centric may result in a lack of precision in both positions · Cusp-to-surface rather than cusp-to-fossa relation affects chewing efficiency
<p>3.</p>	<p>Simplified occlusal design (Wiskott and Belser)⁸</p>	<ul style="list-style-type: none"> · Cusp-fossa relation with only one occlusal contact per tooth · Anterior disclusion during all eccentric movements · Freedom in centric occlusion · Can be adapted to most anterior guidances and varying degrees of group function 	<ul style="list-style-type: none"> ·

<p>4.</p>	<p>Pankey, Mann and Schuyler Philosophy⁹ (1960)</p>	<ul style="list-style-type: none"> · Maxillary cuspids in good functional contact · Group function on working side · Absence of nonworking side contacts. · Freedom of movement in centric occlusion is necessary · Long centric is incorporated in the lingual surfaces of maxillary incisors 	<ul style="list-style-type: none"> · Cusp to fossae marginal ridge contact · Use of wax functionally generated path techniques can cause errors · The PM philosophy was developed and its use advocated on a non-arcon articulator, which may not accept interocclusal records made at increased occlusal vertical dimension
<p>5.</p>	<p>Twin Table technique-Hobo (1991)¹⁰</p>	<ul style="list-style-type: none"> · Incisal guidance and condylar path are dependant factors · Posterior teeth are restored using two customised incisal tables: without disclusion; and with disclusion 	<ul style="list-style-type: none"> · The cusp angle was fabricated parallel to the measured condylar path, and the cusp angle became too steep · To obtain a standard amount of disclusion with such a steep cusp angle, the incisal path had to be set at an angle that was extremely steep. This made the patient uncomfortable · The customised guide tables were fabricated by means of resin molding. It was technique sensitive

6.	Twin Stage Procedure-Hobo and Takayama ¹¹	<ul style="list-style-type: none"> · Since cusp angle is the main determinant of occlusion, the measurement of the condylar path is not necessary · The procedure can be indicated for single crowns, fixed prosthodontics, implants, complete-mouth reconstructions, and complete dentures · Suitable for transmandibular disorder patients · It can be incorporated easily with commonly used clinical techniques such as facebow transfer, various centric recording methods, and cusp-fossa waxing 	<ul style="list-style-type: none"> · Contraindicated for malocclusion cases
7.	Youdelis Scheme ¹²	<ul style="list-style-type: none"> · Cuspal anatomy is so arranged that if the canine disclusion is lost through wear or tooth movement, the posterior teeth drop into group function 	<ul style="list-style-type: none"> · Used in advanced periodontitis cases
8.	Nyman and Lindhe ¹³ Scheme	<ul style="list-style-type: none"> · When there are long tooth-borne cantilevered restorations, balanced occlusion must be achieved · When distal support is present, anterior disclusion is provided 	<ul style="list-style-type: none"> · For extremely advanced periodontitis cases · Type of contacts n

Discussion:

Of all the concepts discussed in the literature, two have found acceptance for natural dentitions and fixed prosthesis: the “gnathologic” and the “freedom-in-centric” concepts. The bilateral balanced occlusion scheme was applied for natural dentition by McCollum¹⁴ but later mutually protected occlusion was adopted by Stuart and Stallard¹⁵ as clinical failures were observed with bilateral balance.¹⁶ Hobo and Takayama¹¹ in their study made observations similar to those of Schuyler¹⁷ that anterior guidance and condylar guidance were dependent, not independent factors. Wiskott and Belser⁸ combined anterior disclusion mechanics and antero-posterior freedom with the advantage of one occlusal contact per tooth. After reviewing the various occlusal concepts, we are of the opinion that it is best to achieve posterior disocclusion in full mouth rehabilitation to avoid harmful lateral forces as was suggested by Hobo.¹⁰

Conclusion:

Occlusal rehabilitation is a radical procedure and should be carried out in accordance with the dentist’s choice of treatment based on his knowledge of various philosophies followed and clinical skills. A comprehensive study and practical approach must be directed towards reconstruction, restoration and maintenance of the health of the entire oral mechanism.

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Periodontal Considerations In Fixed Partial Denture

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Abstract :

A sound periodontium provides a firm foundation for an esthetic and functional prosthesis. This review paper aims at exploring the potential of an interdisciplinary approach to achieve this end. This involves incorporating a comprehensive treatment plan, paying close attention to both soft and hard tissues around teeth and implants before, during, and after restorative procedure. Periodontal considerations include control of periodontal inflammation, correction of the gingival architecture, and periodontal maintenance.

Key Words : Periodontium, fixed partial denture, margin adaptation, Periodontal maintenance.

Introduction :

A beautiful smile can be crafted only against a backdrop of healthy gingiva. A sound periodontium provides a firm foundation for an esthetic and functional prosthesis. The practice of restorative dentistry has a reciprocal relationship with the maintenance of periodontal health. Poor restorative treatment may have adverse effects on the periodontium by increasing accumulation of plaque while untreated periodontal disease will compromise the success of restorative dentistry.¹ When restorations are designed to be self-cleansing and promote gingival health, the tissues present a harmonious esthetic blend at the restorative gingival interface. The purpose of this review is to explore the effects of

contemporary restorative procedures and materials on the periodontium. On the other hand, the clinical relevance of some periodontal plastic surgery procedures for a healthier restorative-alveolar interface is outlined.

Importance of a healthy periodontium:

A firm foundation for precise and lasting restorations

- Healthy gingival margins do not shrink after tooth preparation and enable accurate impressions^{2,3}.
- There are less chances of bleeding after preparation, which aids visibility and making impressions

- Stable tissues, free of inflammation ensures predictable restorations⁴.
- Trauma from occlusion on teeth with untreated periodontitis may increase tooth mobility and rate of attachment loss⁵.
- Quality and topography of the periodontium should be improved to prevent negative changes once the restorations have been placed. For instance, a wider zone of attached gingiva is needed around abutment teeth and in those with subgingival restorations as less inflammation is reported than in teeth with narrow zones⁶. It is useful in areas of esthetic margin placement, to facilitate impressions, and in some cases, to increase patient comfort. Thicker tissues have been found to provide adequate protection against recession.

Periodontal therapy

- A thorough periodontal evaluation is indicated in the planning stages prior to fabrication of the prosthesis. Selection of abutment teeth is based on prosthodontic and periodontal considerations, including bone support and architecture, width of attached gingiva, tooth mobility, root anatomy, and tooth position
- Controlling or eliminating periodontal disease with cause related therapy and surgical therapy to eliminate pockets
- Correction of the gingival architecture that may favor disease, impair esthetics, or impede placement of prosthesis with pre-prosthetic surgery
- Periodontal maintenance and motivation for oral hygiene should be given during treatment and interim periods⁸.

Cause related therapy

Plaque control, calculus removal, and the removal of any inadequate dental restorations in the gingival environment, treatment of food impaction, correction of trauma from occlusion, and orthodontic tooth movement, motivation for oral hygiene, as well as extraction of hopeless teeth can be done.

Surgical therapy

- Periodontal flap surgery may be necessary to gain access for debridement, to reduce pockets and for periodontal regenerative therapy with bone grafts [Figure 1]
- Pre-prosthetic surgery: Gingival augmentation: It can be done using a free gingival graft or connective tissue graft or acellular dermal matrix⁹.
- A vestibuloplasty may be required in areas where a shallow vestibule complicates oral hygiene. Correction of shallow vestibule also facilitates gain in attached gingiva. Vestibuloplasty by periosteal fenestration [Figure 2], and vestibuloplasty with free gingival graft [Figure 3]. Removal of aberrant frenum improves vestibular depth, attached gingiva and eliminates tension on marginal gingiva in the area of a frenum
- Removal of gingival excess and maintaining biologic width: In situations in which a tooth has a short clinical crown deemed inadequate for retention of a required cast restoration, it is necessary to increase the size of the clinical crown using periodontal surgical procedures [Figure 4].



Fig.1 : Flap surgery with bone grafting



Fig.2 : Vestibuloplasty with periosteal fenestration for treatment of shallow vestibule and insufficient width of attached gingiva



Fig.3 : Vestibuloplasty with free gingival graft. Incision given, recipient bed, and template for graft prepared. Free gingival graft harvested and sutured in place



Fig.4 : Crown lengthening with osteoplasty done for unesthetic gingival margins and reduced height of clinical crown. Vertical and internal bevel incisions are given. Flap raised and bone recontoured to prevent violation of biologic width

This can be done surgically or orthodontically while maintaining the biologic width. To select the proper treatment approach for crown lengthening, an analysis of the individual case with regard to crown-root alveolar bone relationships should be done.

- External bevel gingivectomy: This can be done when there is more than adequate attached gingiva and at least 5 mm excessive suprabony gingival tissue is present and no bone involvement [Figure 5].
- Internal bevel gingivectomy: Reduction of excessive pocket depth and exposure of additional coronal tooth structure in the absence of a sufficient zone of attached gingiva with or without the need for correction of osseous abnormalities requires a surgical procedure, wherein the flap must always be internally beveled so as to expose the supporting alveolar bone [Figure 6]
- Apically positioned flap with bone re-contouring: It is used to expose sound tooth structure in cases of tooth fracture or caries. As a general rule, at least 4 mm of sound tooth structure must be exposed at the time of surgery. It is indicated for multiple teeth in the nonesthetic zone^{9,10}. Esthetic

crown lengthening can be done using flap surgery with bone removal using a surgical guide. The golden proportion has been recommended as a guide for an esthetic tooth restoration: The mesial-distal width of a tooth is approximately 75% of its height. Allen et al recommended having the gingival margins on incisors peak slightly distal to the midline of the teeth. Central incisors, with an average length of 11–12 mm, should be 1.5 mm longer than laterals⁷.

- Pontic soft tissue relationships: If soft tissue form and surface characteristics are deemed unacceptable, corrections should precede fabrication of the restoration. Pontics should preferably be placed over keratinized tissue rather than alveolar mucosa. Ridge augmentation may be accomplished by internal connective tissue grafts, free soft tissue onlay autografts, or ridge transposition. When the ridge is covered by excessive amounts of soft tissue, ridge reduction can be accomplished by gingivoplasty or internal soft tissue wedge reduction (e.g., tuberosity reductions)⁸. Osseous resective surgery may be indicated when a bony portion of the ridge is covered by a thin layer of soft tissue. Ridge reduction surgery may be required to increase the vertical clearance between the residual ridge and opposing occlusion.



Fig.5 : Esthetic gingival recontouring with external bevel incision for unesthetic gingival margins. Gingival margins established in golden proportions



Fig.6 : Internal bevel gingivectomy with osseous contouring for prosthetic restoration of fractured tooth. Core buildup done and crown is in place

Supportive Periodontal Therapy

Maintenance recalls are essential to the long-term success of fixed and removable prosthesis especially overdenture abutments. Hygiene adjuncts using end-tufted brushes and daily application of fluoride are beneficial.

Conclusion

An interdisciplinary approach requiring coordinated efforts by the restorative dentist and periodontist is the need of the hour. Close attention paid to both soft and hard tissues around teeth and implants before, during, and after restorative procedure produces a successful outcome. It also gives the patient the benefit of comprehensive treatment with precise and lasting restorations.

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Measurement Of Implant Stability : A Review

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Abstract :

For the success of Dental implant stability of the implant is most important factor. Clinically lack of mobility means implant stability. As a mechanical phenomenon, primary implant at placement is associated with quantity and quality of the local bone, the kind of implant method and placement used. Secondary implant stability is related to the increased instability attributable to the formation of bone and to remodel it at the implant tissue interface and in the neighboring bone. This article focuses on the various methods to detect implant stability.

Key Words : Periotest, reverse torque test, Implant stability maintenance.

Introduction :

Successful osseointegration is a prerequisite for functional dental implants, and primary implant stability is a prerequisite for successful osseointegration. Implant stability is the absence of clinical mobility. Implant instability could result in fibrous encapsulation with resultant failure. Primary implant stability at placement is a mechanical phenomenon that is related to the local bone quality and quantity, the type of implant and placement technique used. Secondary implant stability is the increase in stability attributable to bone formation and remodeling at the implant/tissue interface and in the surrounding bone.^{1,2}

Actually, the gold standard technique used for evaluating osseointegration's degree was histologic or microscopic analysis.

Conversely, because of the insensitivity of such technique and associated ethical problems, numerous other techniques of analysis were suggested; resonance frequency analysis, using blunt ended instruments for clinically checking mobility, reverse torque, radiographs and cutting torque resistance.

Assessing implant stability is supportive to taking good decisions regarding when to load, permits beneficial protocol selection on a patient-to-patient basis, and is indicative of situations wherein unloading is best, supportive to good communication and enhanced trust and offers better case records. The techniques of determining implant stability clinically are, clinical perception, , percussion test and reverse torque test³,

cutting torque resistance analysis, Periotest RFA (Resonance Frequency Analysis)

1. Clinical Perception: The clinical view of the primary Implant stability is often based on the mobility as identified by blunt ended instruments. This happens to be very unpredictable and non-objective technique. This may also be checked by observing implant's cutting resistance while inserting it. The sensation of "good" stability can be stressed in case of sensing an abrupt stop at the implant's seating. Tapered implants' root forms repeatedly have a geometry which will offer a firm stop and probably a false sensitivity of high stability.^{4,5}

2. Percussion test : The percussion test may involve the tapping of a mirror handle against the implant carrier and is designed to elicit a ringing sound from the implant as an indication of good stability or osseointegration. Percussion tests probably provide more information about the tapping instrument, and will at best only yield poor qualitative information ⁶.

3. Reverse torque test : Reverse torque test was proposed by Roberts et al . and developed by Johansson and Alberktsson. It is used to assess the secondary stability of the implant using the torque ratchet . Implants that rotate when reverse torque is applied indicate that bone implant contact could be destroyed. (Fig 1. & Fig 2)



Fig 1. Torque Ratchet



Fig 2. Reverse Torque

Further, it cannot quantify the degree of osseointegration as threshold limits vary among patients, implant material, bone quality and quantity. The studies showed, the stress of the applied torque may in itself be responsible for the failure. It also does not measure lateral stability that is a useful indicator for successful treatment outcome.

4. Cutting torque resistance analysis : The energy required for a current-fed electric motor in cutting off a unit volume of bone during implant surgery is measured. The energy correlates to bone density, which is one of the factors determining implant stability. However, the lower limit value has not been established, which can denote potential failure of the implant. Moreover, it can only be used during the surgery and not as a diagnostic aid, and it cannot assess the secondary stability by new bone formation and remodeling around the implant.⁸

5. Periotest : Quantifies the mobility of an implant by measuring the reaction of the peri-implant tissues to a defined impact load. The Periotest was introduced by Schulte to perform measurements of the damping characteristics of the periodontal ligament,

thus assessing the mobility of natural tooth Periotest® uses an electro-magnetically driven and electronically controlled tapping metallic rod in a handpiece.⁷ (Table 1, Fig 3 & Fig 4).

Reading	Interpretation
-8 to 0	Good osseointegration, implant can be loaded
+1 to +9	Clinical examination is required, in most cases loading is not possible
+10 to +50	Osseointegration is not sufficient, implant cannot be loaded

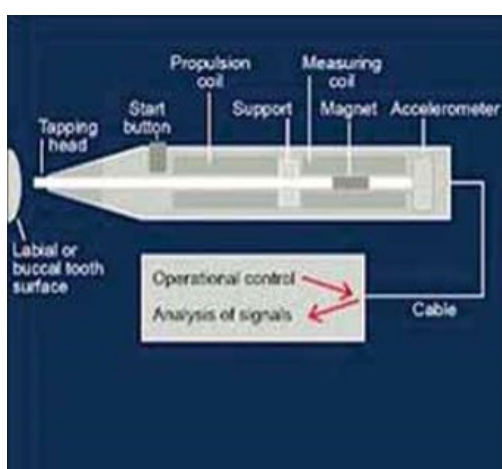


Fig 3. Periotest

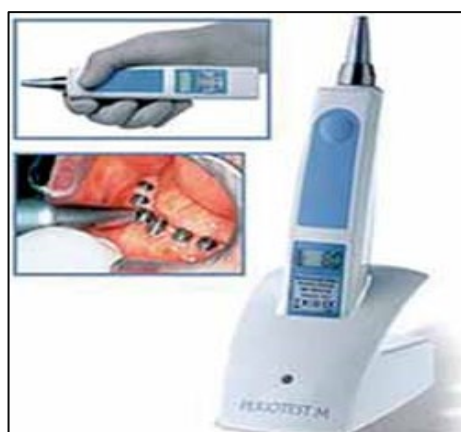


Fig 4. Perio M

6. Resonance Frequency Analysis

It is a noninvasive diagnostic method that measures implant stability and bone density at various time points using vibration and structural principle analysis. Two

commercially devices have been developed to assess implant stability. The original (electrical) method uses a direct connection (wire) between the transducer and the resonance frequency analyzer [Figures 5 and 6]. The second method uses magnetic frequencies between transducer and resonance frequency analyzer. In the electronic device, the transducer is L shaped cantilever beam which connects to the implant via a screw attachment. A piezoelectrical crystal on the vertical portion of the L beam is used to stimulate the implant/transducer complex; second piezoelectric crystal on the opposite side of the beam is used as a receiving element to detect the response of the beam.

The new magnetic RFA device has a transducer, a metallic rod with a magnet on top, which is screwed onto an implant or abutment. The magnet is excited by a magnetic pulse from a wireless probe. The pulse duration is about 1 ms. After excitation, the peg vibrates freely, and the magnet induces an electric voltage in the probe coil. That voltage is the measurement signal sampled by the resonance frequency analyzer. The electronic device and the magnetic device are capable of measuring similar changes; however the magnetic device results in higher implant stability quotient (ISQ) value when measuring the stability of nonsubmerged dental implant. With this method, implant stability is measured either by determining the resonance frequency of the implant-bone complex or by reading an ISQ value given by the Osstell apparatus (Integration Diagnostics AB, Gothenburg, Sweden). Classically, the ISQ has been found to vary between 40 and 80, the higher the ISQ, the higher the implant stability. A substantial

increase or decrease in implant stability could be detected with this method that otherwise could not be clinically perceived. The factors affecting the readings are effective implant length, bone quality and quantity, implant length, diameter and shape. Effective implant length is the length of the exposed threads and abutment height. It is inversely proportional to the resonance frequency.

Implant stability can be determined for implants with an ISQ of 47. All implants with an ISQ more than 49 osseointegrated when left to heal for 3 months. All implants with an ISQ more than 54 osseointegrated when immediately loaded. For implants with low ISQ values, a decrease in implant stability should alert the practitioner to submit these implants to a tighter follow-up schedule and to take additional precautionary measurements in terms of unloading until implant stability is regained or if nonloaded to check for mechanical trauma and/or infection. For implants with high ISQ values, reduction of implant stability during the first 12 weeks of healing should be considered as a common event that should not require alteration of routine follow-up.

The drawbacks with this technology are that the transducer is limited to a set of 60 measurements, thus making the method rather expensive. In order to perform the RFA, a transducer is fixed to the implant. This excludes monitoring all implants that support a cemented restoration.

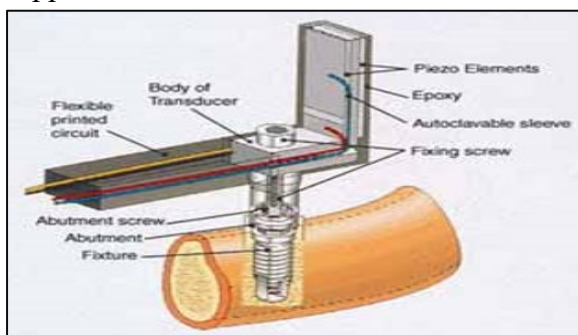


Fig.5 Electric resonance frequency



Fig.6 Magnetic resonance frequency

Conclusion

Although different methods are available in determining implant stability the number variables make it difficult to determine the actual result & the success. Hence a more precise instrument is required to gauge the implant stability.

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Treatment Of Oral Lichen Planus: A Systematic Review

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Abstract :

Oral lichen planus (OLP) is a chronic inflammatory disease that affects the mucus membrane of the oral cavity. It is a T-cell mediated autoimmune disease in which the cytotoxic CD8+ T cells trigger apoptosis of the basal cells of the oral epithelium. Several antigen-specific and nonspecific inflammatory mechanisms have been put forward to explain the accumulation and homing of CD8+ T cells sub epithelially and the subsequent keratinocyte apoptosis. A wide spectrum of treatment modalities is available, from topical corticosteroids to laser ablation of the lesion. In this review, we discuss the various concepts in the pathogenesis and current treatment modalities of OLP.^[1]

Key Words : Apoptosis, autoimmune, basal keratinocytes, corticosteroids, oral lichen planus.

Introduction :

Lichen planus is a chronic inflammatory disease that affects the skin and the mucus membrane. Oral lichen planus (OLP), the mucosal counterpart of cutaneous lichen planus, presents frequently in the fourth decade of life and affects women more than men in a ratio of 1.4:1.^[2] The disease affects 1–2% of the population.^[3,4] It is seen clinically as reticular, papular, plaquelike, erosive, atrophic or bullous types. Intraorally, the buccal mucosa, tongue and the gingiva are commonly involved although other sites may be rarely affected.^[5] Oral mucosal lesions present alone or with concomitant skin lesions. The skin lesions present as violaceous flat-topped papules in ankles, wrist, and genitalia, but characteristically the facial skin is spared.

Pathogenesis:

OLP is a T-cell mediated autoimmune disease in which the auto-cytotoxic CD8+ T cells trigger apoptosis of the basal cells of the oral epithelium.^[6] An early event in the disease mechanism [involves keratinocyte antigen expression or unmasking of an antigen that may be a self-peptide or a heat shock protein.^[2,7] Following this, T cells (mostly CD8+, and some CD4+ cells) migrate into the epithelium either due to random encounter of antigen during routine surveillance or a chemokine-mediated migration toward basal keratinocytes.^[2] These migrated CD8+ cells are activated directly by antigen binding to major histocompatibility complex (MHC)-1 on keratinocyte or through activated CD4+ lymphocytes. In addition, the number of Langerhan's cells in OLP lesions are

increased along with up regulation of MHC-II expression; subsequent antigen presentation to CD4+ cells and Interleukin (IL)-12 activates CD4 + T helper cells which activate CD8+ T cells through receptor interaction, interferon γ (INF – γ) and IL-2. The activated CD8+ T cells in turn kill the basal keratinocytes through tumor necrosis factor (TNF)- α , Fas–FasL mediated or granzyme B activated apoptosis.^[2,7]

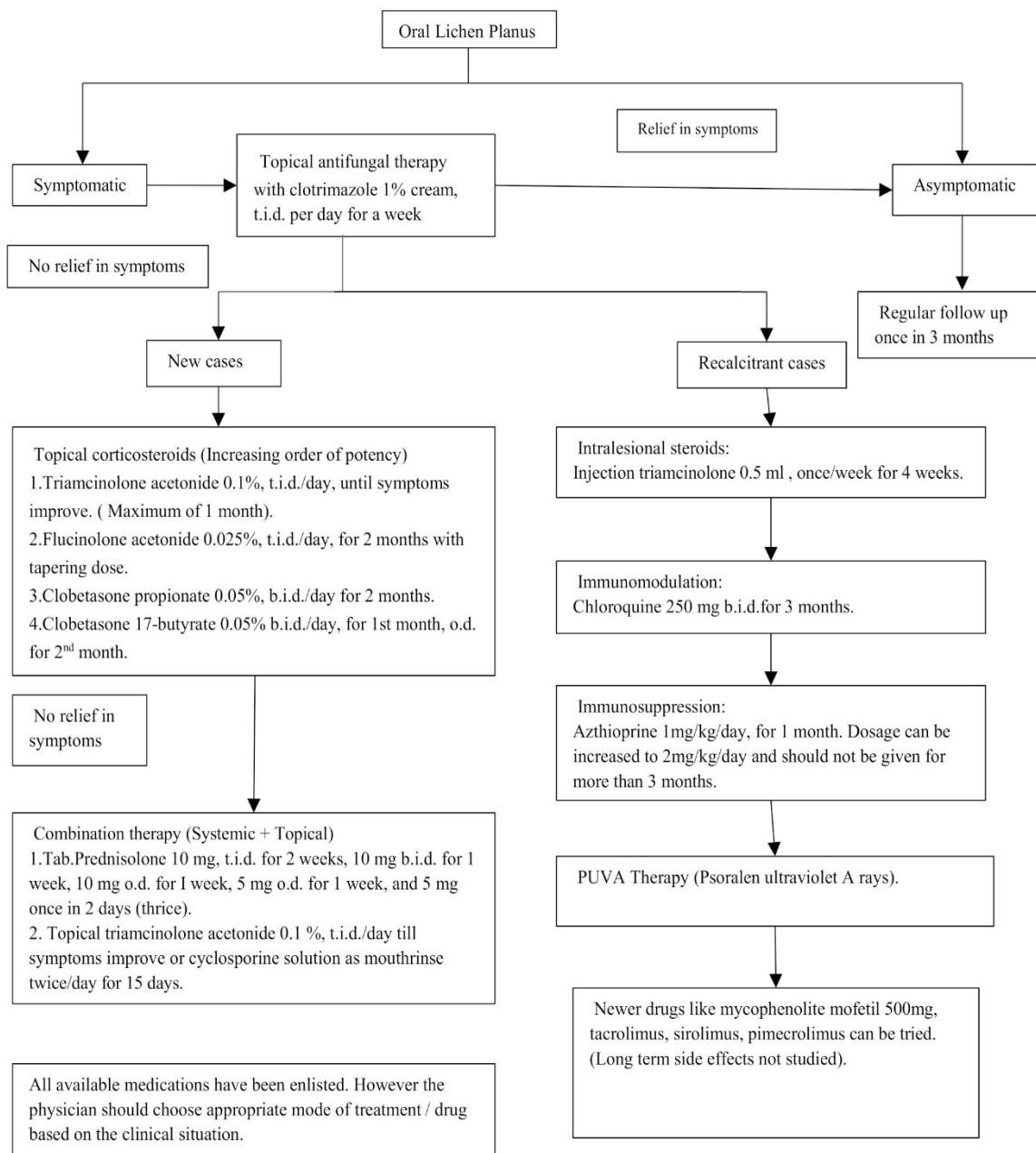
Therapeutic Options:

Topical Treatment:

Clotrimazole 1% Cream applied thrice a day, for a week results in relief of symptoms. If the patient is asymptomatic, the patient is recalled every three months for examination.^[8]

Corticosteroids:

These are the most commonly used group of drugs for the treatment of OLP.^[9] The



rationale behind their usage is their ability to modulate inflammation and immune response. They act by reducing the lymphocytic exudate and stabilizing the lysosomal membrane.^[10] Topical midpotency corticosteroids such as triamcinolone acetonide, high-potent fluorinated corticosteroids such as fluocinonide acetonide, disodium betamethasone phosphate, and more recently, superpotent halogenated corticosteroids such as clobetasol are used based on the severity of the lesion. The greatest disadvantage in using topical corticosteroids is their lack of adherence to the mucosa for a sufficient length of time. Although trials were done using topical steroids along with adhesive base, no study shows their superiority when compared to steroids without the base (carboxymethyl cellulose).^[11]

Following may be used in increasing order of potency:

1. Triamcinolone acetonide 0.1%, (Tess gel, Lederocort ointment), three times (tid)/day, until symptoms improve, for 1 month (maximum).
2. Fluocinonide acetonide 0.025%, (Fluzone cream), tid/day, for two months, with tapering dose.
3. Clobetasone propionate 0.05%, (Clobetol cream, Cosvate gel), twice (bid)/day, for two months.
4. Clobetasone 17-butyrate 0.05%, (Eumosone), bid/day, for 1st month, then once a day (od) or 2nd month.
5. Mometosone furoate 0.1% (Mosone cream).

For patients who don't get relief with above, combination therapy (systemic + topical) is used as follows:

1. Tab prednisolone 10 mg (Wysolone, Emosolone) tid for 2 weeks; 10mg

bid for 1 week; 10mg od for 1 week; 5mg od for 1 week & 5mg once in 2 days (thrice).

2. Topical triamcinolone acetonide 0.1% (Tess gel), tid/day till symptoms improve or cyclosporine solution (Sandimmune) as mouthrinse twice/day for 15 days.

For Recalcitrant cases, the following regimen is used:

1. Intralesional steroids- Injection triamcinolone 0.5ml (Amcort) once/week for 4 weeks.
2. Immunomodulation- Chloroquine (Lariago, Laquin), 250mg b.i.d. for 3 months.
3. Immunosuppression- Azathioprine (Imuzat, Azoran), 1mg/kg/day (50 to 100mg), for 1 month. Dosage can be increased up to 2mg/kg/day and should not be given more than 3 months.
4. PUVA Therapy. (Psoralen ultraviolet A rays).
5. Newer drugs like Mycophenolite mofetil 500mg (Cellmune), Tacrolimus, Serolimus, Pimecrolimus can also be tried.

Conclusion:

Although steroid therapy remains the backbone of treatment of OLP, its use must be justified. Steroid therapy either topical or systemic can cause adrenal suppression if used for prolonged periods. A thorough medical history should be taken before the commencement of the steroid therapy to avoid medical complications. The lowest-potency steroid that proves effective should be used. Patients with oral lichen planus should be counseled about the causes, nature and course of the condition and response to different treatment modalities. Causative agents like dental restorations or drugs must be identified and proper corrective approaches should be followed. Patients

experience high rates of recurrences after the cessations of treatment and this should not discourage them for getting further treatment. Regular follow-ups allow the clinicians to examine and evaluate the patients thoroughly. Any suspicious lesions must be send for biopsy for histopathological examination as there is high chances of transformation, in few forms of lichen planus, into squamous cell carcinoma.^[8]

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Periodontal Considerations In Removable Partial Denture Treatment : An Overview

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Abstract :

A critical overview on the periodontal considerations in removable partial denture (RPD) treatment is presented. A MEDLINE search was conducted for studies pertaining to the effects of RPDs on the periodontal tissues during the various phases of prosthetic treatment. This article included both in vivo and in vitro studies.

The use of RPDs leads to detrimental qualitative and quantitative changes in plaque. There seems to be a lack of information regarding the effects of RPDs on the status of periodontally compromised abutments. A number of studies, mainly in vitro, have failed to agree on the ideal RPD design. Clinical trials have shown that if basic principles of RPD design are followed (rigid major connectors, simple design, proper base adaptation), periodontal health of the remaining dentition can be maintained.

Removable partial dentures do not cause any adverse periodontal reactions, provided that preprosthetic periodontal health has been established and maintained with meticulous oral hygiene. Frequent hygiene recalls and prosthetic maintenance are essential tools to achieve a good long-term prognosis. More prospective clinical trials are needed on the effect of RPDs on the condition of periodontally involved abutment teeth.

Key Words : Abutment; Major Connector, Minor Connector

Introduction :

There are a number of ways to treat the partially edentulous patient to restore function, health, and esthetics.¹ A fixed partial denture supported by the adjacent teeth can be constructed. In the case of long edentulous spans or posterior edentulism, osseointegrated implants can be used to support the fixed reconstruction.²

Although a fixed prosthesis may be more desirable from a psychological point of view, a well-constructed removable partial denture

(RPD) can be an excellent treatment alternative.^{3,4}

The purpose of this article is to review the dental literature regarding periodontal considerations in RPD treatment.

Periodontal Considerations Prior to Prosthetic Treatment Periodontal Screening

The periodontal screening of a patient who is a candidate to receive RPDs does not differ

in any way from that of any other patient in need of other types of prosthetic treatment.⁵ Oral hygiene, the presence of plaque and gingival inflammation, attachment loss, remaining osseous support, and mobility should be assessed.

The goal at this phase is to diagnose any periodontal conditions that would compromise the long-term prognosis for a successful therapeutic outcome.⁶

One of the most important parameters is the patient's level of oral hygiene. It is critical that the patient is educated with regard to oral hygiene.

It has been observed that RPDs can result in detrimental changes in the quality and quantity of plaque, which necessitate a higher level of plaque control on the part of the patient.⁸⁻¹⁰

Definitive Periodontal Treatment

The goal of definitive periodontal treatment is to eliminate periodontal disease, treat any defects that hinder plaque control, and create a better environment for cleaning.^{5,11}

Strategic extractions of severely weakened teeth should be performed, especially in cases when the treatment plan does not change.⁵ For example, a compromised maxillary second premolar could be extracted if the first premolar is healthy. The new RPD will have the same design for retention with an additional denture tooth.

Periodontal pockets should be eliminated or reduced via surgical or nonsurgical therapy.⁵ Kaldahl et al^{12,13} compared osseous resective therapy to open flap debridement and nonsurgical treatment. Their 7-year investigation revealed that osseous resective surgery for pocket elimination results in a greater reduction of probing depths and improved retention and maintenance of the

treated dentition than the other modalities of treatment examined in the study. This was especially true for sites with pocket depths exceeding 4 mm.

Pocket-elimination surgery also includes root-resective therapy. A root and its accompanying crown portion may be removed to facilitate establishment of positive osseous contours around the remaining root or roots still invested in the alveolar bone.¹⁴

Open-flap debridement and nonsurgical therapy may provide only pocket reduction, but they are certainly advantageous in contrast to no decrease in pocket depth prior to insertion of an RPD.

Regarding guided tissue regeneration (GTR), there are no studies examining the effects on healing when a tooth also serves as an abutment for an RPD. It should be noted, however, that wound healing is delayed in these procedures, as the membrane placed during the surgery serves to exclude the ingress of gingival epithelium from the healing area, thereby slowing down the process of wound closure.¹⁶ This effect is intentional, allowing the slower-healing tissues of the periodontal ligament and the adjacent osseous structures to close the wound. The result is regeneration of the attachment apparatus rather than a repair via a long junctional epithelium.¹⁶ Early wound healing stability seems to be an important factor for successful periodontal regeneration.¹⁷ The possible torquing action of the RPD could interfere with the regenerating periodontal ligament, resulting in a long term failure. As a result, insertion of an RPD should be delayed if GTR is used on an abutment tooth.

Crown lengthening is indicated in instances of altered passive eruption of the abutment

teeth to establish better crown contours, as well as to create minimal space required for the different RPD components.

Gingival augmentation might be considered when there is a lack of attached gingiva around abutment teeth. It must be stressed that the available body of scientific evidence does not substantiate the claimed importance of a certain gingival dimension around abutment teeth.¹⁸

The retentive arms of an RPD, though, can be a source of plaque accumulation and can present an inflammatory challenge to the soft tissue.¹⁹ This is especially true for infrabulge retentive arms, like I bars, that approach the abutment teeth from a gingival direction.

Effects of RPDs on Periodontal Indices

Effects on Plaque

Several studies show an effect of RPDs on the quantity and quality of plaque. One study showed that plaque formation is enhanced on teeth in contact with RPDs and pointed out the need for teaching patients how to keep the endangered teeth clean.⁸

One group of researchers studied 46 RPDs and their effects on plaque accumulation. They concluded that a higher level of oral hygiene is needed for RPD patients and that the denture design should be as simple as possible, covering only the essential hard and soft tissues. Similar observations were made in a 1-year study of three maxillary RPD designs.

A short-term, single-blind cross-over experimental gingivitis trial suggested that the cingulum bar has fewer detrimental effects on gingival tissues than the lingual apron major connector.

The increased tissue coverage by the latter major connector resulted in more plaque accumulation.

Another group of investigators demonstrated that the ecologic changes brought about by RPDs are not offset by toothbrushing as it is commonly practiced; extra hygiene measures are needed.

Effects on Forces Exerted on Teeth and Tooth Mobility

There has always been a concern in the literature regarding the biomechanical aspects of RPD design. Bilateral or unilateral distal extension RPDs share their support between the abutment teeth and the edentulous ridge.

It has been reported that RPD design affects the distribution of force on abutment teeth and residual alveolar ridges.

Two similar photoelastic studies compared the stresses induced on the abutment teeth by different RPD designs of direct retainers. The first study tested seven clasp assemblies, whereas the second tested two clasp assemblies and four intracoronal attachments. Both studies concluded that the typical "RPI" retainer design (mesial rest seat and buccal I bar) produces the lowest torquing forces on abutment teeth.

The RPI retainer was used as a control in another photoelastic study in which Extracoronal Resilient Attachments (Sterngold) semiprecision attachments with light retention elements, splinted teeth, and rest seats compared favorably with it. This study also showed an increase in stress concentration on abutment teeth as periodontal support diminishes.

One group of investigators using intraoral strain gauges measured the lateral horizontal forces applied to abutment teeth by RPDs during function. They showed that forces exerted on abutment teeth during swallowing are almost twice those exerted during mastication on a daily basis. They did not

mention the practical effects of their findings on the teeth. Another investigator stressed the fact that not only occlusal force but also tongue, cheeks, and lips contribute to generating torque and forces exerted on abutment teeth.

The literature suggests that clasp-retained designs produce less torque on abutment teeth than intracoronal attachment designs. Clinical studies suggest a tendency of reduction of torque exerted on abutment teeth as the denture-wearing period proceeds. This “settling” period lasts about 1 to 1.5 months from the time of insertion of new RPDs and is attributed to changes of jaw movement in the frontal plane, adaptation of the oral tissues to the denture, properties of the alveolar mucosa, or changes in the chewing points of the RPDs.

In a 4-year longitudinal study of RPD patients, it was reported that patients who were wearing their dentures had on average 18% of their teeth mobile and 25% with a tendency for increased mobility by the end of the study period. Patients who did not wear their dentures had no significant changes in tooth mobility. The study concluded that when patients have a high standard of oral hygiene, RPDs can be used for rehabilitation for long periods without major risk of damage to the remaining teeth. Several investigators have reported, with in vitro and in vivo studies, that the forces exerted on abutment teeth are also influenced by the inclination of the residual ridge.

One group studied the effects on tooth mobility of three bilateral distal extension RPD clasping systems in five patients. The first system consisted of a cast circumferential buccal retentive arm, a distal rest, and a lingual bracing arm. The second system used an 18gauge wrought wire buccal retentive arm instead of the cast arm. The

third clasping system had a buccal I-bar retentive arm, a mesial rest, and a distal plate contacting a guide plane. The authors did not record any change in abutment tooth mobility after 1 month of using each RPD clasping system. A slight initial increase in tooth mobility was attributed to settling of the dentures and was diminished later. The authors stress the importance of following sound principles during RPD fabrication (altered cast, proper design, proper occlusion) and maintaining a strict recall.

A short-term clinical study of five patients with mandibular Kennedy Class I RPDs reported a small increase of abutment mobility. However, the abutments were single-standing premolars, and there was no mention of controlled final impressions or oral hygiene measures. The author suggests splinting of primary abutments used in distal extension dentures.

A cross-sectional study concluded that RPDs might be associated with increased tooth mobility in an elderly population.

Several long-term clinical studies have shown that properly designed RPDs do not have any detrimental effects on tooth mobility, provided that strict oral hygiene and frequent recalls are implemented.

Splinted Versus Nonsplinted Abutments

There is no scientific evidence to point to one treatment over the other. Carlsson et al suggested splinting primary abutment teeth to withstand the forces of the RPDs. They based the recommendation on the observation that during their 4-year clinical study, no deterioration of the periodontal condition occurred on the splinted abutments. Goodkind made the same suggestion. An in vitro study of a photoelastic model concluded that fixed splinting of adjacent abutment teeth is an

important factor when attachment retainers are used for an extension RPD. Similar results were obtained from a study of the strains induced on abutment teeth when extracoronal attachments are used in distal extension RPDs.

One more photoelastic study looking at the same issue concluded that a distal abutment with moderate periodontal support should be splinted to one sound adjacent tooth to decrease the load transfer by a distal extension RPD. Literature has shown that in the absence of plaque and inflammation, traumatic forces on teeth do not cause attachment loss. An initial increase in tooth mobility may be the result of adaptive, not pathologic, changes. However, sound principles should be followed during the fabrication of RPDs to minimize stresses. The framework should be adjusted properly, and distal extension bases should be constructed using an altered cast.

Clinical Studies of RPDs

A 4-year longitudinal study of RPD patients concluded that, in patients with a high standard of oral hygiene, RPDs can be used for rehabilitation for long periods without major risk of damage to the remaining teeth. Derry and Bertram recalled patients 2 years after fabrication of their RPDs and found that in no instance had the dentures contributed to the destruction of the supporting structures. The weakness of the study was that there were no pre treatment readings for comparison. A team of investigators studied a group of patients after 2 years of RPD use. They reported an increase in plaque and gingival inflammation, but stressed that their patients did not receive regular hygiene instructions. There was also no mention of recall during the 2 years. All other indices remained stable.

Different investigators examined the same group of patients for 8 to 9 years after initial treatment.¹⁹ Although the turnout was low (40%), the authors concluded that there were no significant longitudinal differences between patients wearing RPDs and those not wearing them. Poor oral hygiene caused increased levels of gingival inflammation in regions covered by the dentures and apical to clasp arms. A cross-sectional study of a group of RPD patients reported poor maintenance and oral hygiene the majority of patients that led to gingival inflammation. However, there was a very small turnout of patients.

Isidor and Budtz-Jørgensen⁷ presented the only study that evaluated long-term (5-year) periodontal changes in two groups of patients with moderate to advanced bone loss. One group was treated with distally extended, fixed cantilevered partial dentures, and the other was treated with RPDs. Both treatment groups showed no progression of periodontitis, and all clinical indices remained stable over the observation period. One study compared two matched groups of regular dental attendees and concluded that patients using RPDs were no more likely to have poor periodontal health than those who did not wear dentures.

In a well-designed randomized clinical trial, Kapur³ et al compared the effectiveness of two different RPD designs for 134 patients with Kennedy Class I and II edentulous conditions. One design used a distal occlusal rest seat and guide plane along with a buccal cast circumferential clasp retainer. The other design used an I-bar retainer and a mesioocclusal rest seat. No clinically significant changes were reported for any periodontal component in the two groups after 60 months. It must be noted that in this particular study, patients were selected to

meet fairly rigid general and periodontal health criteria, most of the abutment teeth were splinted, and a rigid quality-control system was followed for the fabrication of the RPDs.

Conclusions

This literature review suggests the following conclusions:

1. The use of RPDs leads to detrimental changes in the quality and quantity of plaque. Implementing meticulous hygiene of both the oral cavity and dentures can offset these changes.
2. Factors that affect force distribution from the RPD to the abutment teeth and edentulous ridge include denture design, denture base adaptation, and residual ridge inclination.
3. The wearing of a new RPD is followed by a “settling” period that lasts about 1 to 1.5 months and leads to a reduction of the initial torque exerted on the abutment teeth.
4. Splinting of abutment teeth is indicated when the periodontal support has been reduced or when increased stresses are expected, as in the use of intracoronal attachments.
5. Properly designed and maintained RPDs can provide long-term clinical service without any detrimental effects on the periodontal condition of the remaining dentition, provided that preprosthetic periodontal health has been established and maintained with meticulous oral hygiene.

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Prosthodontics – Periodontics: An Interdisciplinary Approach For The Success Of Fixed Partial Denture Respective To Pontic Design : Review Report

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Abstract :

The inter relationship of prosthodontics and periodontics share the strongest, most intimate and inseparable relationship in multiple aspects, including treatment plan, procedure execution, outcome achievement and maintenance. By controlling inflammation and preparing sites for proper prosthetic prosthesis, periodontists no doubt can provide a solid foundation for successful Prosthodontic outcomes. Constructing proper restorative margin, shapes and contacts by Prosthodontists will benefit the harmony of periodontium. So common goal of both specialist should be:

To create pleasing aesthetic with a harmonious and functional stomatognathic system.

Key Words : Periodontal health, Prosthetic treatment, Pontic design

Introduction :

The inter relationship of Prosthodontics and Periodontics is a dynamic one. Prosthetic dentistry is by far the most important factor for plaque accumulation. Poorly executed restorations provide good support for plaque accumulation, so gingivitis occurs or worsens. The final evaluation of restorative treatment should be judged not only by aesthetic and functional criteria, but also anticipating the effect that restoration will have on periodontal structures. Each dental restoration has a periodontal dimension which plays an important role in long-term prognostic of the respective tooth. It is very important to understand how the restoration

contributes to the accumulation of plaque and periodontal disease. An unjustified extension of the restoration margins may induce detrimental effects on the gingival sulcus².

Importance of a healthy periodontium: A firm foundation for precise and lasting prosthesis

- Healthy gingival margins do not shrink after tooth preparation and enable accurate impressions.
- There are less chances of bleeding after preparation, which aids visibility and making accurate impressions.
- Stable tissues, free of inflammation ensure predictable restorations.

- Inflammation of the periodontium impairs the capacity of abutment teeth.
- Trauma from occlusion on teeth with untreated periodontium may increase tooth mobility and increases rate of attachment loss.
- Discomfort from tooth mobility will interfere with mastication and function.
- The position of teeth is frequently altered in periodontal disease and after resolution of gingival inflammation teeth try's to come back in original position.

Prosthodontic Considerations That Impact The Periodontium

- Restoration contour and contact areas
- Margin adaptation and defects
- Location of margin
- Role of provisional restorations
- Design of fixed
- Occlusal function
- Prosthetic and restorative materials and alloy hypersensitivity
- Iatrogenic damage from restorative procedures.

Contour and Contact Areas:-

Clinical longevity of any prosthesis is directly related to achieving proper restorative contours. It is the functional axial form of teeth to afford protection and stimulation to the marginal periodontium.

Physiologic tooth contouring

- Allows for self-cleansing mechanisms of cheek, tongue, etc. For instance, the buccolingual bulge should be <0.5 mm wider than the cemento-enamel junction.
- There must be sufficient space cervically to create the correct contour that facilitates plaque removal, occlusally to allow the restoration for a proper occlusion, axially to

provide a proper thickness of veneering material to achieve an esthetically acceptable prosthesis.

As per the retrospective study, it is concluded that:-

To preserve interdental papilla, the distance from contact point to the alveolar crest, should not exceed more than 5 mm. Ideally size of interproximal embrasure is one that permits the introduction of cleaning aids for removal of plaque in this most vital area.

Problems with misplaced contacts:-

Horizontal food impaction is produced by the action of the tongue, lips, cheeks and results from poorly contoured interproximal surfaces. Deflective occlusal contacts. Black triangle interdental gives negative aesthetics impacts.

Problems with over contouring:-

- “Food traps” from open contacts, overhangs, or plunger cusps may occur
- Poor occlusal design, and poor aesthetics.

Emergence profile :-

The emergence profile is the shape of the restoration in relation to the gingival tissues. **Stein and Kuwata** described the part of the axial contour that extends from the base of the gingival sulcus pass the free margin of the gingiva as the emergence profile that should be straight in the gingival third.

Schluger et al felt the cervical bulge overprotects the microbial plaque. Schluger et al. have advocated “flat” not “fat” contours.

Over contouring is potentially more detrimental to the periodontium than under contouring.

Marginal adaptation and defects :-

There are three options for margin placement :- Supra-gingival, equi-gingival and sub-gingival

Orkin et al demonstrated that subgingival restorations had a greater chance of bleeding and exhibiting gingival recession than supragingival restorations.

Renggli et al showed that gingivitis and plaque accumulation were more pronounced in interdental areas with adapted subgingival amalgam fillings compared to sound tooth structure.

Silness evaluated the periodontal condition of lingual surface of 385 fpd abutment tooth. He found that supragingival position of the crown margin was most favourable, whereas margins below the gingival significantly compromised gingival health.

Assessment of biologic width :

Wilson and Maynard have described the concept of intra crevicular restorative dentistry. Intra crevicular margins are defined as those confined within the gingival crevice. The restorative dentist must be able to determine the base of the sulcus for intra- crevicular margin location.

Kois suggested that the restorative dentist must determine the total distance from the gingival crest to the alveolar crest. This procedure is termed bone sounding. The tissues are anesthetized, and the periodontal probe is placed in the sulcus and pushed through the attachment apparatus until the tip of the probe engages alveolar bone.

Based on this measurement, the three categories of biologic width described are:

Normal crest: A biologic width of 3 mm on the labial aspect allows for a crown margin that is placed 0.5 mm subgingivally

High crest: Measurement lesser than 3 mm does not allow for subgingival margins without bone removal

Low crest: Measurement of more than 3.0 mm. It is most susceptible to recession secondary to the placement of an intra crevicular crown margin in the presence of a thin periodontium.

Margin placement guidelines

Rule I: If the sulcus probes 1.5 mm or less, place the restoration margin 0.5 mm below the gingival tissue crest

Rule II: If the sulcus probes more than >1.5 mm, place the margin one- half the depth of the sulcus below the tissue crest. This places the margin enough below tissue so that it is still covered if the patient is at higher risk of recession

Rule III: If the sulcus >2 mm is found, especially on the facial aspect of the tooth, then evaluate to see whether a gingivectomy could be performed to lengthen the teeth and create a 1.5 mm sulcus. Then the patient can be treated as mentioned in rule I.

Crown lengthening procedure:-

Crown lengthening includes Apical positioning of flap along with bone resection. Is used to solve may problem such as-

- Subgingival location of carious lesions
- Subgingival location of fracture lines
- Inaccessibility of sub gingival margins of failing restoration
- Inaccessibility of subgingival prepared tooth structure for proper impression.

Gingival Retraction

Very often the gingival margin of the restoration is INTRACREVICULAR. To enhance the assess, so that damage to the soft tissue is prevented during crown preparation, recording impression may be desirable to carry out some degree of gingival retraction. There are various means by which retraction can be done :

Chemicals, chemico - mechanical, electrosurgical means, surgical means.

A single cord technique is the least traumatic option than two cord technique and is normally employed when the sulcus is shallow, and the margin is placed only minimally in the crevice in areas of root proximity.

Ruel and co-worker reported that gingival displacement method may cause 0.1 – 0.2 mm gingival recession, gingival inflammation and the destruction of junctional epithelium and that takes 8 days to heal. It has shown that the different time intervals of chemical retraction agent placement could cause different degree of tissue inflammation changes. Actually there is direct relationship between time that retraction cord on sulcus and potential for adverse gingival response.

So ideal retraction time should not exceed more than 15 to 20 min

The application of pressure while placing retraction cord should not be more than 2.5 N/MM².

Ideally 0.1 TO 1 N but practically we pressed 10 N

KEY FACTOR TO AVOID TISSUE PERMANENT DAMAGE

Proper manipulation

Minimum application of pressure

Time control

Pontic design:-

Aesthetically and functionally replace lost teeth non irritating to the mucosa and allow effective plaque control. The most important factor in obtaining inflammation free pontic ridge relationships. Embrasures should be opened as much as practical to permit access with oral hygiene aids. Minimal soft tissue contact designs are biologically advantages
Most accepted pontic

Esthetic zone - Modified ridge lap pontic.

Posterior area - Sanitary pontic.

Interproximal Embrasure Designs

Interproximal embrasure should house the gingival papilla without impinging on it. Interproximal papilla responds rapidly to over contouring of the embrasure region. Thus papilla become inflamed and hypertrophied as a result of poor oral hygiene. Embrasures that are excessively opened impact negatively on the aesthetics, impair phonetics, and allow excessive lateral food impaction.

Periodontal consideration :-

- Interpaillary surgery
- Mucogingival surgery

Provisional Restoration

One of which is to preserve the position, form, and color of the gingiva.

The goal can be accomplish when soft tissues rest in normal location ,Properly contoured, well adapted to the finish line, Should have smooth surface improperly contoured provisional can cause gingival recession.

Precaution :-

After cementation of provisional restoration excess cement should be removed from gingival sulcus to prevent unfavourable gingival defects. Proper cleaning protocol should be instructed to the patient.

Occlusal Considerations:

The relation between periodontal disease and occlusion has been debated long. It is generally accepted that the inflammatory aspect should be addressed first and resolve before any occlusal consideration. The rationale is that resolution of inflammation will change the tooth-tissue relationship of

teeth to opposing dentition. After resolution of inflammation, the occlusal can be evaluated and any negative consequences addressed.

Cementation And Polishing Of Restoration

After cementation, all retained excess cement must be thoroughly removed. Restoration that extent below gingival margin, particles of cement within the sulcus causes periodontal tissues damages.

Conclusion

An interdisciplinary approach requiring coordinated efforts by the Prosthodontist and Periodontist is the need of the hour. Close attention paid to both soft and hard tissues around teeth and implants before, during, and

after restorative produce a successful outcome. It also gives the patient the benefit of comprehensive treatment with precise and lasting and restorations.

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The Ocular Impression: A Review of the Literature

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Abstract :

The management of an anophthalmic socket requires the combined effort of ophthalmologist and maxillofacial Prosthodontist. The surgeon provides the basis for successful rehabilitation. The maxillofacial Prosthodontist provides prosthetic treatment to the best of his ability. A thorough knowledge of the anatomy is necessary for successful treatment. The goal of any prosthetic treatment is to return the patient to society with a normal appearance. The aim of this review article was to show the fabrication of Ocular prosthesis which can be used to provide a cosmetic replacement for enucleated or eviscerated eyes.

Key Words : Maxillofacial defect, Ocular defect, Stock acrylic ocular prosthesis

Introduction :

The agony over the loss of an eye and the resulting facial defect has a crippling effect on the psychology of the patient. A fundamental objective when restoring an anophthalmic socket with an ocular prosthesis is to enable the patient to cope better with the difficult process of rehabilitation after an enucleation or evisceration. The placement of an ocular implant provides additional anatomic support for the residual contents of the orbit, increases motility, of the overlying ocular prosthesis, and provides muscular stimulus for orbital growth. The United States Navy is credited with the development of custom acrylic resin ocular prostheses. After

conducting extensive research into various aspects of ocular prosthesis fabrication, Navy investigators concluded that each enucleated eye socket was individual in nature. Hence, it is critical to make an accurate impression of the site to be restored. Criteria for an acceptable impression included accurately recording the posterior wall, the position of the palpebral in relation to the posterior wall, and the greatest extent of the superior and inferior fornices of the palpebral. Many techniques have been advocated to achieve optimal fit of ocular prostheses. This article will review impression and fitting techniques used in the fabrication of acrylic resin custom ocular prostheses.

Literature Review

Numerous ocular impression and fitting techniques have been described. Most can be placed into one of several broad categories: direct impression/external impression, impression with a stock ocular tray or modified stock ocular tray, impression with custom ocular tray, impression using a stock ocular prosthesis.

The Direct Impression/External Impression: Several authors have used a technique in which low viscosity alginate or reversible hydrocolloid is injected directly into the enucleated socket^{1,2,3,4}. The patient is instructed to stare straight ahead as the material sets. Additional material is applied to the external tissue, and an impression is made using a rigid tray for reinforcement. As a result, the anatomy of an ophthalmic socket and overlying tissues is obtained. A stone mold is made from the impression, and wax is poured into this mold. The wax form or scleral blank acts as a trial ocular prosthesis. It can be tried in the patient and adjusted as necessary to achieve proper tissue contours and fit. Bartlett and Moore¹ rationalized their procedure by explaining that an impression is required to realize the full movement potential of a prosthesis supported by an ocular implant. A well-fitting prosthesis also would eliminate potential voids in the socket and possible debris collection. In addition, Bartlett and Moore¹ stressed that a wax try-in is necessary to evaluate proper physiologic function.

Impression with Stock Ocular Tray

Perhaps the most common impression technique involves a stock ocular tray to help support the

impression material^{5,6}. Allen and Webster⁵ were early proponents of this technique, calling it the “modified impression method.” The stock ocular tray is placed in the socket. The tray has a hollow stem fastened in the middle through which a runny mix of ophthalmic alginate is injected. Perforations in the tray aid flow and retention of the alginate. Subsequently, the impression is removed and invested in stone. A wax pattern is fabricated from the mold. This wax trial prosthesis is placed in the socket and 10 minutes allowed for muscle accommodation. The fit of the trial prosthesis is evaluated and modified as needed. The authors included a detailed account of the methodology for modifying the wax pattern during the try-in to achieve proper fit.

Stock Ocular Tray Modifications

Variations of the “modified impression method” center on the fabrication or configuration of a stock ocular tray. Maloney⁷ placed 3 channels through the superior edge of his own set of customized stock trays to prevent air entrapment. Following his method, a raised ring around the stem prevents the eyelid from blocking the channels. Engelmeier⁸ suggested casting a set of stock trays in Ticonium (CMP Industries, Albany, NY) to permit sterilization and reuse. Sykes, Essop, and Veres⁹ advocated the use of modeling plastic impression compound as an ocular tray material, forming it around one half of a small rubber ball and placing a hollow tube through it. Ophthalmic alginate is injected through the tube to make the impression.

Impression with Custom Ocular Tray Miller¹⁰ suggested that a custom ocular tray is necessary in certain situations. For example, the

anophthalmic socket could be highly irregular or stock trays may not be available. Miller's method involves attaching a solid suction rod to the patient's existing prosthesis, conformer, or wax shell and investing it in an alginate mold. After the alginate sets, the prosthesis, conformer, or wax is removed and replaced with clear acrylic resin. Perforations are made in the resulting tray, and a tunnel is cut into the stem through which impression material can be delivered. An impression is made using injected alginate.

Impression Using Stock Ocular Prosthesis

Several authors have recommended use of a stock ocular prosthesis as a tray to carry impression material^{11,12,13,14}. The impression technique involves selecting an esthetic stock eye and reducing its peripheral and posterior aspects. It is then lined with a thin mix of ophthalmic alginate and inserted for the definitive impression. Alternately, alginate can be injected directly into the socket and then reinforced by placement of the stock eye. The resulting impression is processed, providing a customized stock prosthesis. Limitations of this technique include the need to maintain a fairly large supply of artificial eyes and the inability to match all sizes and colors of the iris and pupil.

DISCUSSION:

Those using impression material favor a low viscosity, nonirritating irreversible hydrocolloid. Impression material is injected or carried to the socket, and the patient stares straight ahead until the material is set. The impression is removed and invested in a stone mold from which a wax blank is made.

Although a good impression technique can predictably capture the internal tissue surface and fornices of the socket, most authors agree that a wax trial ocular prosthesis try-in is important to evaluate fit, proper lid opening, and overlying tissue contours. The muscles must be relaxed before the wax prosthesis can be evaluated and modified. Some clinicians prefer to use a functional impression technique to accomplish this. In spite of the goal of intimate tissue contact, some situations may dictate actually eliminating tissue contact over the globe, such as during hydroxyapatite implant integration.

CONCLUSION:

The goal of any prosthetic treatment is to return the patient to society with a normal appearance and reasonable motility of the prosthetic eye. The disfigurement resulting from loss of eye can cause significant psychological as well as social consequences. However, with the advancement in ophthalmic surgery and ocular prosthesis, patient can be rehabilitated very effectively.

The maxillofacial Prosthodontist should provide prosthetic treatment to the best of his ability and should also consider psychological aspects and if necessary the help of other specialist should be taken into consideration.

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Lasers In Prosthodontics

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Abstract :

Lasers is the acronym for “Light Amplification by stimulated emission of radiation”. In 1917 Albert Einstein proposed the concept of Stimulated Emission. In 1965 report of first exposure to vital human teeth was published. These instruments are now available in various delivery systems and can be used for both hard tissue and soft tissue modifications.

Key Words : LASERS, MASER, SOFT TISSUE, HARD TISSUE, ERBIUM, HOLMIUM

Introduction :

Lasers is the acronym for “Light Amplification by stimulated emission of radiation” named by Gordon Gould in 1957. In 1997, the Erbium family of lasers, consisting of Er:YAG and Er,Cr:YSGG wavelengths, was introduced in the United States. These instruments have indications for use for both soft and hard tissue. In 1917 Albert Einstein proposed the concept of Stimulated Emission. “MASER” i.e microwave amplification by stimulated emission of radiation was developed by Theodore H in 1954. “LASER” was further developed by Goldman in 1959. In 1965 report of first exposure to vital human teeth was published. In 1970 and 1980 new

devices such as CO₂ and neodymium YAG were introduced. In 1987 Myers and Myers received the USA food and drug administration’s permission to sell dental laser.

Fundamentals of lasers:

1) Light :-It is a form of electromagnetic energy. Properties of laser light are

- Monochromatic
- Collimation
- Coherency
- Efficiency

2) Amplification:-The Amplifying medium or the gain medium may be Solid, Gas, liquid.

3) Stimulated :- Stimulated means that the photons are amplified by stimulating an atom to release more photons

4) Emission:- Emission occurs by Pumping mechanism and Population inversion

5) Radiation :-Light waves are produced by the laser as a specific form of electromagnetic energy.

The delivery systems include Articulated arm, Waveguide delivery system, Fiber optic delivery system .Regulatory agencies such as American national standards institute, Food and drug administration, Center for devices and radiological health , Occupational safety and health administration regulate the production of laser delivery systems used for medical and dental services.

Commonly used lasers in dentistry:

Argon :- Active medium is argon gas. It is Fiber optically delivered as continuous and gated pulsed mode. The chromophore is pigments in the cell. It is Ideally suited for acute inflammatory periodontal disease and highly vascularized lesions .

Neodymium: YAG :-Medium garnet crystal combined with rare earth elements yttrium and aluminum are used . Delivered in Free running pulsed mode in Optic fiber delivery system The Chromophore is pigments in the cell. Used for removal of pigmented surface carious lesions.

Holmium: YAG :- Medium crystal of yttrium aluminum garnet sensitized with chromium are used. Fiberoptically delivered in free running pulsed mode.Used for Arthroscopic surgery of TMJ. However It is no longer manufactured for dental use.

Erbium :- These can be Erbium, Chromium: YSGG 2780 nm or Erbium: YAG 2940 nm. Fiber optically delivered in free running pulsed mode. The Chromophore is water and

hydroxyapatite. It is very Effective root canal therapy and bone removal.

Co2 :-Medium co2 gas is used . It is delivered as hollow tube wave guide in continuous or gated pulsed mode. The Chromophore is water. Highest absorption to hydroxyapatite of any laser.

Advantages :

- High patient acceptance
- Less postoperative trauma and swelling.
- Bloodless surgery/hemostasis
- Patient comfort
- Better tissue healing
- Reduced risk of blood borne pathogens

Disadvantages:

- Lack of tactile sensation
- Expensive equipment
- Maintenance
- Extreme precision required

Application of lasers in prosthodontics

FIXED PROSTHETICS/ESTHETICS

- i. Crown lengthening
- ii. Soft tissue management around abutments
- iii. Osseous crown lengthening
- iv. Gingival retraction
- v. Formation of ovate pontic sites
- vi. Bleaching
- vii. Tooth preparation for veneers and full coverage crowns and bridges
- viii. Removal of carious lesion and faulty composite restorations before placement of final restorations.

IMPLANTOLOGY

- i. Second stage uncovering.
- ii. Implant site preparation.
- iii. Peri-implantitis
- vii. Treatment of flabby ridges
- viii. Vestibuloplasty

- ix. Sulcus deepening
- x. frenectomies
- xi. Osseotomy during tooth/root extraction or ridge recontouring
- xii. Treatment of soft tissue and hard tissue undercuts

LASER APPLICATIONS IN THE DENTAL LABORATORY

- i. Laser titanium sintering
- ii. Laser ablation of titanium surfaces
- iii. Laser assisted hydroxyapatite coating
- iv. Laser welding of titanium components of the prostheses

LASERS IN MAXILLOFACIAL REHABILITATION

- i. Planning the shape and position of the prostheses.
- ii. Three dimensional acquisition of optical data of the extraoral defects.

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E -Cigarettes-Harmless Or Harmfull??

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Abstract :

Electronic cigarettes (E-cigarettes), also known as e-vaporizer are battery operated devices that people use to inhale an aerosol, containing mostly Nicotine, flavoring and other chemicals. They resemble traditional tobacco cigarettes, cigars or pipes etc.

Key Words : Some common nicknames for e-cigarettes are e-cigars, e-hookahs, hookah-pens, Vapes etc.

Introduction :

- **How do e-cigarettes work ?**

1. A cartridge with flavoured nicotine
2. A heating element (atomizer)
3. A power source
4. A mouth piece to inhale

- **E- cigarettes use in Teens**

E-cigarettes are popular among teens and are now the most commonly used form of tobacco among youth in United States. Alluring advertisement, various e-liquid flavours and belief that they are safer than cigarettes; have made them appealing to this age group.

In high school students, one in four teens reported using e-cigarettes for dripping a practice in which people produce and inhale vapors by placing e-liquid drops directly onto heated atomizer coils to produce thick vapors.

- **EFFECT ON HEALTH BY E-CIGARETTES**

Use of E-cigarettes in teens and pre-teens then go on to use more than other tobacco products, including cigarettes within next few years. Different studies suggest that e-cigarettes may actually encourage cigarettes smoking in adolescents.

A study of adult smokers in Europe found that those who used e-cigarettes were less likely to have stopped smoking than those that didn't use e-cigarettes.

The Nicotine in e-liquids is readily absorbed from the lungs into blood stream. Upon entering the blood, nicotine stimulates the adrenal gland to release hormone

epinephrine (adrenalin) which stimulates CNS and increase blood pressure breathing and heart rate.

In most addictive persons , nicotine activates the brains rewards circuits and also increase levels of chemical messenger in the brain called dopamine , which reinforces rewarding behaviors.

Pleasure caused by nicotines interaction with the reward circuit motivates some people to use nicotine again and again and despite risks to their health and well-being.

E-cigarettes use exposes the lungs to a variety of toxic chemicals and as well as potentially toxic metals Nano particles from the device itself even E-liquid contains high levels of nickel and chromium which may come from nichrome heating coils of vaporising device. Cadmium for E-cig smoke can cause

breathing problems lung , stomach bladder and Oesophageal Cancers are seen associated to chemical toxins .

Respiratory and heart diseases are also seen. WHO has taken tobacco free initiative.

Advisory note by WHO addresses the growing concerns about increasing prevalence and potential health effect of tobacco smoking .

Due to harmful effects of e-cigarettes and other tobacco products, FDA, now regulates the manufacture, import, packaging, labeling etc as well as purchase not below at least 18 years age.

As a Dentist, we should make patients aware of side effects of E-cigars and help them in its prevention .

Effect Of Occlusal Overload And Residual Cement On Peri-Implant Tissue Health: A Review

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Abstract :

Implants have become a prime treatment option for partial or completely edentulous patients in this modern era. Certain complications come along with implants. These complications can be on part of patient or dentist or idiopathic. One such complication that dentist most fears of most is peri-implantitis. Peri-implantitis may be caused by occlusal overload and residual cement around implant on cementation of prosthetic component. The factors related with occlusal overload are probably Bone quality, Parafunctional activity, premature contacts, cantilever, anterior guidance, mutually protected occlusion. Cusp inclination, cusp angle, occlusal table width, Implant body orientation and influence of load direction, implant crown contour. The following review article discusses on effect of occlusal overload and residual cement on peri-implant tissue health.

Key Words : implants, occlusal overload, peri-implantitis, periodontal health, residual cement.

Introduction :

In recent years, dental implant applications have become more frequent in order to treat both aesthetic and functional disorders caused by tooth loss. However, even if the implants can retain their presence in the mouth for a long time, the majority of the implants experience implant-related diseases. In the literature review, peri-implant diseases are divided into two groups: Peri-implant mucositis and peri-implantitis. Both of them are associated with an inflammatory reaction in the peri-implant tissues. Peri-implant mucositis is limited to soft tissues encircling a dental implant that

does not contain a supporting bone. while periimplantitis was defined as the inflammatory reactions associated with supportive bone loss around a functioning implant. Trigger determinants for periimplant bone loss generally split in two main categories: biological factors and biomechanical factors. Biological failures include progressive bone loss, bacterial infections, microbial plaque subsidence and sensory corruptions. Biological complications are divided into two groups as early biological failures and late implant failures; early failures are not applied to

appropriate aseptic measures of the surgical implant, late complications are typically infections caused by periimplantitis and bacterial plaque. Periimplantitis due to biomechanical factors are: Prosthesis-related Factors (Occlusal overload, residual cement, and inadequate prosthetic placement), inappropriate abutment angle and bruxism are the cause of exceeded forces due to parafunctional habits¹. The purpose of this literature is to provide current information about the risk factors of peri-implantitis

Related Factors for Prosthetics:

Occlusal Overload: One of the major causes for the loss of implants is overload, which causes peri-implantitis. The factors related with occlusal overload are probably Bone quality, Parafunctional activity, premature contacts, cantilever, anterior guidance, mutually protected occlusion. Cusp inclination, cusp angle, occlusal table width, Implant body orientation and influence of load direction, implant crown contour.

a) Bone quality-

Engquist *et al*² reported that higher implant failures in maxillary overdentures were attributed to poor bone quality of the maxilla. Jaffin and Berman³ determined that the quality of bone was the greatest determinant of fixture loss. Occlusal overload can cause bone resorption around the osseointegrated implants. Occlusal trauma with peri-implantitis may accelerate bone destruction. After a while, the anaerobic environment formed in the periimplantitis region changes the rates of normal bacteria. Therefore, a microbial flora that changes with excessive occlusal loading causes an increase in marginal bone resorption. Occlusal corrections should be made to stop progressive bone destruction. Occlusal loading controlled by bone density may improve bone loss due to periimplantitis⁴.

b) Parafunctional activity:

Falk *et al*⁵ in 1990 proposed that the numbers and distribution of occlusal contacts

had major influences on the force distribution between a cantilevered segment and the implant-supported area, especially with cantilevered units. Naert *et al*⁶ suggested that shorter cantilevers, proper location of the fixtures along the arch, a maximum fixture length, and night-guard protection should be prerequisites to avoid parafunctions or overloading of implants in bruxism patient.

Bruxism is disorder of a chewing system, which is expressed by stress, anxiety and tense situations, or rubbing, creaking and tightening teeth during normal activity and sleep⁷.

ligament is an essential part to make a relation between natural tooth and bone. The most important characteristic of periodontal ligament is shock absorption. There is no periodontal ligament between implant and bone. For this reason, all the loads on implant are transmitted to bone directly, which may impair the relationship between bone and implant⁷⁻⁹.

c) Premature contacts-

Isidor¹⁰ reported that excessive occlusal overloading can cause severe crestal bone resorption and loss of osseointegration. Miyata *et al*¹¹ suggested that there is a critical height of premature contact on implant prostheses for crestal bone loss, especially under peri-implantitis which cause implant failure.

d) Cantilevers-

Shackleton JL¹² suggested that long cantilevers (≥ 15 mm) has more implant-prostheses failures than cantilevers < 15 mm long. Duyck *et al*¹³ reported that when a biting force was applied to a distal cantilever, the highest axial forces and bending movements were recorded on the distal implants, which were more pronounced in prostheses supported by only 3 implants, compared to prostheses with 5 or 6 implants.

e) Anterior guidance-

Studies reported that less force was elicited when the posterior segments are not in contact in the lateral mandibular position.-

Weinberg and Kruger¹⁴ with every 10° change in the angle of disclusion, there is a 30% difference in load. They suggested that the anterior guidance of implant supported prostheses should be as shallow as possible.

f) Cusp Inclination-

Kaukinen et al¹⁵ suggested that the cusp inclination affects the magnitude of forces transmitted to implanted prostheses. Weinberg¹⁶ claimed that cusp inclination is 1 of the most significant factors in producing bending moments.

g) Occlusal table width-

30%~ 40% reductions in the occlusal table in a molar region has been suggested. A narrow occlusal table reduces the chance of offset loading and increases axial loading, which eventually can decrease the bending moment. Misch also described how a narrow occlusal table can improve oral hygiene and reduce the risk of porcelain fracture.

h) Premature occlusal overload-

It can cause poor osseointegration, even in dense mandibular bone. Misch¹⁷ first proposed the concept of progressive bone loading he modified this concept by incorporating time intervals (from 3 to 6 months), diet (avoid chewing with a soft diet, then harder food), occlusion (gradually intensify the occlusal contacts during prosthesis fabrication), prosthesis design and occlusal materials (from resin to metal to porcelain) for poor bone quality condition.

Residual cement:

The effect of flooding cement on peri-implantitis formation is similar to that of dental calculus in periodontal disease. The rough surface of the cement makes it difficult to remove microorganisms and this causes peri-implant mucositis initially and peri-implantitis resulting in bone loss later. The remaining cement after cementation of the prosthesis is related with clinical and radiographic findings of peri-implantitis. Another cause of peri-implant diseases is peri-implant tissues have different

morphology from the natural teeth. The periodontal ligaments around the natural teeth are more resistant to occlusal forces due to their viscoelastic structure. However, relation of the implant with the surrounding bone causes occlusal forces to be transmitted to the surrounding bone. In addition, absence of periodontal ligaments around the implant and elongation of the connective fibers parallel to the implant surface reduce the pressure resistance of the peri-implant tissues. Cause of force applied during the cementation, the cement is pushed into the deep tissues and the cementum does not burst of the sulcus, making it difficult to clear the cementum surplus. Linkevicius et al. stated that the cement can no longer be detected in the radiograph. Wadhwai noted that radiographic imaging of the cement after implant prosthesis cementation is poor¹⁸. Cement application techniques appear to be used arbitrarily with little understanding by clinicians regarding how or where to apply the cement. There are different techniques to prevent seepage of cement into sulcus like Use of radiopaque cement, crown venting technique, abutment copy technique, G-cuff collar technique.

Discussion:

In this article, the effect of etiologic factors causing periimplantitis is evaluated. Peri-implantitis is the most used criterion for assessing the success of osseointegrated implants. Occlusal overloading on the implant can lead to marginal bone loss. Microfracture inflammatory phenomena cause bone defect without involvement. However, marginal bone loss has not been detected in implants with occlusal load in experimental studies performed by Hurzeler and colleagues on other living beings other than humans. Miyata et al. also showed that occlusal load with a height of 100um in other living beings did not provoke bone loss in implants with healthy marginal gingiva. Bone loss was significant after induction of inflammation. Despite the absence of periodontal inflammation earlier, 180 um or more periimplant appeared early in bone

resorption. This indicates that occlusal overload can impair the health balance of periodontal tissues and reduce the magnitude of overload required to provoke bone loss in previous gingival inflammation. In the compilation we made, peripheral overload was the main factor associated with peri-implant.¹⁹

There is a lack of consensus regarding the type of luting cement to use for cement-retained implant prostheses. Cements are usually chosen arbitrarily, usually because the clinician is familiar with them for cementation procedures to natural teeth. Research has shown that some cement types were more likely to cause remnants in the peri-implant tissues and increase the risk of biological complications. Ideally, the luting agent should be strong enough to retain the restorations, but weak enough so that the restorations can be removed easily if required.

Residual excess cement is one of the most common problems of cement-retained implants, found on up to 81% of subgingival spaces in one study.²⁰ During cementation, hydraulic pressure builds up and the cement flows to the direction of least resistance beyond the crown margin to the gingival sulcus. The weak peri-implant tissues are less resistant to this pressure and the extruded cement continues to flow subgingivally. Numerous clinical studies report incidences of excess cement left in patients,²⁰ which is suspected as being a primary cause of peri-implant disease. In fact, the American Academy of Periodontology includes residual implant cement as a risk factor for peri-implant disease peri-mucositis and peri-implantitis. Korsch et al.¹⁹ found that larger implant diameters were more significantly associated with the presence of excess cement and are therefore at risk for peri-implant disease. However, this is more likely related to the fact that larger diameter implants are used in the posterior regions of the mouth which are more difficult to access for cleaning and cement removal.

If a patient presents with signs of peri-implant disease, the clinician must first

confirm a diagnosis before treating. In most cases, dentists are unable to evaluate and detect excess cement that is subgingival. Even radiographs are poor diagnostic aids for evaluation of residual cement because its detection depends largely on the type and thickness of the cement used. The radiographic material varies directly with the extent that it can be visualized on a radiograph. Zinc-containing cements are radio-opaque (zinc phosphate and zinc oxide-eugenol but are often not thick enough to be diagnostic.²¹

Conclusion:

The risks of peri-implantitis, such as smoking, alcohol consumption, diabetes and unsure but genetic features, prosthetic factors, implant design and parafunctional habits, are all shown as biological and mechanical factors that can influence the patient's inflammatory reaction and infection response host response. Complications of occlusal overload can be prevented by application of biomechanical principles such as : passive fitting of prostheses , reducing the cantilever length, narrowing the buccolingual / mesiodistal dimensions of the prosthesis

reducing cusp inclination, eliminating excursive contacts and a proper occlusal scheme centering occlusal contacts, increasing number and diameter of implant, splinting of implants and night guard in case of bruxism. Thus preventing the complication will decrease the failure of implant and help in its longevity. Cement application should be minimal and localized to the circumference of the crown margin only. A pre extrusion procedure can be performed to remove excess cement extraorally, and then the crown should be seated slowly onto the abutment. The early follow-up visit is recommended to collect baseline data which will serve as a reference at future appointments. Early detection of cement remnants and successful treatment can prevent disease progression. In addition, the patient should be informed about oral hygiene protocols and prosthesis cleaning

and should be regularly checked at dental examinations and in dental education faculties.

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Awareness lecture on 'Anti-Ragging' by Dr. Dilip Mhaisekar Vice Chancellor of MUHS



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Inauguration of Journal Periovision



Students Rally for Oral Health Awareness



Conservative Endodontic Day 6th March



Prosthodontic Day 22nd Jan.



Inauguration of No Tobacco Day 31st May



Oral Hygiene Day 1st August by Dept. of Perio



Inauguration of RMW Workshop



Perio-Prostho inter departmental symposium



School Dental Checkup Camp



Oral Health Day 20th March



Inauguration of Tobacco Cessation Centre



Oral & Maxillofacial Day 13th Feb.



Felicitation of Winners in National Yoga Competition at Indore
Students of CSMSS Dental & Ayurvedic College, Aurangabad



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