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Dr. A.L. Meenakshi Sundaram

It is indeed a matter of pleasure to meet you all through the first issue of JIDA. I extend my congratulations to Dr. Mustafa, Editor of JIDAT who made efforts to bring out the first issue of JIDAT after two years.

It has been an honor and privilege for me to serve you as the President of IDA, Tamil Nadu state.

I promise to do my best that I can and look forward to do whatever needed for the Association

I would like to especially thank Dr. George Thomas, our past National President for his enormous support and guidance. His contribution is invaluable for the rejuvenation of IDA, Tamil Nadu branch which faced a substantial setback for the past three years.

I request all our dedicated members to publish their articles in JIDAT that are informative and useful for everyone.

We are tasked with special goal-TO INCREASE MEMBERSHIPS!

By hosting events that members would like to attend gain creditability and help us improve in membership growth.

Teamwork requires contribution, dedication, cooperation and commitment which helps IDA, Tamil Nadu to reach newer heights.

We will need to be unified in our effort and we are all in this together.

The effort put forth will produce the desired outcome.

I once again request our members cooperation for a successful year ahead.

My sincere wishes for a Prosperous and peaceful 2018.

Yours sincerely,

Dr. A.L. Meenakshi Sundaram
Hon-State President
IDA-Tamilnadu State Branch



Dr. K.P. Senthamarai Kannan

It's a great privilege and my dream to write a Secretary message in the prestigious journal Jidat published by IDA Tamilnadu State Branch.

On behalf of state branch I request everyone to be united for the welfare of our society.

Jidat will effectively provide quality dental services by updating our knowledge & skills in latest dentistry. We believe that Jidat features on clinical practice, research and the latest trends in dental science. Jidat has been a great asset for every clinician.

We IDA - TN has got so many fruitful programmes in the coming year 2018. I as a state Secretary request all the members to actively participate in the all events conducted by state office and local branches to make all the programmes a grand success.

Best Wishes.

Thanking you,

Yours sincerely,



Dr. K.P. Senthamarai Kannan
Hon-State Secretary
IDA-Tamilnadu State Branch



Dr. H. Mohammed Musthafa

Warm Greetings,

My heartfelt wishes to each and every member of IDA Tamilnadu state. I feel highly obliged to meet you all through this revamped JIDAT Journal. It gives me immense pleasure to release the first issue, albeit the obstacles in the process of release.

My appeal to all the members is to kindly make use of the Journal to publish your articles, thereby benefitting the dentists at large in updating themselves.

We from the Editor's Office pledge to engender utmost efforts in release of all the issues in this year. Whatever happened in the past need not be a roadblock for all of us to come together, as your contributions are the one which takes this journal to greater heights.

I Thank the Almighty and My Parents for having bestowed me with this knowledge.

My Sincere thanks to the State office President , Hon State Secretary & Treasurer for their support and cooperation.

Last but not the least, I thank every Reviewer who had played their tunes to perfection.

Let us be together always to make IDA Tamilnadu scale enormous heights in coming years.

Regards,

Dr.H.Mohammed Musthafa,

Editor in Chief,

JIDAT.

How will the Clinical Establishment Act impact the practice of Dentistry in Tamilnadu?

Dr. George Paul

Consultant - Oral & Maxillofacial Surgeon, Salem

Introduction

The Clinical establishment Act (CEA) was made into law by enactment in 2012 when it was gazetted following the adoption of the law by 4 state governments. Normally the Central Government cannot legislate on state subjects like Health. However, in view of the importance in regulating public health in the country, Article 47 of the constitution was invoked to create a central law that is binding on all states. Over the last few years, several state governments have adopted the CEA. Tamilnadu has adopted the CEA replacing the Tamilnadu Private Clinic Establishment Act of 1997 pending as a bill in the assembly and awaiting implementation. However it shall be referred to as an Act for the purposes of this article. The present Act has been modified to incorporate the CEA and is to be called the Tamilnadu Clinical Establishments (Regulation) Act 1997 (TNCEA 1997). It is applicable to all kinds of clinical establishments from the public and private sectors, of all recognized systems of medicine including single doctor clinics. The only exception will be establishments run by the Armed forces. The details of the Act including definition of terms, authorities, administration and registration procedure is available freely on the Clinical Establishment Act Website and in the official gazette notifications of the Tamilnadu Government.

How does the TNCEA 1997 (amended) Bill differ from the basic structure of the CEA 2010?

The central Act provides scope for the states to amend the Act to suit local issues and conditions. However these changes must be in accordance with the basic structure of the Act. In addition to the difference in name from CEA 2010 to TNCEA 1997 and Rules there are some differences in statutes and procedures.

The Tamilnadu Clinical Establishment Act of 2018 (TNCEA 18) is technically an amendment of the

existing Tamilnadu Private Clinic Establishment Act 1997, which has been amended to incorporate the essence of the central Act. The Amendment was passed on 20th March 2018. The rules were framed and officially notified on 04th June 2018. The CEA in Tamilnadu has a few differences from the Central Act but the basic structure has been adhered to. In reality there are several differences. Some of them help the medical profession. However, some are inconvenient to practitioners.

1. The national administrative structure remains the same in both. However, TNCEA 1997 has a slightly different administrative structure at the State and district level. For example the State Level Advisory Committee of TNCEA 1997 is headed by the Director of Medical and Rural Health Services who will be the Chairperson (Chapter III, section 8. 2 (a)), whereas in the Central act, the Chairperson is the Secretary, Health and Family Welfare. Similarly in the hierarchy of the District level, the Chairperson is the Deputy Director of Medical and Rural Health services. In addition, the Dean of a Government Medical College in the district and several members from MCI, AYUSH, Siddha etc are on the advisory committee. Significantly, there is no dentist from council or association in this committee in both the Acts. The District level authority as per the CEA was the Collector of the District. The TNCEA 1997 has a large representation from Siddha because the Siddha Medical Officer of the district is also a member. Significantly, there is poor representation for the dental surgeon at all levels in the National CEA and the TNCEA 1997. There is only one nominee from DCI at the National level and one nominee from TNSDC at the state level. Most importantly there is no representative at the level of the district authority which is the

registering and inspecting body. While there is representation from the Indian Medical Association and the AYUSH association at all levels, there is no representation from the IDA or any dental specialty association. This has serious repercussions at the registration and inspection levels because these will be done by non-dental persons with little knowledge about the special requirements of dental clinics and hospitals.

2. Registration and inspection of clinics at district level will be done by health professionals at the district level as per the TNCEA 1997 unlike in the CEA where the registrations may lie in the hands of revenue officials since it is headed by the collector. However section 34 of Chapter IV of the CEA elaborates on the 'Power to enter' by officials for inspection. It clearly states that 'No such person shall enter the clinical establishment without giving of his intentions'. In the TNCEA 1997 there is no such restriction on random inspection and it can be misused by officials to disturb or exploit practitioners.
3. The CEA has a provision for provisional registration within a period of one year for existing practitioners and 6 months for new practitioners (after the law comes into force through notification). In fact it provides for up to 24 months for an existing practitioner to conform to the requirements under the CEA. The TNCEA 1997 has no such provisions for provisional registration and practitioners have to fulfill the necessary conditions within 9 months of notification of the Act in the state. Further it has to register permanently with the authority directly without any period of provisional registration prescribed in the CEA. This has to be done within 9 months in the case of an existing establishment and within 6 months if it is a new establishment. The CEA gives up to 2 years time to fulfill requirements for permanent registration which, in both cases, needs renewal only once in 5 years. The absence of a temporary or provisional registration and adequate time to meet the statutory requirements will cause problems in

compliance for both existing practitioners and new practitioners as per TNCEA 1997.

4. The prescribed penalties according to CEA and TNCEA are slightly different and can be reconciled.

Requirements for Dental Establishments

The requirement for dental clinics, multispecialty clinics and dental hospitals are published under different headings ranging from minimum area, personnel and qualification, safety features, Signages for different rooms and facilities, Fire Safety, Toilets, Record maintenance, Waste disposal etc and the exact details for different categories can be viewed on the official website. The requirements are designated as mandatory and desired. While most features are reasonable, this Act will place an additional burden on the dentists in terms of manpower requirements, digital documentation and statutory compliance to all regulatory mechanisms including updating of the license to run the practice. A relatively new feature is transparency regarding fees which have to be available to the patient before starting treatment.

What should the Dental Community do?

As explained earlier, the CEA 2010 and TNCEA 1997 are legislated laws and compliance is mandatory. Organizations such as the IDA and other dental forums should endeavor to lobby the law makers to make amendments which are more friendly and useful to both the practitioners and the patients. Some of the suggestions include

1. Greater representation of dental associations in the state and district levels. The registering and inspecting authority must have a dentist who understands the complexities of the specialty and its special needs which are distinctly different from other medical branches. The Tamilnadu State IDA has already made such representations to the Health Secretary and the Ministry of Health and Family Welfare.
2. Considering the enormity and logistics of registration of thousands of clinics in various districts and the compliance of establishments to the new requirements, the

TNCEA 1997 should provide a two tier system for registration as envisaged in the CEA 2010 which provides for a provisional registration for up to two years followed by a permanent registration after that with a validity of 5 years. Further the time given for registration (after publication of requirements) is only 9 months for existing establishments and 6 months for new establishments. This should be increased to at least 1 year to permit adequate compliance.

3. All inspections should be made with due written notice of at least one week from the authority in case of any complaint. Surprise inspections of health facilities where patients are being treated can be disruptive to both practitioners and the patients undergoing treatment. Although the CEA 2010 has emphasized this aspect, it does not find mention in the TNCEA 1997.
4. Practitioners found in violation should be given a show cause notice and adequate time to correct deficiencies. There should be no scope for arbitrary action by inspectors. Although these clauses are included in the CEA and TNCEA, there should be an accountability and appeal process with suitable punitive provisions against authorities who harass doctors. This is because of the far reaching implications involved in providing safe health care free from unnecessary and arbitrary interference in the name of regulation in a life- saving sector. The CEA and TNPCEA appears to give authorities a lot of arbitrary powers absolving them of any legal rights in the name of acts done in 'good faith'.
5. The registration fee of Rs5000/ appears a little steep for the new practices. There should be slabs for different kind of practices and also a fee structure based on metro, urban and rural practices.

Advantages of Clinical Establishment Act

- Standard Dental Care
- Weeding out of quacks
- Safety for public

- Transparency in charges and fees
- Compliance to public safety standards including pollution etc
- Availability of manpower resources data for health administration

Disadvantages of CEA

- Discretionary powers with inspecting authorities
- Scope for corruption
- Increased cost to dentist and patient

Summary and Conclusion

The CEA has been adopted by Tamilnadu as an amendment of the existing Tamilnadu Private Establishment (Regulation) Act 1997 which was not however implemented at that time. It comes into force from 2018 after the required notification by the state government. The regulation of practice is a necessity in the interest of public health and it can be useful as long as the process is fair and non discriminatory. It should be implemented without putting unnecessary burden on the medical profession and the public.

The fact that the CEA is a law and is binding to the practice of the profession cannot be wished away. The IDA or any organization of Dentists should be well represented at all levels of the administration particularly in the district advisory committee, registering and inspecting committees.

The regulation of the CEA must be done purposefully and there should be no scope for arbitrary action or victimization of the establishments. Stringent laws/ amendments should be incorporated to ensure this

References

1. The Clinical Establishment (Registration and Regulation) Act 2010. Ministry of Health and Family Welfare, Government of India.
2. The Tamilnadu Private Clinical Establishment (Regulation) Act 1997 and Rules 2018 (Amendments) , Ministry of Health and Family Welfare, Government of Tamilnadu, Bill introduced on March 20th 2018 through Gazette Notification LA Bill number 15 of 2018.

EVALUATION OF STYLOID PROCESS USING DIGITAL PANORAMIC IMAGING – A CROSS-SECTIONAL STUDY

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ABSTRACT

INTRODUCTION: Styloid process is a normal anatomical structure which is a cylindrical and cartilaginous bone arising from the temporal bone immediately in front of the stylomastoid foramen. When the styloid process length is greater than 3cm, then it is referred to as elongated styloid process (ESP).

OBJECTIVE: The aim of the present study was to assess and measure the length of styloid process using panoramic radiographs and also to find the variations that can occur in age, sex and also with respect to the sides of the styloid processes.

MATERIALS & METHODS: A total of 400 digital orthopantomographs were selected and the styloid process was measured on both the sides using measurement toolbars on the accompanying analysis software (SPSS).

RESULTS: The overall prevalence of ESP was in 67.5% subjects and 32.5% subjects did not have ESP. Males showed more ESP with an increased prevalence on the right side. The average length of the right styloid was $3.03 \pm 0.7\text{mm}$ and on the left side was $3.01 \pm 0.74\text{mm}$. The length of both styloid processes did not show any increase with age. Type I calcification was more prevalent.

CONCLUSION: The styloid process is an important, often overlooked anatomical structure which can provide proper diagnosis if evaluated carefully.

KEYWORDS: Eagle's syndrome, panoramic radiography, elongated styloid process.

INTRODUCTION:

The multi-speciality of nature's creation extends her grace to each and every object created. One such creation which comes in various styles is the styloid process¹. Styloid process is a normal anatomical structure which is a cylindrical and cartilaginous bone arising from the temporal bone immediately in front of the stylomastoid foramen. This process has derived its name from the Greek word "Stylos" meaning "pillar" and is embryologically derived from the second brachial arch, the Riechert's cartilage².

A proper clinical and radiographic evaluation can detect anatomical variations in this process. When the styloid process length is greater than 3cm, then it is referred to as elongated styloid process (ESP). According to the literature around 2-28% of the population has elongated styloid process. Along with elongated styloid process, if the patient experiences clinical symptoms such as neck or cervico-facial pain, with pain on rotating the head, dysphagia, referred otalgia, it is considered as Eagle's syndrome³. Radiographical

examination plays a vital role including panoramic radiographs, AP, lateral skulls and multi-slice computed tomography. The aim of the present study was to assess and measure the length of styloid process using panoramic radiographs and also to find the variations that can occur in age, sex and also with respect to the sides of the styloid process.

MATERIALS AND METHODS:

A total of 400 archived digital orthopantomographs of individuals who had visited our college and hospital for various dental problems between January and October 2016 were used for the study. All the radiographs were taken using digital panoramic machine Planmeca Pro Max X-ray unit (Planmeca Oy., Helsinki, Finland). The exposure parameters were standardized according to the manufacturers and it ranged between 60-70kvp and 8-12 mA. All these radiographs were exported to JPEG format and were stored as soft copies in the hard drive of the computer in our Radiology department. Radiographs with positioning and magnification errors were excluded and only

the radiographs which clearly showed the styloid process on both the sides were selected. The radiographs were analysed using Adobe CC Photoshop (Magnification factor: 1.28)

The length was measured from the point of emergence from the base of the tympanic plate to the tip of the styloid process. The styloid process if greater than 30mm was considered as elongated. As it is very difficult to distinguish the ossified elements from the styloid process in a panoramic radiograph, even if the ligaments were ossified they were measured along with the styloid process as a part of the elongated styloid process. Among the selected OPGs which were having elongated styloid process; 222 were male and 178 were female. Further all the selected radiographs were also of patients between the age group of 10 to 70 years with a mean age of 45 years. Both unilateral and bilateral measurements of styloid process were also made and the prevalence was also recorded. The ESP was further categorized based on the type of classification according to Langlais et al 4.

The collected data were entered in a spread sheet (Excel 2010, Microsoft, Richmond, USA) and was statistically analysed using SPSS (Statistical Package for Social Sciences) software. The statistical test used was unpaired t-test for determining the relation between the gender and the styloid lengths, one way ANOVA for the age and variations in the sides.

RESULTS:

Out of 400 patients, the overall prevalence of ESP was in 67.5% subjects and 32.5% did not have ESP.

Among 270 subjects with ESP, 115 (41.85%) were unilateral and 155 (58.14%) were bilaterally elongated. Thus bilateral elongation was seen more, than unilateral elongation (Figure 1).

Among the population having ESP, 149 (55.03%) were males and 121 (44.97%) were females. Thereby, males showed more ESP than females (Table I). The mean length of ESP in males on the right side was 3.1 ± 0.75 mm and on the left side was 3.03 ± 0.73 mm. The mean length of ESP in females on the right side was 3.08 ± 0.6 mm and on the left side was 3.0 ± 0.63 mm. So, an increased prevalence of ESP was seen on the right side compared to the left side (Table II).

Among the 3 types of calcification of ESP with respect to the right side, type 1 was seen in 85.2%, type 2 was seen in 5.6% and type 3 was seen in 9.2% of the total population. Type 1 is the most prevalent calcification (Figure 2). In the left side, type 1 was seen in 86.4%, type 2 in 5.6% and type 3 in 9.2%.

Evaluating all the ESP, the increase in age did not show any significant increase in the length among all the age groups (Table III).

DISCUSSION:

The styloid process is a slender pointed projection from the temporal bone which serves as point of attachment for a number of ligaments. According to Sokler et al, a normal styloid length can range from 1.52 to 4.77cm 5. Reviewing various studies, any length > 3cm is considered elongated 6,7. The cause of ESP could be due to calcified and ossified bone and the ligament. The various reasons attributed to this could be local chronic irritation, surgical trauma and endocrinal disorders in females at menopause, persistence of mesenchymal elements, growth of osseous tissue and mechanical stress or trauma during development of styloid process which can lead to calcified hyperplasia of styloid process. Okabe et al found significant correlation between calcium concentration and the styloid process length 8. Such an ectopic calcification in non-osseous soft tissue can be due to three mechanisms like metastatic, dystrophic and ectopic ossification 9.

There can be varied symptoms associated with an ESP like chronic facial and/or neck pain, dysphagia, tinnitus, orbital pain or pain radiating to maxillary region¹⁰. As these symptoms can be present in various other neuralgias and TMJ disorders, thorough investigation with advanced modalities should be used as an adjunct in diagnosing these cases¹¹.

In our present study the prevalence of ESP 67.6%. Our findings are in accordance with the study done by ManishKumar et al showing a high prevalence rate of 82%¹². And also the prevalence according to literature ranged as low as 0.4% (Rath et al)¹³ to as much as 84.4% (Ferrario et al)¹⁴. Varied differences in the results could be due to the differences in the separate age groups, sample size, variations in the methodologies followed and also other contributing factors like ethnicity, race, dietary habits, lifestyle, etc. Our study also showed an increase in the length in males compared to females. Different studies had shown different variations in the results and the gender dominance. So a study with a larger sample with vast geographic distribution should be performed for a reliable confirmation about hypothesis of sexual dimorphism.

The most common type of calcification seen on both the right and left side in our present study is type 1, followed by type 3 and type 2. These results are very similar to various studies done in different parts of the world and also among Indian population. Even though the mechanism of ossification is not fully understood it is suggested that the stylohyoid ligament retains some part of the cartilage within, during ossification resulting in varying degrees of ossification and elongation of the stylohyoid chain.

Various theories have also been reported to explain the ossification of stylohyoid ligament namely the theory of reactive hyperplasia, reactive metaplasia,

anatomical variations, ageing and developmental anomaly due to loss of elasticity in the ligament stimulating tendinosis. The different types of calcification depend on various factors including the regional factors like dietary, chewing and also racial variation. So as our present study had shown more elongation on the right side compared to the left side which is similar to the study done by More et al¹⁵. Also, there is no increase in elongation with increase in age, which is in contrast to the study done by Roopashri et al.¹⁶ A larger study sample is necessary to find further variations.

CONCLUSION:

The styloid process is a very important, often overlooked anatomical structure which can provide proper diagnosis if evaluated with care. Though orthopantomographs are the preferred imaging modality, advanced 3D imaging techniques like CBCT or 3D reconstruction can give a better insight into this lesser explored arena.

ACKNOWLEDGEMENTS:

We would like to express our gratitude to our Institution, the Principal Dr.M.C.Sainath and all the faculty members for their encouragement and constant support that helped us to shape the study and complete it successfully.

Table I: Difference between the mean elongations of styloid process according to the sex of the study subjects

Side	n	Mean ± Standard Deviation	Standard Error of Mean	p value (0.05)
Right				
<i>Males</i>	112	3.101 ± 0.7460	0.0705	0.837 (ns)
<i>Females</i>	138	3.083 ± 0.6059	0.0516	
Left				
<i>Males</i>	112	3.032 ± 0.7376	0.697	0.768 (ns)
<i>Females</i>	138	3.007 ± 0.6336	0.539	

(ns)-not significant p<0.05

Table II: The percentage of distribution of the sides of the elongated styloid process

Side	n	Mean ± Standard Deviation	Std. Error of Mean	p value
Right side	270	3.03 ± 0.70	0.0424	0.227 (ns)
Left side	270	3.01 ± 0.74	0.0431	

(ns)- not significant p<0.05

Table III: Difference between the mean elongation of Styloid process according to the age of the study subjects

Age group (Years)	n	Mean ± Standard Deviation	Std. Error of Mean	p value
Right				
10-30	258	3.128 ± 0.7301	0.0581	0.969 (ns)
31-50	96	3.020 ± 0.5648	0.0670	
51-75	46	3.057 ± 0.5320	0.1141	
Left				
10-30	258	3.026 ± 0.7031	0.0559	0.516 (ns)
31-50	96	3.001 ± 0.6117	0.0726	
51-75	46	3.014 ± 0.7618	0.1662	

(ns)- not significant p<0.05

Figure 1

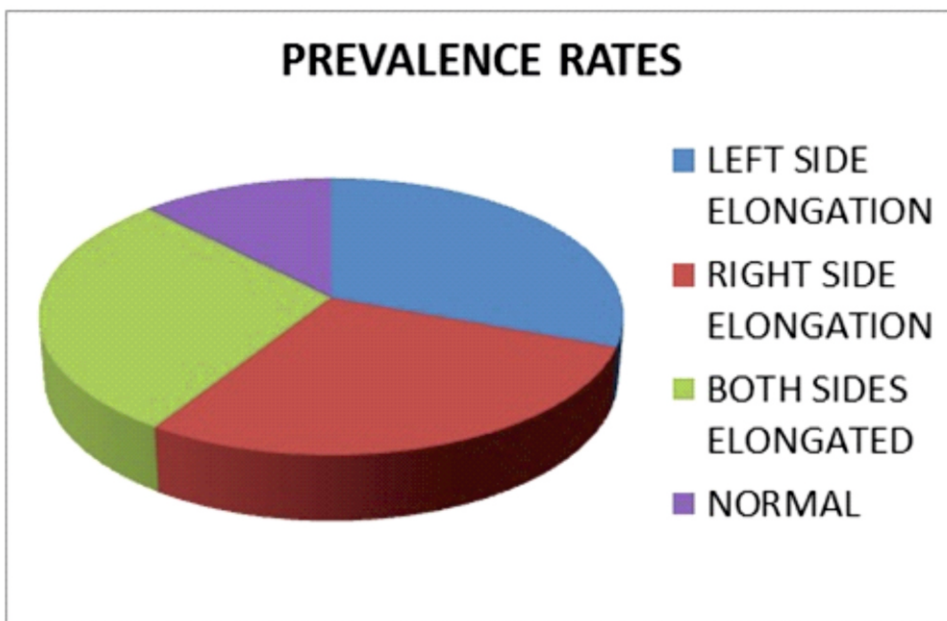
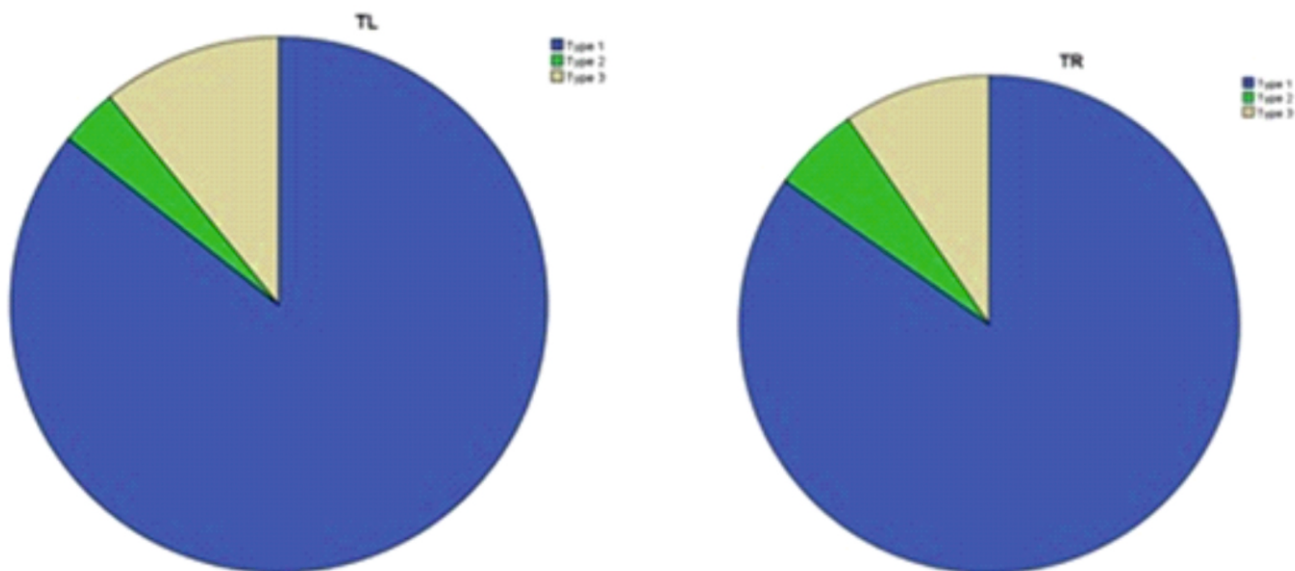


Figure II



DISTRIBUTION OF TYPES OF CALCIFICATION - Right and left sides

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Management Of Miller's Class III Recession Immediately Following Conventional Graft Failure - A Case Report

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Abstract:

Gingival recession is defined as "Displacement of soft tissue margin apical to the cemento-enamel junction". Gingival recessions require treatment for many reasons - impaired aesthetic appearance, root sensitivity, cervical caries or abrasion. Presence of gingival recession and gingival inflammation in areas with a lack or narrow band of attached gingiva is identified as a mucogingival problem. Periodontal plastic surgery procedures are performed to resolve these mucogingival problems. This study presents a case report of a 25 year old female with Miller's class III gingival recession which was successfully regrafted with free gingival autograft following a failure in the previous attempt.

INTRODUCTION:

Gingival recession is the exposure of the root surface due to an apical shift of the gingival margin.[1] Marginal etiological factors that can lead to gingival recession is Periodontal disease. In periodontal disease, the interaction between bacterial infection and immune response of the host causes matrix degradation, alveolar bone resorption, and apical migration of the epithelium, resulting in periodontal pockets, gingival recession, or a combination of both.[2] The free soft tissue autograft when used for increasing the amount of attached gingiva is a relatively simple surgical procedure. The use of the free soft tissue autograft for root coverage, however, is a much more technically demanding procedure requiring the periodontist to consider additional prognostic factors. Overlooking or failing to properly address a single one of these factors can result in incomplete coverage or graft failure. The purpose of this case report is to outline those factors that must be considered when root coverage is attempted.

CASE REPORT:

A 25 year old female patient presented with a complaint of

receding gums. On examination Miller's class III recession was found in 31, 41(Figure 1). The case was planned for a root coverage procedure by a Raetzke's Technique (envelope procedure), and an informed consent was obtained from the patient. Advantage of this technique is esthetic appearance. Graft matches surrounding tissues. No "patchy" appearance invites the patient's objections. Indication for the envelope technique is localized areas with lack of keratinized and attached gingiva where inflammation cannot be permanently controlled by normal oral hygiene measures alone.[3]

Procedure: After local anesthesia and intraoral disinfection with 0.2 % chlorhexidine mouthrinse, the exposed root surfaces were planed thoroughly with a Gracey 1-2 curette. Through an undermining partial thickness incision, an "envelope" is created in the tissue around the denuded root surface followed by root biomodification by EDTA.[4,5] Free gingival graft was harvested from the palate, whose borders were deepithelialised and made into an epithelium embossed connective tissue graft. The

graft is placed in the previously created envelope so that it completely covers the formerly exposed root area and then secured with 5-0 vicryl sutures.[6] Periodontal dressing was given and patient recalled after 1 week for review (Figure 2). At the time of review, the graft was diagnosed as failed due to the evidence of swelling, exudate in the graft recipient site, sloughed epithelium with thinning of the graft, persistent root exposure with no evidence of soft tissue covering (Figure 3).[7] Patient was explained about the failure of the procedure and gave her willingness to retreat the defect.

Two weeks post graft failure, regrafting with free gingival graft by Miller Holbrook Ochsenbein technique was done. Sound mucoperiosteal bed preparation extending 5mm past the apical margin of the denuded root. Vertical incision was made approximately one papilla mesial and distal to the recipient site. Sulcular epithelium which borders the denuded root is removed. Graft was harvested from the anesthetized hard palate. Horizontal graft stretching suture to counteract primary contraction, Circumferential and interdental concavity suture was made for maximum adaptation and to minimize dead space formation (Figure 4).[8]After one week recall (Figure 5), healing was satisfactory with good signs of a vascularization and a one,three month recall showed a significant increase in the width of attached gingiva, which was also aesthetically satisfactory to the patient as significant root coverage was also achieved (Figure 6).

DISCUSSION

Patient with gingival recession may complain about the tooth sensitivity, unsatisfactory esthetics, associated with gingival recession there is often absence of attached gingiva which renders the area vulnerable to inflammation. The importance of attached gingiva has been acknowledged by Goldman and Cohen in 1979 who gave a "tissue barrier" concept and postulated that a dense collagenous band of connective tissue retards and obstructs the spread of inflammation better than does the

loose fiber arrangement of the alveolar mucosa. They recommended increasing the zone of keratinized attached tissue to achieve an adequate tissue barrier (thick tissue), thus limiting recession as a result of inflammation. This can be achieved by mucogingival surgical techniques which are designed to provide a functionally and esthetically adequate zone of keratinized attached gingiva.[9] Mucogingival therapy includes increasing the dimensions of the gingival tissues to stop or prevent recession, to facilitate plaque control, and to improve aesthetics and to reduce or eliminate root sensitivity. Etiology and the contributing factors are important when deciding on appropriate treatment procedures for patients with localized gingival recession.[10]

In this present case report though there was initial graft failure due to overambitious placement of the graft aiming complete root coverage till the cement enamel junction owing to the width of the denuded area. This compromised the ratio of avascular root surface to the vascular bed resulting in a defective blood supply was predicted as the most possible reason for graft failure. Inadequate graft dimension, trauma to the graft during initial healing could be the other possible factors for Graft failure as stated by Miller.[11]

After scrutinizing various treatment modalities, Gold standard Free Gingival Graft procedure was adopted as a mean to achieve a wide zone of attached gingiva and a partial root coverage for Class III recession as stated by Preston D Miller 1985. The results obtained after 3 month follow up was stable.

This case report meticulously describes that proper surgical guidelines and analysis of prognostic indicators is mandatory for a successful mucogingival surgery. Immediate grafting procedure post graft failure can also lead to successful grafting in terms of gain in attached gingiva. Rather than going for heroic non scientific methods, simple procedure following evidence based surgical protocol will go a long way in providing predictable esthetic procedures to the patients.



Figure 1: Miller's Class III Recession in 31,41



Figure 4: Regrafting - Miller Holbrook Ochsenbein Technique.



Figure 2: Free gingival graft - Envelope Technique.



Figure 5: One week Post Operative view.

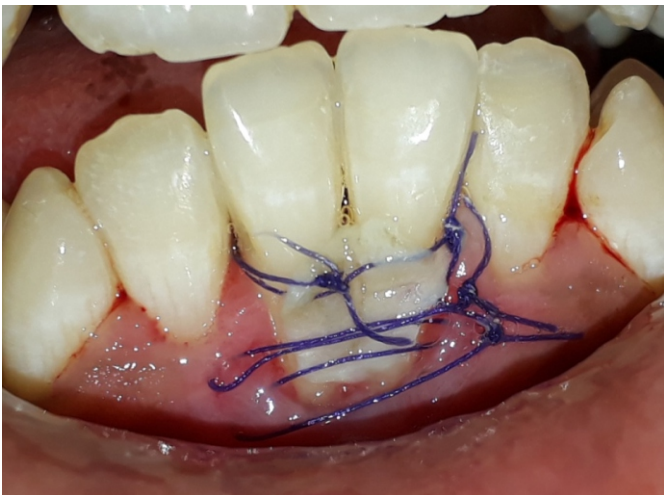


Figure 3: Graft failure - One Week Post Operative view.



Figure 6: Three Months Post Operative view.

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CONSERVATIVE MANAGEMENT OF PERIODONTALLY COMPROMISED MANDIBULAR MOLAR WITH A RESECTIVE SURGICAL PROCEDURE -HEMISECTION -A CASE REPORT

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ABSTRACT

Hemisection of affected teeth allows the preservation of tooth structure, supporting alveolar bone and also gives an opportunity for complete patient satisfaction. It is a viable treatment option to be considered before extraction of molars with severe vertical bone loss involving one root of multirooted teeth. Hemisection is a resective surgical procedure indicated in multirrooted teeth with grade III and grade IV furcation defect. This case report describes management of a periodontally compromised mandibular molar with endodontic therapy followed by hemisection and then by prosthetic rehabilitation.

Keywords: Hemisection, Mandibular molar, Furcation.

Introduction

Hemisection is the splitting of two-rooted tooth into two separate portions. This procedure has been called as bicuspidization or separation because it changes the molar into two separate roots. (1) In 1867, Magitot reported on the complete removal of molar roots. In 1884, Farrar was the first person to explain the resective techniques for the radical removal by amputation of any portion of the roots of the tooth that can be of no further use. Hemisection is a treatment procedure where the involved crown-root is removed to preserve the remaining tooth rather than sacrificing it. (2) The aim of this procedure is to save the original tooth structure as much as possible.

Case Report

A 45 year old systemically healthy male patient reported to our department of periodontics and implant dentistry, CSI College of dental sciences and research with a chief complaint of food impaction and pain in right lower back tooth region for past 2 years. Pain was mild and intermittent in nature,

which aggravated during mastication.

On clinical examination, there was a mesially drifted 46 with Glass Ionomer restoration. Upon probing there was a 7 mm probing pocket depth in relation to mesial root of 46 and 4mm probing pocket depth in relation to distal root with grade III furcation. On intraoral periapical radiograph a vertical bone loss in relation to mesial root of 46 with grade III furcation involvement was seen. The bony support in relation to the distal root of 46 was intact. There was an overhanging restoration in 46.

Based on the clinical and radiographic findings of 46, hemisection procedure was planned for its management. The treatment procedure and its complications were completely explained to the patient and the patient agreed with this treatment option. Patient was referred to department of conservative dentistry and endodontics for completion of root canal treatment in relation to 46. After one month patient was recalled to department of periodontics for hemisection procedure. Based on the bony support, it

was decided to retain the distal root of 46. Under local anaesthesia, full thickness flap elevated in relation to 42, 43, 44, 46 and 47. Open debridement was done followed by hemisection of 46 with bur. Sutures given with 5-0 silk. Suture removal done after 7 days. Healing was satisfactory and uneventful at the end of one month. Patient was referred to department of prosthodontics for prosthetic rehabilitation, FPD involving 46, 44 (3 units) was placed. Patient was followed for 1 year.

Discussion

Hemisection involves removing significantly compromised root structure along with coronal structure through deliberate excision. Hemisection is a conservative way of preserving tooth. The term "hemi section" or "root amputation" are synonyms for "root sectioning" or "bisection" and is a treatment modality, which allows the preservation of tooth structure, alveolar bone and cost savings over other treatment options. (3) This procedure is indicated where only one root of a multi-rooted tooth is affected and the surviving root is structurally capable of supporting a restoration.

The root morphology of the surviving root should allow for surgical access and proper periodontal maintenance of the final restoration. Root divergences, root form, location of furcation, remaining root attachment are the four critical factors to be considered in selecting molar for hemisection. (4) Regular periodontal maintenance and sufficient coronal restoration are important precondition for long term survival.

In this case report, hemisection was considered as a viable treatment option as the patient didn't want to extract his tooth. Hence hemisection was selected as a treatment plan for this patient to treat the periodontally compromised mandibular molar with grade III furcation and severe vertical bone loss in relation to mesial root of 46. Moreover, implant therapy

was considered as a treatment option, but based on the patient's financial status and his desire to retain the part of natural tooth, hemisection was done.

Park et al (5) have suggested molars that are having questionable prognosis can maintain the teeth without detectable bone loss for a long-term period by hemisection but patient should maintain a good oral hygiene. Saad et al (6) have also concluded that hemisection of a mandibular molar may be suitable treatment option when the decay is restricted to one root and the other root is healthy and remaining portion of tooth can very well act as an abutment. Shin-Young Park (7) concluded that root resection to treat periodontal problems had a better prognosis than non-periodontal problems.

The literature on distal root resection is limited as compared to mesial roots in mandibular molar because of its anatomical structure. (8) Nevertheless hemisection is a viable option to be considered before the extraction of molars. (9) Hemisection allows for physiologic tooth mobility of the remaining root, which is thus a more suitable abutment for fixed partial dentures than an osseointegrated counterpart. (10) To achieve a good result, it was important that the remaining roots had more than 50 percent bone support.

Conclusion

This case report shows the management of a periodontally compromised mandibular molar by multidisciplinary treatment approach. The success of the tooth with hemisection depends on the amount of supporting bone, the restorative treatment plan, and the oral hygiene maintenance of the patient. Hemisection is an important treatment in the dental field which will help in increasing desire to retain natural teeth. The results of hemisection are predictable, and success rates are high if certain basic considerations are taken into account.

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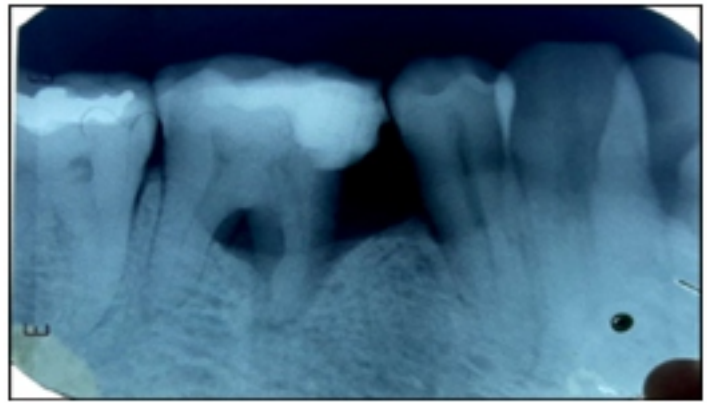


Figure 1: Pre operative radiographic view of mandibular right first molar with furcation involvement and vertical bone loss in relation to mesial root.



Figure 2 : (a) Radiographic view of mandibular right first molar after endodontic treatment. (b) Clinical image of mandibular right first molar after endodontic treatment.



Figure 3 :Hemisection done in relation to mandibular right first molar



Figure 6
(a) Clinical image after FPD placement.
(b) Radiographic view after FPD placement.



Figure 4:Extracted mesial root.



Figure 5: Sutures placed

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ONESTEPAPEXIFICATION- "THEAPICALBARRIERTECHNIQUE"

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ABSTRACT :

Apexification is a method to induce a calcified barrier in a root with open apex or the continued apical development of an incompletely formed root in teeth with necrotic pulp.(1) A necrotic mandibular 2nd molar with periapical involvement and an open apex was treated in single visit with one step Apexification. With the standard root canal irrigation and instead of Gutta-percha (GP) obturation MTA (Mineral Trioxide Aggregate) was filled in the apical 3rd followed by gutta-percha in middle & coronal 3rd. Post- Op Radiographic examination shows complete seal of apex with MTA.

Keywords : open apex, apexification, MTA, irreversible pulpitis, apical barrier, Calcium hydroxide, Sleiman sequence.

INTRODUCTION:

A method to induce a calcified barrier in a root with open apex or the continued apical development of an incompletely formed root in teeth with necrotic pulp.(1) In permanent tooth with open apex, closure of root apex is the most desirable response that can be elicited from root dentine .MTA at the apical 1/3rd serves as Apical Barrier on which gutta-percha can be safely obturated. MTA has emerged as material of choice in the apexification because excellent sealing properties.(2).

Case Report

The patient was 20 -year old female. She had a history of pain in lower right back region for which analgesic & antibiotic prescription was given in the winter of 2016. Because of her periapical symptoms the pain returned & she visited the clinic Dec 17.

On visual examination the mandibular 2nd molar had deep occlusal caries, with fractured distolingual cusp (Fig 1), which elicited pain on percussion. IOPAR was taken (Fig 2) an Apical diagnosis of Symptomatic Apical periodontitis & Pulp Diagnosis of Pulp necrosis was put forth.



Fig. 1



Fig. 2

Since the patient had no purulent discharge from the canal it was decided to treat it in "single visit with One step APEXIFICATION".(3) The access cavity was refined & cleaned the tooth had a single large oblong canal, as expected there was plenty of bleeding but no purulent discharge. The canals were dried up. The canal working length was taken with apex locator (ROOT ZX II) & confirmed with iopa (Fig 3).



Fig. 3

Extensive irrigation protocol was carried out with 5% Sodium hypochlorite & 17% liquid EDTA as alternating irrigants (Sleiman's Sequence (4). Both irrigants were activated with Sonic Endoactivator Tips. A final flush of cold Saline was done. A final flush of 2.5 degree C Saline helps to reduce postoperative pain in single visit root canal treatment.(5)

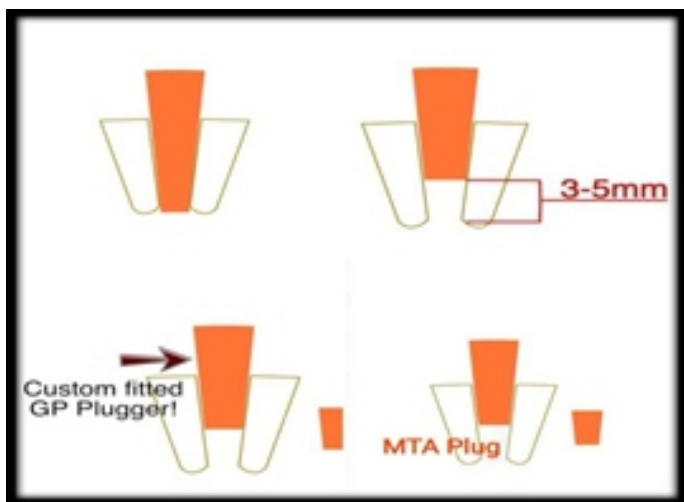


Fig. 4

Traditionally teeth with large open apices & periapical pathology has been treated in multiple appointments with non-setting calcium hydroxide $Ca(OH)_2$ as intra canal medicament which needs to be changed every 2 weeks until the canals are

completely dry, then again setting.

One Step Apexification was carried out by placing MTA in canal with MTA carrier (Angelus) and slowly pushing the MTA plug with master apical gutta-percha (which was cut at 16.5mm from tip) so that it can act as custom made plugger (Fig 4).

Further it was compacted with root canal pluggers (GDC), to the working length of 20.5mm, a iopar was taken to confirm that MTA plug has formed an apical barrier at apex (Fig 5) .Rest of middle & coronal 3rd of canal was obturated with multiple shortened gutta- percha points placing it tightly and compacting it with obturation pen & root canal pluggers (Classic schilder's technique of vertical compaction). Coronal seal was attained with Amalgam filling. (Fig 6).



Fig. 5

DISCUSSION

$Ca(OH)_2$ is placed at apex for apexification procedure till apices closes. MTA which has been present in endodontic armamentarium for almost two decades has become material of choice for one step apexification because of excellent biocompatibility, superior sealing in apexification process, ease of use & relatively innocuous reaction if accidentally extruded beyond apex.

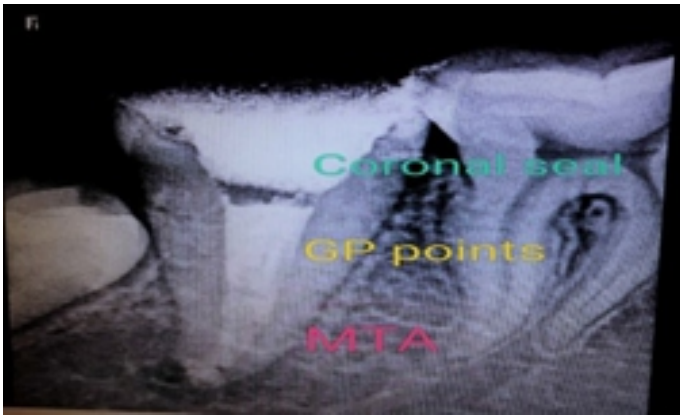


Fig. 6

CONCLUSION:

With advent of 3 dimensional cleaning instruments 3D XP-ENDO Shaper & Finisher, Self adjusting file (SAF), which basically touches almost (80 % of canal walls compared to normal rotary file which touches 36-40 %) canal walls, along with negative pressure technique which helps in preventing apical extrusion of irrigants provides thorough irrigation protocol of NaOcl & EDTA, all of these factors helps us with disinfected canals for One step apexification to be performed with good prognosis.

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PREVENTIVE PROSTHODONTIC APPROACH WITH TELESCOPIC OVERDENTURE - A CASE REPORT

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Abstract

Loss of teeth can lead to resorption of residual alveolar ridge along with a reduction in patient's neuromuscular function, due to decrease in the proprioception. This can ultimately lead to failures of the denture. Saving the remaining natural teeth and utilizing the oral proprioception for bone preservation and better prosthesis control can prevent such problems. Telescopic overdenture offers the patient a lot of advantages like reduced residual ridge resorption better stability, proprioception, and support among a few. Therefore the concept of over-dentures is truly preventive. This article is on a case report where the patient was prosthodontically rehabilitated with telescopic over denture for mandibular arch and cast partial denture for maxillary arch.

Keywords: Telescopic overlay denture, Preventive prosthodontics

Introduction

Preventive dentistry is of paramount importance and an ultimate aim in prosthodontics¹. It reiterates the importance of a procedure that can delay or eliminate future prosthodontic problems. Any treatment modality that preserves the existing teeth in patient with few remaining natural teeth is absolutely a preventive avenue. Since Over denture therapy preserves the few remaining natural teeth, it can be applied as a preventive prosthodontic concept². The main advantage of overdenture therapy is preservation of alveolar bone around the retained teeth³ & continued presence of periodontal proprioceptive mechanisms⁴ that guides the gnathodynamic functions. A telescopic denture is also called as an overdenture, which is defined as any removable dental prosthesis that covers and rests on one or more of the remaining natural teeth, on the roots of the natural teeth, and/or on the dental implants. It is also called as overlay denture, overlay prosthesis, and superimposed prosthesis.

Starr in 1886 first described about Telescopic copings and they were initially introduced as retainers for removable partial dentures⁵. The concept of telescopic crown comes from optics, because it is similar to the way how an optical telescope works with movement of two parallel cylinders. Two components of telescopic crown include: internal crown, called male or primary crown or coping and external crown, called female or secondary crown or sleeve. They are also known as a Double crown, a crown and sleeve coping or as Konuskronen⁶ (German term describing a cone shaped design). Primary copings protect the abutment teeth from dental caries and thermal irritations and also provide retention and stabilization for secondary crown. Primary full coverage crown is luted to the prepared tooth and secondary crown forms part of the denture framework and is connected by means of interfacial surface tension over the primary casting^{7,8}. They function by transmitting forces along the long axis of the abutment teeth and also prevent dislodging movement of prosthesis.

Based on retention system used to retain RPD, three different types of double crown system exists

- Cylindrical crowns exhibiting retention through friction fit of parallel-milled surfaces
- Conical crowns or tapered telescopic crowns that exhibit friction only when completely seated using a "wedging effect."
- Double crown with clearance fit (hybrid telescope or hybrid double crown) where Retention is achieved by using additional attachments or functional-molded denture borders.⁹

This article presents a case report where patient with few remaining natural in mandibular arch was prosthodontically rehabilitated by telescopic overdenture.

Case Report

A 65-year-old female reported to our dental centre for prosthetic rehabilitation. The patient had a chief complaint of difficulty in chewing due to the missing posterior teeth. The patient medical history revealed that patient had diabetes mellitus for the past 15 years and hypertension for the past 20 years. She was on oral hypoglycemic and antihypertensives drugs. She gave a dental history of wearing the same maxillary and mandibular RPD for the past 3 years, which gradually became loose.

A preliminary clinical examination revealed that the patient had missing 12, 15,16,17,23,24,25,26 in the maxillary arch and 34,35,36,37,42,43,44,45,46,47 in the mandibular arch. A definitive examination was done to clinically evaluate the remaining teeth to assess their periodontal status, caries, old restorations, vitality, abrasions, and supra-eruption. There was grade III mobility with respect to 32. Oral hygiene maintenance was fair. Radiographic survey by means of OPG was done to correlate with the clinical findings. The OPG revealed generalized bone loss and also bone loss up to apical 1/3rd in 32. It was decided to extract 32 in the mandibular arch

due to advanced periodontitis followed by a thorough oral prophylaxis. **[Figure 1]**. Irreversible hydrocolloid was used to make diagnostic impressions. The impressions were poured and diagnostic cast was surveyed. Tentative jaw relation was done and the diagnostic casts were mounted in an articulator for treatment planning. This revealed adequate interarch space and no supraeruption of remaining teeth.

Since the patient wanted to retain remaining natural teeth, Treatment plan was finalized to prosthetically rehabilitate this patient with a telescopic denture for the mandibular arch and precision retained cast partial denture for the maxillary arch. Intentional

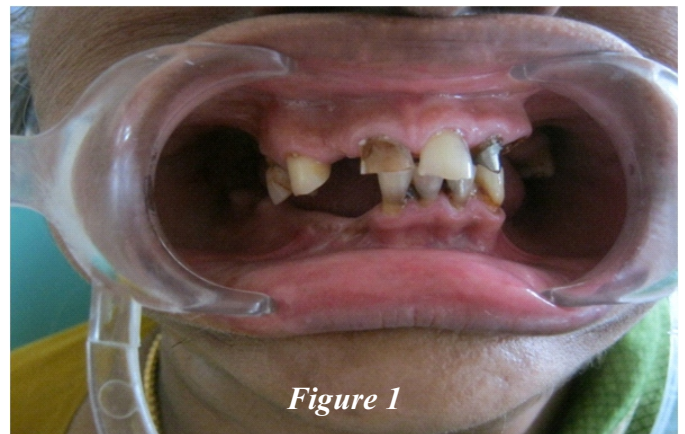


Figure 1

RCTs were performed on 31, 33, 41. Tooth preparation was done with a heavy chamfer finish line in 11,13,14,21,22,27. Tooth preparation was done with a subgingival chamfer finish line and axial wall height of 4 mm in 31,33, and 6 mm in 43 with a taper of approximately 8-10° **[Figure 2]**. After abutment preparations, gingival retraction was done and a final impression was made with addition silicone polyvinyl siloxane elastomeric impression material (Aquasil, Dentsply International, USA) by a two-stage putty wash technique. The provisional restorations were fabricated for abutment teeth by using direct provisional restorative material (Luxotemp, 3M Espe, St. Paul, USA) and cemented with eugenol-free zinc oxide cement (Cavex Temp

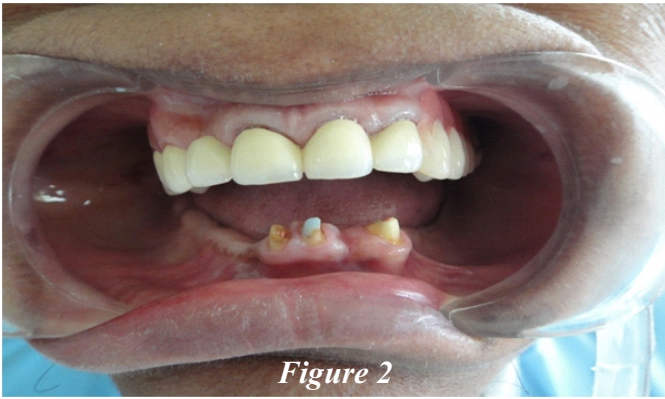


Figure 2

Cem, Harlem, Netherlands).

The silicone impression was poured in a die material to obtain the cast. Using this cast partial denture framework of the maxillary arch was fabricated. During the fabrication of primary copings for 31, 33, 41, the cast were placed on to the milling table and wax patterns were milled with an appropriate path of insertion. The patterns were milled to obtain a frictional surface for retention and then cast in to nickel chrome alloy.

The maxillary cast partial denture framework trial was done on the patient. The primary copings in the mandibular arch were evaluated for fit [Figure 3], and then the copings were luted with glass ionomer cement



Figure 3

(Type I; GC Fuji). An overimpression was made using the medium viscosity addition silicone impression material by using a custom acrylic tray and the second master cast was made. This second master cast is used for the fabrication of



Figure 4

the secondary copings in the mandibular arch.

In the laboratory, the secondary copings were milled on the second master cast with a parallelometer to obtain a milled surface of minimum 4 mm for friction. The fit of the secondary copings over the primary copings was evaluated in the patient's mouth [Figure 4]. The secondary copings had small metal projections which act as retention beads and helps in mechanical interlocking of the secondary copings with the denture base. Retention of the prosthesis is influenced by the frictional contact between the primary and secondary copings. The secondary copings were placed on the master cast, it was covered with wax and the trial denture base was fabricated with shellac baseplate over the master cast. The placement of the wax over the secondary copings helped in the easy separation of the copings from the trial denture base at the time of the dewaxing. Occlusion rims were fabricated over the mandibular trial denture base and maxillary cast partial denture framework. Maxillomandibular records were obtained and these were transferred to a semiadjustable articulator by using a face bow. Acrylic artificial resin teeth were selected and arranged on the record bases of maxillary and mandibular arch with the same shade as were veneered over the PFM crowns in the maxillary arch. The trial denture arrangement of the maxillary and mandibular arch was evaluated

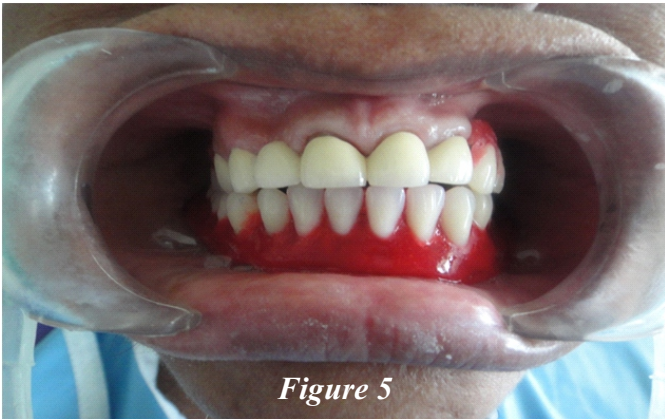


Figure 5

intraorally for phonetics, aesthetics, function along with pre-glaze tryin of the ceramic crowns in the maxillary arch [Figure 5]. After verification, the maxillary partial denture and mandibular overdenture was processed with heat cure acrylic resin. The maxillary crowns of the precision retained cast partial denture were luted with glass ionomer luting cement (Type I;

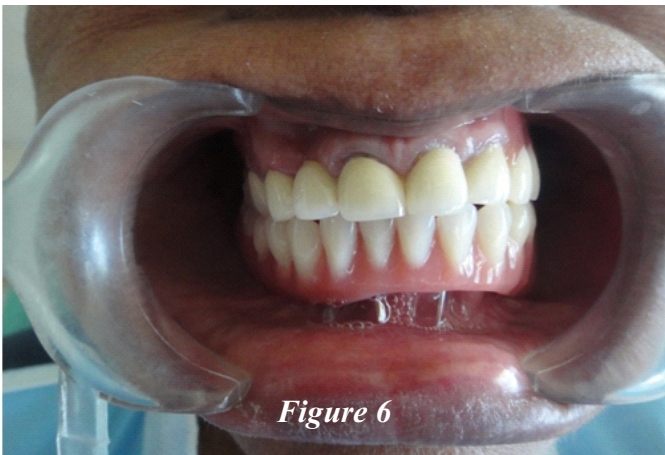


Figure 6

GC Fuji). The completed prostheses were evaluated for function, esthetics, and phonetics [Figure 6, 7]. The patient was scheduled for follow-up visits every 3 months and she reported no complaints during the three years of follow-up.

Discussion

The phenomenon of both residual ridge resorption (RRR) following removal of teeth and maintenance of bone around retained teeth has been well observed and documented in literature 10,11,12. Over denture therapy is a preventive prosthodontic concept that helps to



Figure 7

preserve the few remaining teeth and the supporting structures². The teeth which are considered unsuitable to support a fixed prosthesis can be preserved and modified to act as abutments under overdentures. In this case report telescopic overdenture was chosen for this patient considering its better retentive and stabilizing action good retentive, rigid splinting effect, and better stress distribution. Other treatment options included extraction of the remaining teeth, followed by a conventional complete denture. In order to preserve the proprioception and to gain better support, conventional complete denture was not selected. Implant supported prosthesis was not opted as the patient was medically compromised and also because of the time and cost involved in the procedure. Clinical reports have revealed a long term success with telescopic overdenture in the prosthetic rehabilitation of patients with few retainable teeth¹³.

Adequate space should be available to accommodate primary and secondary copings, the denture base, teeth. The interarch space consideration usually necessitates the devitalization of the abutments. The interocclusal space/ interarch distance should be ? 10 mm for successful fabrication of telescopic overdenture¹⁴. There should be at least one healthy abutment per quadrant and they should be periodontally sound with

adequate bone support with no/ minimal mobility. The contours and the degree of taper of the outer aspect of the primary coping determine the path of insertion and the amount of retention of the prosthesis. The retention decreases with increase in taper of the coping and copings with minimal taper (approximately 5 degrees) require a height of about 4mm to achieve significant amount of retention⁶. For the long term survival, it is essential to provide adequate height of at least 4mm to the vertical walls, a taper of around 6° and copings of thickness of minimum 0.7mm

The main advantage of the telescopic overdenture is providing balanced stress distribution between teeth-soft tissues¹⁵. Due to the optimal stress distribution and continued proprioceptive sensation, telescopic overdenture also prevents residual alveolar bone resorption¹⁶. Other advantages include rigid splinting of remaining teeth, creation of a common path of insertion, easy to perform routine oral hygiene, easy insertion and removal for the patient, psychologically well-tolerated by patients^{8,17,18}. Disadvantages include increased treatment cost, complex laboratory procedures, extensive tooth reduction required, increased number of treatment visits, difficulty in achieving esthetics, retention diminishes after repeated insertion.^{8,17,19} Partially edentulous patient generally report with remaining teeth having minimal supportive tissue and increased tooth mobility during the prosthetic rehabilitation phase. In such situation it is of utmost importance to avoid new prosthesis from inducing further periodontal destruction^{7,20}. Telescopic dentures can be used for the successful rehabilitation of patients with such advanced periodontal disease due to rigid splint like action and better load distribution among the remaining periodontally weakened teeth.

Adaptation to the conventional removable complete dentures is a complex

learning process. Complete dentures may become ill-fitting with time, due to the continual residual ridge resorption. Telescopic dentures supported by natural teeth root have better prognostic outcomes because of increased support, stability and retention and decrease in rate of the residual ridge resorption. Sensory input from the periodontal receptors is one of the major determinants of masticatory function and roots of the teeth offer more discrete discriminatory input than the oral mucosa. The retention of natural teeth preserves some of the sensory input from the periodontal receptors, which is more precise than that obtained from the oral mucosa. Thus a higher degree of accuracy in the jaw movements and the masticatory performance could result. Teeth that normally might have a very short life span can be retained for long periods of time and can thus benefit the patients in their denture function. A clinical study conducted by Bo Bergman et al on conical crown retained dentures, concluded that both functionally and aesthetically most of the patients were very satisfied and their chewing comfort was found to be better with the conical crown-retained dentures²¹. Van den Wijngaarden E et al did a study to investigate the prognosis of the telescopic denture prosthetic structure and abutment teeth. The authors concluded that telescopic dentures can be considered as a durable and sustainable treatment option in the long term. They also stated that abutment teeth loss is relatively rare and has limited influence on the prosthetic structure survival rate.²²

In completely edentulous patients, adaptation of the patient to conventional complete dentures and the long term survival of it can be unpredictable and challenging to the clinician because of the dynamic nature of the oral mucosa and the residual alveolar ridge. Overdentures which are supported and/or retained with a few remaining teeth can provide predictable treatment that will fulfill most of the demands of the edentulous patients.

Conclusion

In patients with few retainable natural teeth the method of prosthetic rehabilitation of the patient is critical. The drawback of conventional removable complete denture can be avoided by retaining these natural teeth. The concept of overdentures is unequivocally a valid approach to preventive prosthodontics. For preservation of oral function, telescopic overdenture can be considered as an option, combining good retentive and stabilizing properties with a splinting action.

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GEOGRAPHIC TONGUE - A CASE REPORT

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INTRODUCTION

Benign migratory glossitis is otherwise known as Geographic tongue is an inflammatory condition of the tongue from an unknown etiology. It is commonly known as Erythema migrans. The dorsum and lateral margins of the tongue are most the common sites of the lesion. This lesion is characterized by altering patterns of serpentine white line surrounding the areas of smooth, depapillated mucosa. The centre of the lesion appears erythematous with white serpentine borders around it resembling a "Map". White border represents the regenerating filiform papillae, keratin and neutrophils. The lesions have slightly raised, well developed white margins which could not be scraped off. Change in the location and pattern of lesion is observed after every few days, thereby giving it a name "Migratory". Histologically the process is superficial and shows desquamation of the keratin layers of papillae along with inflammation of the corium.

CASEREPORT

A 43 years old male reported to our clinic with a complaint of burning sensation and whitish patches on his tongue for past 6 months. Taking the history of patient and clinical features into consideration the diagnosis came to a conclusion as geographic tongue. The lesion regressed gradually as said by the patient.

On inspection, the patient presented with an erythematous depapillated area surrounded by serpentine white lines which was not scrapable.

Patient was advised for cytopatho

pathological examination to confirm the absence of candidiasis.

Detailed history revealed patient has



irritation on taking spicy foods. The patient had been examined earlier by a physician for the same clinical features years back and has been prescribed with antibiotics for which the patient did not respond to the medications prescribed by the physician.

He was prescribed medications for burning sensation on his tongue (Turbocort), (A to Z multivitamin tablets). Burning sensation on taking spicy foods gradually regressed after a period of five days

DISCUSSION

Geographic tongue was first described by Reiter in 1831 and is considered to be a chronic, inflammatory lesion with unknown etiology. Similar to geographic tongue, psoriasis is a dermal, inflammatory, genetic, and immunological disease with much clinical importance. Literature shows that geographic tongue is the most common oral lesion associated with psoriasis based on the microscopic similarity between these conditions and the presence of a common genetic marker, HLA-Cw62.

Generally studies shows that geographic tongue and psoriasis have no gender predilection and occur in people during their third decade of life. Although lesion was first described earlier, there is still a lack of clinical studies that accurately describe the characteristics of the lesions, thus hampering the understanding of its pathogenesis and diagnosis.

The presentation of geographic tongue to a dental surgeon is not common. It is a benign inflammatory disorder and was first reported by Rayer et al. One of the characteristic features of geographic tongue is the altering patterns of serpentine white line with a depapillated mucosa. In a recent study it has been concluded that immunologic and psychologic parameters appear associated with geographic tongue and may constitute as risk factors. It may present as an oral manifestation of psoriasis which is also called as psoriasiform lesion, or as a marker of psoriasis severity.

The diagnosis is purely based upon clinical features of the lesion and the histopathological examination is rarely performed making it difficult to understand its pathogenesis.

Dafar et al. defined a new classification where the white halo was a criteria for lesion activity, with lesions without the halo considered as being passive and those with the halo as being active.

These lesions may represent an early oral manifestation of psoriasis and have described the relationship between geographic tongue and the severity of psoriasis. Furthermore, fissured tongue (FT), the oral condition most often associated with geographic tongue, has also been indicated as a late oral manifestation of psoriasis.

However, studies are in limited number which focuses on the clinical characteristics of geographic tongue, also interfering diagnosis and a proper understanding of its pathogenesis

and its relationship with psoriasis.

Most cases of geographic tongue are self-healing. The differential diagnosis of geographic tongue includes leukoplakia, lichen planus, and candidiasis. Leukoplakia is caused by chronic irritation from rough teeth, improper fillings, tobacco use, smoking, or human immunodeficiency virus-associated oral hairy leukoplakia. Geographic tongue may have variable appearances and symptoms that need to be differentiated from other lesions of the tongue. Treatment is indicated only in symptomatic cases and often includes corticosteroids.

CLINICAL FEATURES:

- It is present on the anterior two-third of the dorsal surface of the tongue.
- They appear as multiple, well-demarcated zones of erythema, concentrated at the tip and lateral borders of the tongue.
- This erythematous appearance is due to the atrophy of the filiform papillae, and these atrophic areas are typically surrounded by a slightly elevated, yellow-white, serpentine or scalloped border.
- It has been reported that the lesion appeared on one site, healed after few days and reappeared on a different site, typically like migrating from one place to another.
- This type of lesion is mostly asymptomatic, although a burning sensation or sensitivity to hot or spicy foods may be noted when the lesion are active.
- It also appears rarely on other surfaces like buccal mucosa, labial mucosa, soft palate and the floor of the tongue.

CONCLUSION:

Benign migratory glossitis is rarely detected during routine intraoral examination of pediatric patients. It is a benign condition and often requires only reassurance in asymptomatic cases as it usually resolves by itself. Treatment is indicated only in symptomatic cases and often includes corticosteroids. However long term

follow up studies are required to understand the clinical characteristics and the pathogenesis of geographic tongue.

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TREATING MUCORMYCOSIS OF MAXILLA- A MAXILLOFACIAL MYSTERY !

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Abstract

The fulminant fungal infection, mucormycosis is an opportunistic disease which causes significant morbidity and mortality in the susceptible individual. The rhino-cerebral structures are often involved with devastation of the facial hard and soft tissues. This infection overwhelms in patients who are already compromised such as having diabetes mellitus, hematologic malignancy, renal failure, immunosuppression. Here we describe a case of rhino-cerebral mucormycosis in a patient with uncontrolled diabetics and renal failure, who was surgically treated.

Introduction :

M u c o r m y c o s i s (**Z y g o m y c o s i s** , **Phycomycosis**) is an acute opportunistic fungal infection caused by saprophytic fungus that belongs to class of phycomycetes and order Mucorales. First described by Paultauf 1885, it is a rapidly progressive fatal infection mostly reported in susceptible individuals such as those with poorly controlled diabetes mellitus. Rhinocerebral type is the most common in such individuals. Early aggressive surgical debridement is important for successful management of invasive fungal disease. This paper discusses a patient with mucormycosis maxilla, who was complicated with uncontrolled diabetes mellitus and renal compromise and surgically treated. Patient then reported with signs of Left sided hemiparesis, underwent medical treatment

CASE REPORT

Case presentation:

A patient 50 years/ male reported to casualty with complaints of nasal discharge from right nostril when having fluids through mouth past two

days. He was febrile (100F), conscious , oriented, vitals stable. He was not a known case of diabetes mellitus/hypertension. No pain/paresthesia noted, Halitosis present, belonged to low socio-economic status. He was advised admission. There were no specific extra-oral findings, eye signs were also normal. On intra oral examination , he was partially edentulous, teeth were attrited with chronic generalized periodontitis, poor oral hygiene, oro-nasal communication noted in hard palate of size 4 * 4 cms(approx) extending from palatal rugae anteriorly, posteriorly junction of hard and soft palate, laterally upto alveolar processes (fig 1). The lesion was lined by necrotic bone (black eschar), sequestrum. There were no palpable lymphnodes. Empirical antibiotics were given , analgesics started, fever controlled.

Differential diagnosis:

- Tuberculous ulcer- no h/o of tb , Syphilis ruled out with negative VDRL test , **N e c r o t i s i n g** sialometaplasia- no h/o trauma , Midline lethal

granuloma - more aggressive, EBV associated , Squamous cell carcinoma of maxillary sinus

Investigations:

- Routine investigations were carried out, Hb: 7.8, PLT : 1.99 lakhs/ μ l
RBS: 349mg/dl, RFT urea :3.6 creatinine 1.2, Urine culture negative, Plasma acetone negative
- HIV, HbsAg, VDRL results negative.
- Culture sensitivity test done: occasional gram positive budding yeast cells
- Swab test KOH staining done: Candida krusea identified. T.Flucanazole 150mg(stat) given on day 4 of admission after culture and staining results.
- CT maxilla was taken and reported as sinonasal mass in right nasal cavity and right maxillary . Mucoperiosteal thickening noted involving right sphenoid, bilateral frontal, bilateral posterior and middle ethmoid sinuses.(fig 7)
- USG abdomen revealed B/L moderate

hydronephrosis , grade I fatty liver.

Diagnosis:

Rhino-cerebral mucormycosis.

Treatment :

Anesthesiologist and other medical opinions were obtained and patient was posted for surgery. Under south-oral intubation GA was administered, resection of necrotic tissue (fig 2), debridement, curettage of Right maxillary sinus (fig 3), nasal floor, closure with placement of surgical obturator was done (fig 5, 6). Passive targeting (Inj Amb 25mg+ 500 cc saline bd+ antibiotics- 5 days) was carried out from POD 3 onwards. Patient was discharged on POD 8.

Outcome and follow up:

Patient was given interim obturator after 2 weeks of surgery. Post-op biopsy was reported as mucormycosis, thick non-septate fungal hyphae with vertical branching. He reported back after 40 days with left sided hemiparesis for which he underwent medical management and was discharged on improvement.



Fig 1 Lesion on initial clinical examination



Fig 2 Intra – op picture after removal of necrotic tissue

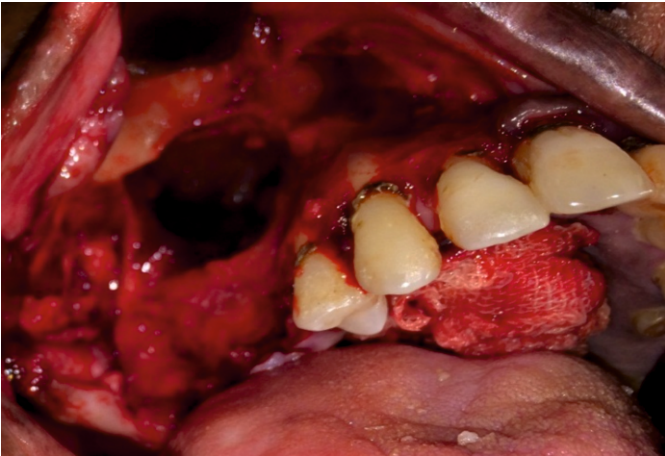


Fig 3 Clearance of right maxillary sinus

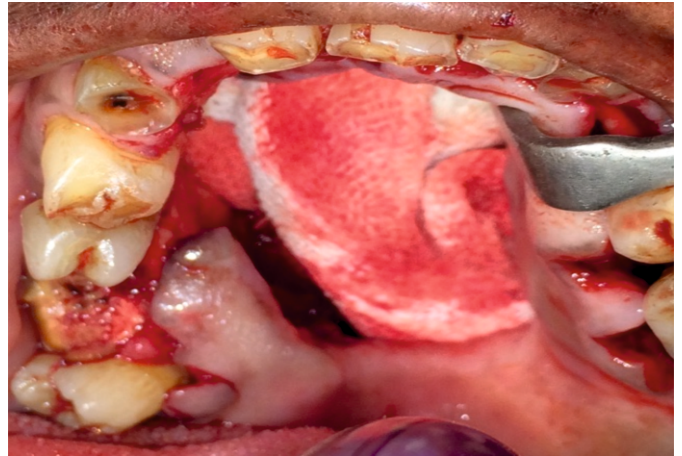


Fig 4 Reflection of palatal flap appreciated along with clearance

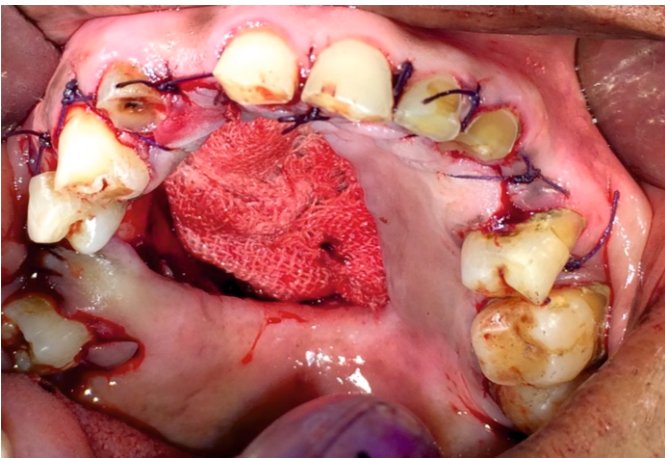


Fig 5 Palatal closure with Neosporin soaked gauze placed into the excavated maxillary sinus and mid-palate



Fig 6 Surgical obturator placed and wired for fixation

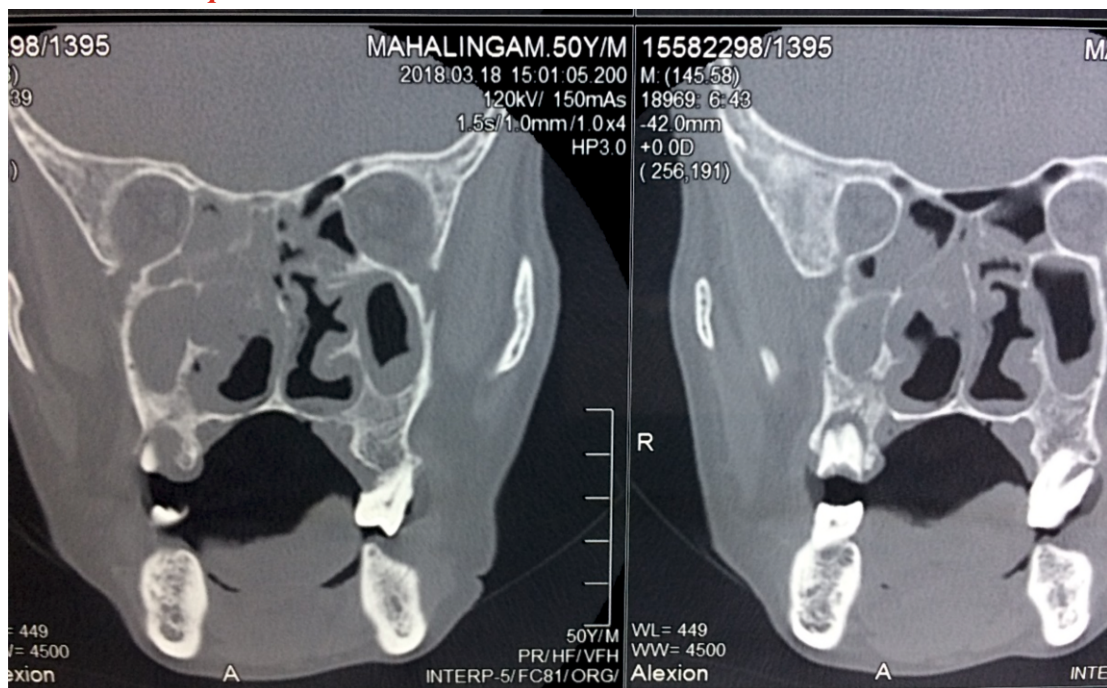


Fig 7 CT scan showing mass involving right maxillary sinus , extending into ethmoids.

Discussion

Fungi have been recognized as infectious agents for humans earlier than bacteria[1]. The infection develops after inhalation of fungal sporangiospores into the paranasal sinuses. Upon germination, the invading fungus may spread inferiorly to invade the palate, posteriorly to invade the sphenoid sinus, laterally into the cavernous sinus to involve the orbits, or cranially to invade the brain[2] Occasionally, cerebral vascular invasion can lead to haematogenous dissemination of the infection with or without development of mycotic aneurysms [3] The fungus invades the blood vessels and subsequently spreads through them. Once fungal hyphae enter into the blood stream they can disseminate to other organs such as cerebrum or lungs, which can be fatal for patient . [4] Mucor hyphae form thrombi within the blood vessels that reduce vascularity to the tissues and cause necrosis. Peripheral vascular disease (due to microangiopathy and atherosclerosis) in diabetic patients also causes local tissue ischemia and increased susceptibility to infections.[5] On the basis of the clinical presentation and particular site of involvement six manifestations of the disease can be described: rhinocerebral, pulmonary, cutaneous, gastrointestinal, disseminated and localised infections not otherwise belonging in the previous categories[7] The rhinocerebral form has been subclassified into rhinomaxillary and rhino-cerebral-orbital by some[8] Early symptoms may include perinasal paresthesias, cellulitis, periorbital edema, rhinorrhea and nasal crusting. These features are quickly superseded by eschar formation and necrosis of the naso-facial region. Advancing infection can quickly result in cavernous sinus thrombosis, carotid artery or jugular vein thrombosis (Lemierre Syndrome) and death[9] Mucormycosis is aggressive and potentially fatal in diabetic patients because of impaired host defense

mechanism and increased availability of micronutrients such as iron[8] . It may also occur in patients with underlying malignancies, recipients of haematopoietic stem cell or solid organ transplants, and individuals with other risk factors.[8] Diabetes mellitus is associated with 40% of mucormycosis cases overall and 70% of patients with ROCM [14] Roden et al found DM to be the most common underlying condition for mucormycosis in the oral and maxillofacial areas.[15] Among the clinical differential diagnosis we can consider squamous cell carcinoma of maxillary sinus. Such cases present as chronic ulcers with raised margins causing exposure of underlying bone. A malignant salivary gland tumor arising from the accessory glands of the palate can also be considered in the differential diagnosis.[7]

There is a close histopathological resemblance between mucormycosis and aspergillosis. Microscopically, aspergillosis has septate branching hyphae, which can be distinguished from mucormycotic hyphae by a non- septate vertical branching hyphae A definitive diagnosis of mucormycosis can be made by tissue biopsy that identifies the characteristic hyphae, by positive culture or both[7]. In our case we had positive results from both tests.

Treatment decisions are highly customized. Most of the conventional azoles, including ?uconazole and voriconazole, have no substantial activity against Zygomycetes fungi.[5] High doses of L-AmB (7-10mg/kg/day) are recommended for invasive mucormycosis and there is no need to reduce the dose in patients with renal disease [18],we decided to take into account the potential nephrotoxic effects. Single case reports or case series available in the literature have demonstrated the efficacy of a combination of Posaconazole plus L-AmB [18]. Information on treatment of mucormycosis with HBO is scarce and its role is in doubt. The disease site and

host factors are the primary determinants. There are no serological tests that can help with the diagnosis of mucormycosis[5]

Mucormycosis was long regarded as a fatal infection with poor prognosis. Necrosis of the palate may be the result of thrombosis of sphenopalatine and internal maxillary artery. The maxillary sequestration is a testimony to the necrotizing effects of mucormycosis.[19] However, with early medical and surgical management survival rates are now thought to exceed 80%[9] Aggressive surgical resection of infected tissues, delayed reconstruction after 3 months of negative biopsy [17] neosporin pack, passive target (inj amb 25mg+ 500 cc saline bd+ antibiotics- 5 days) along with monitoring RFT. In our case since patient had already compromised renal function and fatty liver, we could not continue passive targeting for more than once.

CONCLUSION

Fungal infections should be one of the main stay of suspicion in individuals with underlying immunocompromised status. Correction of underlying predisposing factors and early diagnosis along with multimodal treatment approach offer the best chance for survival in these patients. Aggressive surgical debridement should be initiated early as most antifungal agents have poor penetration ability at necrosed tissues.

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STEM CELLS - SAVIOUR SEEDS OF PERIODONTAL THERAPY

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Abstract

Periodontal disease is the major cause of the tooth loss which is characterized by the inflammation of the tooth supporting structures. Among the periodontal diseases, chronic periodontitis is most commonly seen for decades. Achieving a functional regeneration is done by surgical procedures, but with limited success. Recently, stem cells are used for the regeneration of the periodontium. Stem cells are multipotent and show an effective therapeutic tool for periodontal regeneration, due to its plasticity and ability to differentiate into different cell lineages. This review provides an update about the stem cells and its applications, which can be in future, savior seeds in periodontal therapy.

Keywords:

Stem cells, Cell based therapy, periodontal regeneration.

Introduction

Periodontal diseases are characterized by bacterial induced chronic inflammation that cause destruction of tooth supporting structures including periodontal ligament, cementum, and alveolar bone.¹ Among them periodontitis is the sixth most prevalent health condition worldwide.² National survey has shown the prevalence of severe generalized periodontitis of 15% and 35% of moderate periodontitis of world population.³ Several surgical and non surgical techniques are developed for the regeneration in function of damaged tissue, scaling, root planning and osseous surgery. However, achieving a functional periodontal regeneration is questionable. In recent years, use of stem cells in periodontal regeneration has shown promising results.⁴ Stem cells are defined as "undifferentiated and pluripotent cells that can differentiate into specialized cells with a more specific function".⁵ Stem cells are unique cells which have three important characteristics when compared with other

cells. 1. capable of dividing and renewing for long periods. 2. They don't have any tissue specific structures that allow specialized functions to be performed. 3. Potency - capacity to differentiate into specialized cell types.⁶

Periodontal regeneration is defined as the regeneration of diseased root surface, periodontal ligament (pdl), cementum and alveolar bone.⁴ Several types of stem cells are used for periodontal regeneration like mesenchymal stem cells (MSc), Embryonic stem cells (ESCs), induced pluripotent stem cells (IPscs).⁷ Mesenchymal stem cells are more used in application of periodontal regeneration than embryonic stem cells because embryonic stem cell has major ethical concerns and other safety concerns such as tumorigenicity and immunogenicity.⁴ Mesenchymal stem cells were isolated from bone marrow, but there was a inconvenience of using bone marrow mesenchymal stem cells (BMMsc) as it is painful and causes trauma during aspiration. Hence,

mesenchymal stem cells are obtained from the dental follicles, dental pulp, human exfoliated deciduous tooth, impacted third molars and apical papilla.⁷ These cells are differentiated into periodontal ligament, cementum, peripheral nerves and blood vessels.³ Recent advances of stem cell biology and regeneration includes the tissue engineering.⁸

Tissue engineering was proposed by Langer et al-⁹ contains the multiple progenitor cells, signaling molecules, extra cellular matrix scaffold with an adequate blood supply. Scaffolds acts as extracellular matrix which provides suitable environment for cell proliferation and differentiation. Signaling molecules are essential to enhance the activities such as cell proliferation, differentiation, migration and apoptosis. Progenitor stem cells process the signals and carry the tissue regeneration.⁹

Classification of stem cells

Based on differentiating potential

1. Totipotent stem cells or omnipotent stem cells:

These types of stem cells can be differentiated into embryonic and extra embryonic cell types. All stem cells can be divided into different types, but only totipotent stem cell has capacity to develop into viable organ.

2. Pluripotent stem cells:

These are descendents of the totipotent cells which can be differentiated into the cells derived from the three germ layers.

3. Multipotent stem cells:

Stem cells which are differentiated into cells that is restricted to particular cell.

4. Unipotent stem cells:

Stem cells produce only one cell type.⁶

Based on the origin

1. Embryonic stem cells:

In 1998, Thomason and co-workers derived

the first human embryonic stem (ES) cell from the blastocyst donated by couples undergoing fertility treatment. These are pluripotent cells which are capable of giving rise to cells of three germ layers. These cells are ideal for periodontal regeneration. However, use of embryonic stem cells is decreased due to ethical concerns and sometimes causes rare cancers.⁹

2. Adult stem cells:

Adult stem cells also known as somatic stem cells are undifferentiated cells seen specialized tissue and in adult organs.¹⁰ These are also known as mesenchymal stem cells. Mesenchymal stem cells are derived from bone marrow and adipose tissue.⁸

a) Bone marrow derived mesenchymal cells [BMMSC]

The main source of adult stem cells is bone marrow, hence it is referred to as bone marrow derived mesenchymal cells (BMMSC).⁸ These stem cells have shown to form cementum, periodontal ligament, and alveolar bone. These are used in class III furcation defects. The disadvantage of BMMSC is pain, morbidity and decreased number of cells.⁹

b) Adipose tissue derived mesenchymal cells

Adipose tissue can be obtained by the less invasive and in larger quantities when compared to bone marrow mesenchymal cells. This makes them a unique stem cell reservoir for periodontal therapy.³

c) Periodontal ligamental stem cells

Periodontal ligament stem cells can differentiate in to fibroblasts, osteoblasts and cementoblasts. These cells has higher proliferation rate than bone marrow. This unique feature of periodontal ligament stem cell makes it to be potential for use in regeneration of periodontal defects.⁴

d) Stem cells from apical papillae

Apical papilla is the soft tissue present at the apical region of the developing roots of permanent teeth which forms the radicular pulp. Stem cells from apical papilla are the source of primary odontoblasts responsible for root dentin formation.

e) Dental follicle stem cells

Dental follicle is an ectomesenchyme derived loose connective tissue sac surrounding the developing tooth bud from which alveolar bone, cementum and periodontal ligament formation takes place. Guo et al. reported that stem cells have potential for regenerating the entire root.

f) Stem cells from human exfoliated deciduous teeth (SHED)

Miura M et al found that multipotent stem cells are found in the exfoliated human deciduous teeth. These cells have a higher proliferation when compared to BMMSC and PDLSC.⁹

3. Induced pluripotent cells

Induced pluripotent stem cells can differentiate into all types of somatic cells. Hence, it is called pluripotent. Tumorigenesis is a major drawback.¹¹

Goals of periodontal therapy

The goal of periodontal therapy is to reform all components of periodontium including gingival connective tissue, periodontal ligament and alveolar bone.¹⁰

Wound healing and periodontal regeneration:

Most mechanical and surgical procedures favor the healing and repair of gingival connective tissue and coronal portion of periodontal ligament but no repair of cementum or alveolar bone. Healing after flap surgery is mediated by response like control of inflammation, long junctional epithelium, connective tissue attachment to tooth surface. Ankylosis or new bone with resorption and regeneration is by new functional attachment with formation of cementum, periodontal

ligament and alveolar bone. Virtually, no regeneration occurs. For decades periodontal regeneration is carried out by phases like surgical techniques, root surface conditioning, guided tissue regeneration, growth factors, tissue engineering and stem cells.¹⁰

APPLICATIONS OF STEM CELLS IN GENERAL

Stem cell therapy is used to treat multiple disorders like leukemia, lymphoma, brain and spinal cord injury, cardiac repair, hearing loss, vision impairment, hair loss therapy, veterinary medicine, keratoconjunctivitis sicca, treatment of infertility¹² and stem cell banking.⁵

APPLICATIONS OF STEM CELLS IN PERIODONTICS

Periodontium is a complex tissue consisting of hard and soft connective tissue. The series of events associated with the regeneration involves placement of progenitor cells to the site which can differentiate into the periodontal ligament forming cells, cementoblasts and osteoblasts.⁶

TISSUE ENGINEERING

Tissue engineering involves the incorporation of cells, growth factors and scaffolds in to the defect. Cell sheets are formed by culturing the cells in vitro in ideal conditions. Okano et.al incorporated a temperature responsive polymer poly (N-isopropyl acrylamide) in the culture dishes which helps in proper detachment of cell sheets. Cell sheet engineering along with temperature responsive polymer gives great results for periodontal regeneration. The cell sheets are grafted to recipient site without suturing. Cell sheet fragments and cell sheet pellets have developed to increase the cell efficiency.⁹

RISKS OF STEM CELL TRANSPLANTATION THERAPY

1. One major concern about stem cell therapy is its tumorigenic property.
2. Another concern includes association with

the cell harvesting, cell culture, site of administration.

3. Interaction between the transplanted cells and the recipient's immune system.¹¹

CHALLENGES IN STEM CELL BASED PERIODONTAL REGENERATION

This section provides an update on the biological, technical and clinical challenges from the further stem cell based therapy.

1. BIOLOGICAL CHALLENGES

Periodontal regeneration has not been possible because of incomplete understanding of specific cell types, inductive factors, cellular processes involved in periodontium. Most discoveries of periodontal stem cells are emerged from the animal models and cell cultures which do not always translate with the human body.⁶

2. TECHNICAL CHALLENGES

The mechanism of propagation and incorporation of the cells into scaffolds still needs further refinement. In addition, further studies are needed to understand the conditions that induce lineage specific differentiation and efficiency of stem cells derived from regenerating periodontal defects. There might be difficulty in identifying cell lines with animal free media to avoid cross infection in humans.¹⁰

3. CLINICAL CHALLENGES

Clinical challenges in the stem cell therapy include immune rejection, tumor formation and efficiency of cell transplantation.⁶ Immune rejection can be solved by use of autologous stem cells from third molar teeth and tumor formation can be solved by improvement in understanding of challenges in vitro.¹⁰

CONCLUSION

The goal of periodontal therapy is to restore the tissues destroyed by periodontitis into their original form and function. Recently, several types of stem cells are used for periodontal regeneration by a tissue engineering

processes which involves the stem cells, growth factors and scaffolds into the defect. Now understanding the significance of stem cells, there is a biological, technical, clinical challenge to overcome. By understanding the mechanisms behind the self renewal of stem cells, refinement of laboratory techniques and stem cell translation to clinical settings. The future of periodontal therapy can be by use stem cell, realistic alternative in periodontal regeneration.

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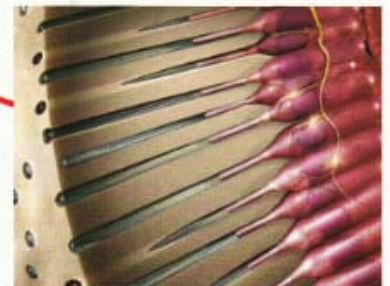
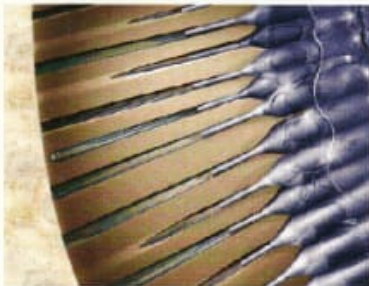
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