Journal of the Society of Periodontists and Implantologists of Kerala



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Dr. Biju Thomas

President's message

Season's greetings to all the Members.

I congratulate Dr. Prakash Prabhakaran who is successfully carrying on the work of Editor and as desired by all of us, he has increased the frequency of the Journal to thrice a year.

The Dental Council of India has made publishing mandatory by the teaching faculty and recently they have modified it to publications in Indexed and National speciality Journals. J.S.P.I.K. being the only Journal in our speciality other than J.I.S.P which is the National Journal of the India Society of Periodontology, we must take steps to get our Journal recognized by the DCI. Also every effort must be made to get the Journal indexed.

Today it is the responsibility of every clinician to offer the best to their patients and it is not possible until and unless everyone in the profession upgrades their knowledge and skill and I firmly believe that Publications like this play a major role in this.

We have achieved another goal this year, that of having a Midterm conference with active participation of the Life and Associate members. We also have a poster category for the undergraduates and Interns to stimulate interest in them about our speciality. We intend to make this Mid- term conference an Annual feature and it should preferably be conducted in Teaching institutions. I request all the members to come forward to host this in future in your respective institutions. I take this opportunity to thank the Chairman, Secretary, Treasurer and all the faculty of Government Dental College, Trivandrum who have come forward to conduct the first Mid- term conference.

Our 4th Annual conference and family get-together will be conducted in the month of April at Kottayam. I request all the members to attend the Annual get together along with your family and have a good time.

> Dr. Biju Thomas President, SPIK



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Editor Speak

The curtains are down for the 35th ISP national conference at Bengaluru. A truly memorable event it was. Now the scene shifts to Ahemedabad for the 36th ISP conference. I 'm thrilled at the opportunity to be back in my Alma Mater the GDC Ahemadabad, one of the oldest and biggest dental college in India. The dates are tentatively fixed in October 2011. Ahemedabad in october will have a cool salubrious climate. I'm sure you will have a whale of a time and can experience the true Amdavadi hospitality along with the exotic cuisine. I think I'm getting carried away a bit, so back to our journal. I hope you received the 1st issue. I agree it can still improve by miles. It was brought out with limited resources. My first task is to bring out the issues on schedule. Welcome to the 2nd issue of JSPIK (December). I hope you will find the issue informative. The mission of this journal is to provide a forum for its readers to exchange information on topics of mutual interest. Readers are invited to post questions for JSPIK authors.Letters to the editor are also welcome.

HAPPY NEW YEAR

Dr. Prakash Prabhakaran prakashpmds@gmail.com

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Dr. Baiju R.M.

Secretary's Message

I am pleased to inform you that our membership strength has grown over 115. It is heartening that more and more specialists are becoming part of the group. When we look within it gives an impression that there are less specialist implantologists in our society. So either we have to attract more implantologists from other disciplines of dentistry or encourage more of our periodontists to take up implantology seriously.

We as a speciality have been always open and adapting. Like implants we have embraced the laser technology too in a big way. Implants, lasers and piezo surgery are all value additions to our repertoire. The organisers of the fourth annual conference are planning to have a session on this particular aspect in the forth coming annual conference at Kottayam to be held in the month of May 2011.

JSPIK is completing its fourth year of continous publishing. Over the years it has been consistent progress in terms of content and quality. This year Dr. Prakash will be bringing out 3 issues for the first time. Thus JSPIK is slowly establishing itself as a speciality journal of national significance. So keep encouraging JSPIK. *Perio is thrilling.*

Dr. Baiju R.M.

Gingival Augmentation - unresolved issues sorted!

* K. Harikumar

Abstract

The complaint of black gums is common particularly in patients having a very high smile line and possess. The role of attached gingiva and its significance in maintaining periodontal health has been a topic of debate over many years. This article discussess the prevailing concepts and controversies regarding gingival dimensions and gingival augmentation on periodontal health. An attempt is made to derive possible conclusions based on consensus reports available in the literature till date

Introduction

Evolution of new concepts is always promising and motivating to the researchers in the field of science. Periodontology has taken leaps and bounces right from its early conceptual years. One of the areas where emergence of challenging concepts raised extensive debate and dialogue was regarding dimensions of gingiva. A review of literature on this aspect still presents several unresolved issues regarding the dimensions of gingiva and its augmentation...

Concepts & Controversies

Terminology

Mucogingival surgery, the term introduced by Friedman in 1950s was renamed as Mucogingival therapy in the Glossary of terms in Periodontology 2001. Currently the surgical procedures to correct defects of gingival or alveolar mucosa are called Periodontal Plastic Surgery proposed by Miller in 1993 and well defined in the proceedings of World Workshop of Periodontics in 1996.

Attached gingiva & periodontal health

Right from the period of Ainamo there were specific measurements for the amount of attached gingiva around different teeth. This was considered essential for oral hygiene maintenance, prevention of extension of marginal inflammation (tissue barrier concept – Cohen) and maintenance of periodontal heath. There were debates on the need for "adequate" zone, "sufficient"zone of attached gingiva. Literature at that times support this concept and showed that a reduced apicocoronal height lead to increased subgingival plaque, clinical attachment loss, gingival recession and difficulty in oral hygiene maintenance.

One of the first studies supporting this concept done by Lang & Loe (1972)¹ on dental students suggested that 2mm attached gingiva is adequate to maintain periodontal health. Miyasato² & Grevers (1977)³ later conflicted the results of Lang & Loe study and opined that clinically healthy gingival tissues exist even in sites with less than 1mm of attached gingiva. Later in 1983 Wennstrom & Lindhe⁴ in an animal study showed that gingival width can be maintained free of clinical and histologic signs of inflammation irrespective of the presence or absence of attached gingiva by strict plaque control measures.

Attached gingiva & gingival recession

Studies by Stoner & Mazdyasna (1980)⁵ proved that a narrow zone of attached gingiva is a contributing factor to the development of soft tissue recession. Later several cross sectional studies failed to prove/disprove this concept. It can be interpreted that the reduced height of gingiva can be the result of gingival recession. Lindhe & Nyman (1980)⁶ found that no gingival recession on SPT patients after periodontal surgery even after 10-11 years follow up who maintained good plaque control.

This lack of relationship between height of gingiva and development of gingival recession was further established by a series of longitudinal studies.

Gingival augmentation and periodontal health

The concept of gingival augmentation to improve periodontal health is poorly supported by scientific evidence.

Dorfman (1980)7 conducted a study where sites with minimum attached gingiva were grafted and similar defects were kept non grafted. On 6-8 yrs followup, grafted sites showed increase in gingival width considerably, but non grafted sites with less than 2mm attached gingiva showed no further clinical attachment loss and recession when strict plaque control measures were ensured. This result was further supported by Hangorsky & Bissada (1980), Schoo &

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VanderVeden (1985), Wennstrom (1985) and Friedman (1999).

Attached gingiva and orthodontic treatment

Alteration in gingival dimensions during orthodontic treatment is dependent on the direction of tooth movement. As far as a tooth moves within the alveolus, recession will not develop (Wennstrom 1987)⁸. In areas of narrow zone of attached gingiva, Batenhorst et al (1974)⁹ observed dehiscenses in bone plates when teeth are moved labially or lingually and labial movement increased gingival recession. Maynard & Wilson suggested the need for gingival augmentation before orthodontic treatment in such situations. Boyd (1978)¹⁰ opined that if there is gingival recession labially and if the tooth is to be moved lingually, orthodontic treatment is to be done first.

Coatom et al (1981)¹¹ opined that attached gingiva even less than 2mm is enough to start orthodontic treatment. Steiner et al (1981)¹² speculated that it is the thickness of marginal tissue rather than the apicocoronal height that will decide whether marginal tissue recession develops during orthodontic treatment. Recently Melson & Allais (2005)¹³ and Yared (2006)¹⁴ observed from their studies that it is the thickness of gingiva that is more critical in preventing soft tissue recession. Presence of inflammation will increase the predilection for soft tissue recession in "thin gingival biotype" subjects.

Attached gingiva and restorative therapy

Subgingival placement of restoration margins are critical. Donaldson (1974)¹⁴ stressed proper contour of restoration subgingivally to prevent recession. Maynard (1987)¹⁵ stressed the need for 3mm AG in cases where crowns are to be placed subgingivally. Stetler & Bissada (1987)¹⁶ recommended a minimum width of 2mm of AG in areas with subgingival margins of restorations. Also the keratinized tissue should be thick enough to prevent recession in areas where subgingival restorations are to be placed, ie a probe in the gingival crevice should not be seen through.

Consensus & conclusions

1. Some amount of attached gingiva is a clinical prerequisite to prevent periodontal breakdown.

2. Width of attached gingiva is related to the depth of the vestibule

3. Excellent plaque control can prevent gingival inflammation even in areas devoid of attached gingiva.

4. But plaque control is difficult in areas without attached gingiva.

5. Height of gingiva is not a critical factor to predispose the site to gingival recession but thickness of gingiva is a significant predisposing factor.

6. To preserve gingival dimensions after orthodontic treatment, a careful pre treatment evaluation of the thickness of the soft tissues is important.

7. Thickness is critical than the apicocoronal width of

gingival to maintain periodontal health after subgingival restorations.

8. Minimum attached gingiva with good vestibular depth dose not demand augmentation.

9. The same minimum width of attached gingiva with poor vestibular depth will be benefited by augmentation.

Thus it can be stated that, any minimum width of attached gingiva is acceptable if there is no clinical signs of inflammation, no difficulty in oral hygiene maintenance and no aesthetic problem to the patient.

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Platelet Rich Plasma and Platelet Poor Plasma used for Coronal Positioning of Flap for Root Coverage

* Md Nazish Alam, ** S C Chandrasekaran, *** Jayaraman Bhaskar, **** Mohan Valiathan

ABSTRACT

Several root coverage procedures are being used for the purpose of root coverage. Root exposure is considered as a major problem for esthetics which is followed by hypersensitivity; the cause is mainly trauma from tooth brushing and other conditions like local factors. Use of platelet rich plasma which is a first generation extract of patient own blood is common in regenerative procedures also to add in we intend to use the platelet poor plasma which acts as a natural glue to approximate the flap and repositioning for covering the exposed root. This case report shows the positive results when both are combined together for application in root coverage procedure.

Introduction

The major goal of periodontal therapy is regeneration of tooth-supporting structures destroyed by periodontitis. The indication of root coverage by surgery is mainly esthetics. If gingival recession is progressive, diagnosis and elimination of the cause are the first priority. After resolution of the inflammation or the elimination of trauma, the clinician may determine whether root coverage is indicated.

Coronally positioning of gingiva in a gingival recession area advocates several procedures with great success and lots of literature is suggestive of the same. Application of platelet rich plasma and platelet poor plasma obtained from patient's own blood for root coverage is applicable because of the predictability of this procedure. Reaction as well as rejection is yet to be documented so this explains the safety of the application.

Classification Of Gingival Recession (According to PD Miller 1985)¹



MGJ - MUCOGINGIVAL JUNCTION

Platelet rich plasma

Growth factors are a class of naturally occurring proteins involved in three key cellular events in tissue repair: mitogenesis, migration, matrix synthesis and remodeling.

Growth Factor	Primary Functions
Epidermal growth factor	Regulation of cell proliferation, differentiation, and survival
Insulin-like growth factor	Key regulator of cell metabolism and growth Stimulates proliferation and differentiation functions in osteoblasts
Platelet-derived growth factor	Major mitogen for connective tissue cells and certain other cell types. Promotes the synthesis of collagen and structural proteins
Transforming growth factor (ie, alpha, beta)	Regulation of cell proliferation, differentiation, and apoptosis Induction of intimal thickening
Vascular endothelial growth factor	Regulation of angiogenesis

A combination of growth factors effectively stimulate formation of mineralized as well as nonmineralized tissues². Platelets are rich in growth factors that may contribute to an accelerated tissue regeneration process. A PRP blood clot contains 4% red blood cells, 95% platelets, and 1% white blood cells. It can be considered that PRP "jump starts" the cascade of regenerative events leading to the formation of a mature graft site³. The PRP obtained offers up to a 2.16-times increase in the maturation rate and substantially greater density of a bone graft procedure⁴.

Components of PRP

- -1. Growth factors
- 2. WBC & phagocytic cells
- 3. Native fibrinogen concentration
- 4. Vasoactive and chemotactic agents
- 5. High concentration of platelets

Platelet Poor Plasma

After centrifugation three layers are formed the top most layer is the the platelet poor plasma the significance of PPP is the presence of fibrinogen which is considered as a natural glue with adhesive properties. In this case we

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CASE PRESENTATION



PRE - OPERATIVE



DEFECT SITE



Blood Withdrawal



Platelet rich Plasma (PRP)



PRP With Bone Graft



IOPA IN LOWER ANTERIOR

tried to use the benefits of this layer which is usually discarded.

Mechanism Of Regeneration

Platelets are responsible for initiation of regeneration of tissue which has been lost. During repair platelets become entrapped in a fibrin clot and degranulate releasing two primary growth factors: Platelet Derived Growth Factor (PDGF) and Tissue Growth Factor (TGF-B). PDGF binds to endothelial cells to initiate capillary in growth; and TGF-B binds to osteoblasts and stem cells to initiate mitosis and stimulate osteoid production³.

The lifespan of platelets is about 5-7 days. Macrophages are attracted into the graft site through an



POST OPERATIVE REVIEW

oxygen gradient of 30-40 mm Hg and drive the remaining bone regeneration process. By day 14, complete revascularization of the graft is seen. Stem cells differentiated into osteoblasts followed by osteoid which is being laid down. Early bone formation begins. By the end of four to six weeks, random cellular bone, called woven bone, is formed which is immature and disorganized. In phase two remodelling lamellar bone is formed, representing a more organized bone⁵.

Case report

A patient aged 25 yrs reported to the Dept Of Periodontics at Sree Balaji Dental College and Hospital with a chief complaint of downward movement of the tissue Platelet Rich Plasma and Platelet Poor Plasma used for Coronal Positioning of Flap for Root Coverage

around the lower front tooth region for the past few months.

No relevant medical history was given by the patient. This was his first dental visit.

General examination of patient appeared normal.

Extra oral examination was of not much of clinical significance.

Intraoral examination revealed presence of grade II recession in relation to 41,42.

On routine blood examination, was found within the normal limits and intraoral periapical radiograph revealed minor bone loss pertaining to lower anterior.

The patient was diagnosed with localized periodontitis with gingival recession of grade II in relation to 41and 42

Treatment Done

Initially scaling and root planning is done and patient is evaluated after two weeks for elimination of inflammatory conditions so that the tissue handling properties are improved.

The area is anesthetized using Lignocaine 1:80,000.

Using BP blade no.15 sulcular incision is given between 32,31,42,41. Full thickness mucoperiosteal flap is raised, debridement is done and Platelet Rich Plasma (PRP) is mixed with osseograft and placed over the defect site and the defect is closed using

3-0 silk suture. Before the final closure the Platelet Poor Plasma (PPP) which is usually discarded is used for conditioning the flap because of its adhesive properties.

A periodontal pack is placed and post operative medication is advised. The patient is reviewed after 10 days. Satisfactory healing is seen.

After 3 months the patient is reviewed with complete

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coverage of exposed root.

Discussion

PRP is new application of tissue engineering and can be used in the most varied areas of the dentistry, being applied in periodontal and maxillofacial surgeries. It is a storage vehicle for growth factors, especially PDGF and TGF. Although growth factors and the mechanism involved is still poorly understood, the ease of applying PRP in the dental treatment and its beneficial outcomes holds promise for further procedures. However, this is new area of science and many clinical results are to be published, especially the efficiency of the procedures, application form, growth factors carriers, genetic modifications of the proteins and growth factors. Certainly, the use of PRP is a step in the history of regenerative methods and the tissue engineering going to be used in future.

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ERRATA

In the article titled "Osteoimmunology- a new dimension to bone resorption in periodontal disease" by Dr Rosamma Joseph et al (Vol 4 issue-1), the abstract was inadvertently deleted. The error is regretted.

Editor

SPIK Forthcoming Events

* April / May 2011 - 4th Annual Conference and Family Get together at Kumarakom, Kottayam

Second primary tumour of gingiva masquerading as Inflammatory gingival hyperplasia - a case report

* Biniraj K.R., ** Mahija Janardhanan

ABSTRACT

Oral squamous cell carcinoma is the most common cancer affecting oral cavity with an estimated number of 378,500 new cases diagnosed annually, world wide. Though revolutionary changes had been attained in the diagnostic techniques and treatment modalities for oral cancer for the past 20 years, no appreciable change was noticed in the oral cancer mortality rate. The causes for treatment failures were many and have been attributed to delay in diagnosis, tumour metastasis, tumour recurrence and development of multiple primary tumors.

Here we report a case of second primary tumour involving gingiva, associated with an ill-fitting denture on periodontally compromised teeth in a patient who was treated for carcinoma of tongue on the opposite side some seventeen years back. This paper highlights the importance of early diagnosis of gingival cancers and also stresses the need for prolonged periodic follow up for the effective management of patients with oral cancer.

Introduction

Oral squamous cell carcinoma, the malignancy arising from oral epithelium is the most common malignancy affecting the oral mucosa. Intra-oral carcinoma can occur anywhere in the oral cavity, gingiva being the third most preferred sub site of involvement¹. The carcinoma of gingiva constitutes an extremely important group of neoplasm. Martin reported that approximately 10% of all malignant tumors of the oral cavity occur on the gingiva². Carcinomas arise more commonly in edentulous areas, although they may develop at sites where teeth are present and often the carcinoma of gingiva and edentulous alveolar ridge are considered as single entity. The mandibular gingiva is commonly affected than maxillary gingiva. Since the lesion clinically, mimics common inflammatory conditions of gingiva, the diagnosis is often delayed, thereby affecting the ultimate prognosis. Gingival carcinomas exhibit clinical characteristics different from those of other intra-oral carcinomas suggesting the possibility of distinct etiological factors and pathological mechanism. Though primary tumours occur frequently in gingiva, the occurrence of second primary tumour is quite rare. A case of second primary tumour of gingiva along with the involvement of adjacent edentulous mucosa, which was clinically diagnosed as inflammatory gingival hyperplasia in relation to an ill fitting fixed partial denture is discussed here.

Case Report

A seventy year old female patient came to our hospital with the complaint of burning sensation and swelling associated with pain since 5 months in the lower left posterior gingival area. She gave the history of wearing a fixed denture for the past 10 years and it was mobile since last one year. The fixed partial denture was removed 3 months back and one of the mobile abutment teeth was also extracted with

it.

Her past medical history revealed that she was diagnosed with carcinoma involving the right lateral border of the tongue seventeen years back, following which wide local excision of the lesion was done along with radical neck dissection. She also received radiotherapy.

On general examination, the patient was normally built and nourished. No pallor, icterus, cyanosis, clubbing or pedal edema was noticed. No palpable lympnodes were present.

On intra oral examination a red raised lesion was seen in the buccal gingiva in relation to 35 and 36 region which was bearing the denture (Fig.1). The 38 region of extraction had completely healed. She had a four unit metal ceramic fixed partial denture, replacing 37 with 36 and 38 as abutment. The lesion was found on the buccal gingiva of 35 and extending posteriorly over the alveolar mucosa covering the edentulous ridge distal to 36 till the retro molar region and lingually till the sulcus (Fig.2). The lesion was tender and bleeding on palpation was noticed in the retromolar region. Based on the clinical presentation, the lesion was provisionally diagnosed as inflammatory gingival hyperplasia. The differential diagnosis considered included erythroplakia and squamous cell carcinoma.

Since the lesion was found to be persisting even after the removal of the fixed denture, incisional biopsy was done, and the tissue removed was submitted for histopathological examination. Microscopically the lesion showed numerous islands and sheets of malignant epithelial cells in a scanty connective tissue stroma. Some of the islands showed keratin pearl formation (Fig.3). The superficial epithelium was dysplastic and the histopathologic impression was that of well differentiated squamous cell carcinoma.

Since the patient had previous history of carcinoma of the tongue, the lesion was diagnosed as second primary tumour of the left mandibular gingiva.

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Discussion:

This case presented as a typical inflammatory gingival hyperplasia seen below an ill fitting fixed partial denture. Similar presentation of gingival carcinomas associated with ill fitting dentures had been reported previously³. The past history of squamous cell carcinoma of tongue seventeen years before made us conclude that the gingival lesion which developed now is a second primary tumour as it was fulfilling the criteria put forth by Warren and Gates⁴ Warren and Gates suggested that if a patient develops multiple malignancies, the diagnosis of second primary tumour can be made, if

(1) Both neoplasms are malignant.

(2) The two neoplasms are anatomically separate.

(3) The possibility of the second primary neoplasm being a metastasis from the index tumor is excluded.

The phenomenon of the second primary tumour was known ever since the time of Theodor Billroth⁵, who suggested that, a patient who had been cured of one tumor later could develop a second one, nearly a century ago. Later more clarity was added to this, when Slaughter came out with the concept of "field cancerisation" in the year 1953⁶.

According to Slaughter, a patient with cancer involving the upper aero digestive tract is more susceptible to the development of many foci of malignant transformation as the mucosa had already undergone a change, perhaps due to carcinogen exposure. This concept was further refined by the recent molecular findings which supported the carcinogenesis model in which the development of a field with genetically altered cells plays a central role.

The cancers of the upper aerodigestive tract are more prone to develop multiple primary tumours than cancer involving any other body sites⁷. The incidence of multiple primary neoplasms in the head and neck was reported to be ranging between 10% and 25%⁸ and it was found that if the index tumour appeared in the oral cavity, the second neoplasms were more likely to occur in the oral cavity itself. Moertal noted that 8.7% of patients with carcinoma of the oral cavity had two or more discrete oral cancers9. In oral cancer the chances of second primary tumour is more if the index tumour was located in the floor of the mouth, inferior alveolus or retromolar triangle than if the tumour was in the tongue, buccal mucosa or palate¹⁰. Contrary to this finding, in our case the index tumour was located in the tongue and the second primary developed in the gingiva and alveolar mucosa.

A male prediliction for the occurrence of multiple primaries had been reported and tobacco and alcohol cosumption are considered to be the key risk factors⁹. The etiology of carcinoma of gingiva neither seems to be specific nor is it defined as the carcinoma in the other areas of oral cavity and its association with tobacco habit is indefinite. Most of the previous demographic studies are pointing

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towards a different etiopathogenesis for carcinomas of gingiva.. It has been speculated that the long term chronic irritation from the calculus and the proinflammatory stimuli of bacteria present in the gingiva may promote the development and invasiveness of oral cancer³. In this context, whether the development of malignancy in the mucosa adjacent to a fixed partial denture which was worn for a prolonged period on periodontally compromised teeth represent a cause-effect relationship or was it a mere coincidence needs to be answered. Perhaps in oral mucosa, which had already undergone a field change a chronic irritation from the calculus deposit below a partial denture, may lead to further mutation which in turn can form a second primay tumour.

Conclusion

The risk of occurrence of multiple malignancies in the oral cavity is very high. Delay in diagnosis and the development of second primary tumour are the main causes of treatment failures in patients with early stage oral cancers.Hence early detection of the lesion and an equally important regular follow up examination of the patient are crucial for the effective management.

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Antimicrobial Photodynamic Therapy (aPDT) — Current status in the management of Periodontitis

* Betsy Joseph

The concept of combining light with a chemical agent dates back to dates back to approximately 3000 years ago as Egyptians and Indians were known to use the therapeutic effects of sunlight activation of psoralens for repigmentation of vitiligo. The basis for this photoactivation is that , the photosensitizer is excited from the ground state to the triplet state upon exposure to light of a specific wavelength in the presence of oxygen resulting in in the formation of oxygen species such as singlet oxygen and free radicals, the antimicrobial effects of which are known.

In early nineties attempts were made to use the redox properties of methylene blue for the reduction of bacterial burden in periodontitis patients. In vitro studies have shown that 99% of subgingival plaque samples were successfully destroyed by photodynamic means¹ and that Actinobacillus actinomycetemcomitans can be photoinactivated by a red laser in the presence of malachite green. Using an animal model, it was shown that photosensitization of P. gingivalis is possible in vivo, resulting in decreased bone loss.² aPDT in a beagle dog model showed a positive effect on inflammatory signs and the possibility to suppress P. gingivalis. In addition, it seems that antimicrobial photodynamic therapy not only kills the bacteria but may also lead to the detoxification of endotoxins because it has been demonstrated in vitro that lipo polysaccharide treated by photodynamic therapy did not stimulate the production of pro-inflammatory cytokines by mononuclear cells³, thus, photodynamic therapy may inactivate endotoxins such as lipopolysaccharide by decreasing their biological activity.

A combination of scaling and root planing along with photodynamic therapy appeared to have promising results as improvements were shown in the the investigated parameters over the use of scaling and root planing alone at all evaluation time points⁴. Reduction in the the numbers of viable bacteria in. Nevertheless, contrasting results have been reported by a couple of authors⁵. Assessing the impact of antimicrobial PDT(aPDT) on the treatment of aggressive periodontitis in humans, photosensitization and SRP showed similar clinical results⁶. Latest studies have shown that the adjuvant application of the described PDT method is appropriate to reduce periodontal inflammatory symptoms and to successfully treat infection with F. nucleatum.⁷ Over all, the results are encouraging as it suggests that clinical outcomes of conventional sub gingival debridement maybe improved by adjunctive aPDT.

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Role of a Periodontist in Tobacco Cessation

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ABSTRACT

The associations between tobacco use and diseases affecting the oral cavity, suchas periodontal diseases and cancer, are now well recognized. This has led to proposals from some members of the profession to provide smoking cesstion services. Because of the high prevalence and severity of periodontal diseases in smokers, the apt professional to conduct smoking cessation would be the periodontist. More dentists believe that they should offer smoking cessation support than actually do provide it and reasons for not providing it include time and reimbursement issues.

Introduction

Tobacco use is one of the major challenges to public health today. In India nearly 1 million persons die due to tobacco use related diseases every year.

Health professionals play a key role in controlling the global tobacco epidemic. Studies have shown that even brief counseling by health professionals on the dangers of using tobacco products and the importance of quitting is one of the most cost effective methods of reducing tobacco consumption in all forms. Among the health professionals, dentists in particular have a prominent role in tobacco control since dental patients are very receptive to health messages during check ups.

Dental professionals are in an ideal position to intervene

Dental professionals are I an ideal position to intervene due to the following reasons:

- § Effects are obvious- smoking effects are immediately obvious to the dental professional ¹
- § More regular visits- Patients tend to visit dentists more regularly than physicians, facilitating followup and monitoring ¹
- § Longer contact- Patients tend to have longer contact during appointment with dental professionals than with physicians¹
- § Intervention works- A study concluded that a brief dental office intervention was significant more likely to lead to a quit attempt²
- § Satisfaction and success- Professional intervention may increase patient satisfaction and successful quit attempts³

Among the dentists, the role of the periodontist is very prominent because of

§ Higher prevalence of periodontal diseases in smokers

- § Greater severity of periodontal diseases in smokers
- § High impact of smoking in periodontal treatment outcomes

Periodontal disease and tobacco use

Pindborg⁴ was one of the first investigators to study the relationship between smoking and periodontal diseases. He discovered a higher prevalence of acute necrotizing ulcerative gingivitis in smokers.

A large number of studies have established that in comparing smokers and non-smokers with periodontitis, smokers have:

- § Deeper probing depths and a large number of deep pockets ⁵
- § More attachment loss including more gingival recession ⁶
- § More alveolar bone loss ⁷
- § More tooth loss 8
- § Less gingivitis and less bleeding on probing ⁵
- § More teeth with furcation involvement ⁹
- § Smoking delays wound healing -There is impaired healing and poorer clinical results to both nonsurgical and surgical periodontal therapy of smokers vs. nonsmokers¹⁰
 - o Less reduction of bleeding on probing
 - o Less reduction of probing depths (even with good oral hygiene)
 - o Smaller gain of attachment
- Studies have found that smokers have less success with open flap debridement, osseous resection, soft tissue and bone graft procedures, and guided tissue regeneration procedures ¹¹
- The implant failure rate in smokers is significantly higher than in nonsmokers
- Cigar and pipe smokers have similar adverse effects on periodontal health as cigarette smokers¹⁰

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- The following may contribute to impaired wound healing
 - Smoking impairs revascularization of bone and soft tissue
 - o PMN altered chemotaxis, phagocytosis, and adherence
 - o Altered antibody production

- Negative effect on bone metabolism may influence osteoporosis and periodontitis by similar mechanisms
- § Those who are exposed to passive smoking had 1.6 times greater odds of having periodontal disease compared with those who were not exposed

Smokeless tobacco and periodontal disease

- § Results are not consistent as in the case of smoking
- § Snuff causes localized gingival recession
- § Betel chewers with tobacco have severe periodontal indicators compared to those with out tobacco

Role of a periodontist in tobacco cessation

As there is an established kink between smoking and periodontitis, periodontists have a professional responsibility to clearly state that smoking is one of the causes of periodontitis and that the patient should stop smoking.

Smoking status should be considered in periodontal diagnosis, prognosis, and treatment planning. Smoking status is a clinically useful predictor of future disease activity Smoking cessation should be considered a part of periodontal treatment.¹²

All patients should be assessed for smoking status and given advice to quit the habit. About 70% of people who smoke would like to quit and should be assisted. Former smokers more closely resemble non-smokers in the periodontal health status and response to treatment, but the time required to revert this status has not been defined. A study done by Preshaw et al¹³ showed a more favorable treatment outcome in those subjects that managed to quit using well established quit smoking strategies including counseling and nicotine replacement therapy.

In the clinic, dentists have an important role in helping patients quit tobacco:¹⁴

- § In the clinic during the course of oral examination, dentists should try to correlate the effect of the patients tobacco use on the orodental problem for which the patient is attending the clinic. They should also counsel patients to quit between treatment, as not doing so might worsen the situation.
- § Dentists should understand that they are is an advantageous position to address the issue of tobacco control during an oral check-up, as patients would listen because they are in pain
- § Dentists can give brief advice to non-users of tobacco and counsel them never to take up tobacco use. To users of tobacco, advise and counseling by dentist on quitting tobacco use have been shown to be effective

Brief, effective Tobacco Cessation Intervention

Tobacco cessation intervention does not need to be time consuming. The Public Health Service has established an intervention, called the "5 A's", which has been proven to effectively reduce tobacco use rates while only requiring 3-5 minutes implementation time. The 5 A's include:

1. ASK patients if they use tobacco. This is most easily accomplished by including tobacco use as part of the medical history form.

2. ADVISE patients to quit in a manner that is clear, strong, and personalized to the individual's situation.

3. ASSESS readiness to quit using tobacco by asking "Are you willing to try to quit at this time ?"

4. ASSIST them to quit by offering brief suggestions about how to quit, referring them to free quitting programs and prescribing nicotine replacement therapy or bupropion

5. ARRANGE follow-up to prevent relapse.

Given the difficulties faced by people attempting to stop tobacco use, medical treatment have been developed to help them by lessening the intensity of withdrawal symptoms. Patients who would benefit most from pharmacotherapy are those who have attempted to quit several times without success or those who suffer from chronic depression. There are two main types of pharmacotherapy for tobacco use cessation:

1. Nicotine Replacement Therapy (NRT): These lessen craving and other withdrawal symptoms while the individual learns to stop the behaviour connected with tobacco use. They are available as nicotine gums, patches, inhalers, nasal spray and lozenges.

2. Antidepressants like Buproprion function as anticraving medication

Constraints against counseling in dental practice ¹⁵

Various factors are cited by dentists as barriers for counseling in clinical practice:

- § Lack of reimbursement
- § Inadequate counseling training

 $\$ No time to provide tobacco counseling in a busy schedule.

Conclusion

The associations between tobacco use and oral diseases, in particular periodontal diseases, are well recognized. Therefore the periodontist can play an important role in tobacco cessation. Two approaches have strong evidence of efficacy for tobacco cessation: counseling and pharmacotherapy. The periodontist can encourage patients to quit be pointing out the damage caused by tobacco to periodontal tissues and highlighting the general health benefits of quitting.

The most significant barrier remains a lack of education to dentists and dental hygienists on cessation activities during their formative years of training. Effective training modules both at undergraduate and continuing dental education level need to be introduced and implemented to allow the dental team to engage in cessation activities. Optimizing the implementation of routine smoking

Role of a Periodontist in Tobacco Cessation

cessation intervention in general dental practice remains a key aim in the delivery of dental care.

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Natural products for periodontal therapy: A comprehensive review

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ABSTRACT

Natural products have been a reliable and effective source of remedy for most diseases since ancient ages. Besides the routine plaque control measures, there are a variety of natural products that can help eliminate inflammation and infection associated with periodontitis. Various researches and scientific literatures existing uptodate have been found to supplement the effects of certain products like turmeric, green tea, honey etc. against periodontitis. The objective of this review is to emphasize the importance of including these natural products in the prevention and treatment strategy of periodontitis.

Introduction

Microbial plaque accumulation in gingival crevices induces an inflammatory response which progresses into a chronic destructive condition of the supporting tissues of the teeth termed as PER IODONTITIS; in susceptible individuals. Periodontal disease, the most common cause of tooth loss is the outcome of mainly poor oral hygiene, poor nutrition or any underlying systemic conditions. Microbial and other environmental factors are believed to initiate and modulate periodontal disease and genetic predisposition leads to progression of the same.¹

Periodontal pathogenesis:- new paradigm

According to new paradigm, complex components of the inflammatory and immune responses perform both critically protective as well as destructive functions under the influence of microbial and environmental risk factors .Although bacteria are a necessary factor in the equation, the reaction of the host's immune-inflammatory system is responsible for most of the destruction. The clubbing of Acquired factor and Genetic factors may modify a patient's risk of developing periodontitis.²

Drawbacks of conventional treatment modalities

The rationale for treating periodontal disease has always been to preserve the structure, function and aesthetics of dentition. The use of conventional periodontal therapy alone did not fulfill all the before said requirements.

Periodontal therapies like scaling and root planing was mainly intended for mechanical removal of local factors. But mechanical therapy was ineffective against tissue invasive organisms like Actinobacillus actinomycetemcomitans.³

The reign of "Specific plaque hypothesis" has lead to the importance of antimicrobial therapy. Patients who did not respond to conventional therapy was provided with the adjunctive use of antimicrobial agents. Local drug delivery had the advantage that optimal bactericidal or bacteriostatic concentration can reach the affected area and greater concentration can be maintained for longer periods. But it was also not effective against tissue invasive organisms. In general, antimicrobial agents had drawbacks like emergence of resistant strains and genetic predisposition. Some of the newly introduced drugs were lacking on information about their safety.⁴

Until now the treatment was mainly on the basis of microbial etiology. Current research is focused on host modulatory therapy(HMT) which uses immunomodulatory intervention strategies which help in tuning of the host response to maximize the protective and minimize the destructive aspects of periodontal host response (HMT).⁵ Present scenario of periodontal treatment consists of combination of mechanical, antimicrobial and host modulation therapy.

Available host modulatory agents are either collagenase inhibitors, bisphosphonates, or agents restricting the production of MMP's, cytokines or prostanoids. But HMT is also meant to disrupt the cell signaling pathways. When there is a microbial challenge, the virulence factors acts as inducing stimulus for signal transduction which ultimately results in cytokine production and other secondary mediators like MMP's and PGE₂.³

Natural products for host modulation therapy

Side effects and increased cost of production of synthetic agents have prompted researchers to think about naturally available agents for HMT. Many natural products have been tried for periodontal host modulation therapy which include turmeric, clove, neem, green tea, honey, Triphala etc. Antimicrobial, anti-inflammatory, antiplaque,

* Prof. & HOD, ** Reader, *** Senior Lecturer, **** Junior Resident, Dept. of Periodontics, PMS College of Dental Science & Research, Thiruvananthapuram antioxidant and astringent actions of these agents have been confirmed in several studies.Natural agents for periodontal therapy must be effective, affordable and acceptable to the patient.⁶

This review aims to comprehend the available literature on natural products for periodontal therapy:-

1. Turmeric

Derivatives of common spice turmeric and Java turmeric (Curcuma xanthorhizza) have anti-inflammatory potential. Curcumin, a low molecular weight polyphenolic compound originated from spice turmeric exerts inhibition of a transcription factor, NF-kb (nuclear factor – k β) with consequent modulation of the expression of COX-2, TNF- α and IL-6. Curcumin suppresses the LPS-induced expression of both TNF- α and IL-1 β in a dose dependent manner. Thus various in vitro studies and few in vivo studies have suggested that curcumin can inhibit P.gingivalis LPS-included TNF- α and IL-1 β expression and that it could be due to suppression of NF-k β pathway.⁷

Another study perspective dealing with turmeric is that xanthorrhizol isolated from java turmeric is capable of preventing planktonic growth of strep mutans thus resisting it's biofilm formation on tooth surface.⁸ This anti-plaque activity remarkably reduced progression of periodontitis.

Green tea

A multitude of components present in green tea are effective in improving the periodontal status of a person. In vitro studies have shown that green tea polyphenols inhibit the growth and cellular adherence of periodontal pathogens and their production of virulence factors. Green tea catechin has anti collagenase activity against gram negative anerobic rods. Local delivery of this catechin markedly decreased the pocket depth.9 Flavinoids obtained from herbal tea inhibits enzymes like cycloxygenase, lipoxygenase, phospholipase A2 and Protein kinase C. A recent study conducted to investigate the relationship between green tea intake and periodontal parameters among 940 Japanese men aged 49-59 years concluded that the intake of green tea was inversely correlated with the mean PD, mean clinical AL, and BOP.¹⁰ Recent findings of Okamoto et al. suggest that green tea catechins may have the potential to reduce periodontal breakdown resulting from the potent proteinase activity of Porphyromonas gingivalis. Green tea polyphenols also acts against the growth and cellular adherence of P.gingivalis. Studies have also shown that some virulence factors (toxic end metabolites, protein tyrosine phosphatase) associated with periodontal disease are neutralized by the epigallocatechin gallate(EGCg) present in green tea.¹¹

3. Honey

A natural product used throughout the ages, therapeutic features of honey which helps to promote oral wellness are substantiated by large volume of literatures. The anti-inflammatory activity combined with its antioxidant property is beneficial in preventing the erosion of periodontal tissue that occurs as collateral damage from the free radials released in the inflammatory response to infection .Honey can be obtained from different floral sources. Honey has an activating effect on leukocytes which could be beneficial to periodontitis caused due to immune cell hypo-function. It also stimulates rapid growth of granulation tissue and epithelial cells.¹²

Antibacterial action of honey is principally directed towards gram positive cocci. Honey contains a substantial level of antioxidants that has been demonstrated to have direct effect for the clearance of infection. Mode of administration include honey extract (camelyn), gelled honey, candy.¹³ Disadvantage of honey is that it would be cariogenic if it comes in contact with tooth for a prolonged period or if accompanied with poor oral hygeine measures in susceptible individuals.

4. Neem

Azadirachta indica leaf extract has been evaluated to have anti plaque activity. A 6 week clinical study conducted in India has confirmed that neem extract in the form of a dental gel has significantly reduced the plaque index and bacterial count. Also effective as a host modulatory agent, the anti-inflammatory activity of Azadirachta indica is by inhibition of inflammatory mediators like TNF- α , IL-1 and IL-6... Drawback to its use is that it has been proven to be harmful for pregnant ladies.¹⁴

5. Aloe vera

Medicinal species include A.ferox, A.perryl and A.spicata.

Stimulates epidermal growth and repair processes by stimulating fibroblasts and connective tissue formation. It increases tissue oxygenation by boosting the blood supply through angiogenesis. Topically applied Aloe Vera stimulates fibroblast activity and collagen proliferation and systemically activate macrophages.¹⁵

6. Garlic

Garlic (Allium sativum) has long been known to have antioxidant properties but there are few data on its effects against oral bacterial species particularly putative periodontal pathogens or their enzymes.Garlic extract was tested positive for its bactericidal ability against Porphyromonas gingivalis. It inhibited the trypsin like and total protease activity of P.gingivalis.¹⁶

7. Grapes

Each grapefruit contains about 90 – 100mg of vitamin C. According to researches at Germany's Friedrich Schiller university, 2 grape fruits per day helps promote dental health. Grape seed and it's extract has been found to be rich in Oligomeric Proantho cyanoclins. (OPC's). These posses a wide range of biologic properties against oxidative stress. Honde et al (2006) investigated the effect of these on the production of reactive oxygen metabolic by murine macrophages stimulated by lipopolysaccharide of various periodonto pathogens.¹⁷ Grape fruit also has lots of flavonoids to add to the perio-protective effects of vitamin. C.

8. Clove (Syzygium Aromaticum)

Clove oil and its antimicrobial activity has been the topic of study by several authors. Most of these researches have demonstrated a wide spectrum of activity even in the case of periodontal pathogens. These include A.actinomycetemcomitans, P.intermedia, P.gingivalis, F.nucleatum, S.aureus, P.aeruginosa, E.coil.¹⁸ The compounds in clove oil which possess the antimicrobial action are predominantly flavonoids and cinamic acids. One of the limitations to clove oil use is the variability in composition and action as a consequence of variation in the flora of the region where it is produced.¹⁹

Principal action of flavinoids is that it inhibits enzymes like Protein kinase c, phospholipase A2 which are involved in secretory process, inflammatory cell functioning and Tcell function.

9. Blood root

Included in the genus: Sanguinaria

Other nomenclatures are coon root, Indian paint, red root, tetterwort. Sanguinaria extract is composed of Sanguinarine and five other alkaloids. Can be used both in dentifrice and oral mouth rinse formulations. A 6 month randomized controlled trial designed according to ADA guideline concluded that there was 18 - 57% reduction in gingivitis in subjects who used sanguinarine mouth rinse when compared to control who were under conventional oral hygiene measures. Another randomized controlled double blind clinical trial done in periodontitis patients after scaling and root planing recorded improvement in gingival index, plaque index and pocket depth after a period of 2 - 6 weeks.²⁰

10. Eucalyptus

Eucalyptus extracts possess alkaloids, essential oils and terpenoids which attribute to its antibacterial activity against both periodontopathic and cariogenic bacteria.

Clinical effects with respect to periodontal health in humans is unproven. However, a double masked, randomized controlled trial conducted in healthy subjects with simple gingivitis indicated statistically significant reductive effect on plaque accumulation, gingival index, bleeding on probing and periodontal probing depth. Chewing gum with eucalyptus extract was used for the above study.²¹

11. Chamomile

Species used as phytomedicine for gingival inflammation is Matricaria chamomilla (German chamomile).

Extract of this herb has specific actions like antiinflammatory, bacteriostatic and wound healing promoter when used in combination with other herbal ingredients as dentifrice / mouth rinse. Chamomile extract is rich in flavonoids apigenin, chamazulene, a-bisabolol. Flavonoids interferes with the arachidonic acid pathway.²²

12. Cranberry

Cranberry is a plant native to North America but now popular world wide as its juice and confectionary form. Many health researchers have established the inhibitory effects of cranberry juice on the adherence of oral streptococci and biofilm formation.²³ The cell, surface hydrophobicity of some oral streptococci was reduced by the addition of sugarless cranberry juice to the diet.

13. Mangosteen

Topical fruit native to Southeast Asia. A study involving 60 subjects with mild to moderate gingivitis were randomly distributed into the mangosteen mouthwash group. The results indicated that the mangosteen group experienced improvement in the decrease of plaque formation and less papillary bleeding. Topical application of Garcinia mangosteen gel as an adjunct to periodontal treatment. Caused improvement of clinical parameters like probing depth, clinical attachment level, bleeding on probing and gingival index within the third month.²⁴ However, research is still on the run to find out the mechanism of its anti inflammatory action.

14. Myrrh

Reddish brown resinous material obtained from trees (comniphora myrrha) native to Jordan . Limited studies exists suggesting that myrrh has antibacterial and anti-inflammatory activities. At sub-toxic levels (0.001%) myrrh oil caused significant reductions of IL-1 β stimulated IL-6 and IL-8 production by fibroblasts.²⁵

15. Tea tree oil

It has historically been used as therapeutic option for many medical conditions. Study done among Australian dental professionals concluded that when used in water – pick irrigation device, tea tree oil with water was effective against gum disease. Compounds included in this extract include essential oils, hydrocarbons and terpenoids .Mechanism of its anti bacterial action is by the loss of bacterial cell membrane integrity, increased membrane permeability and inhibition of cellular respiration. Tea tree oil is effective against p.gingivalis, p.nucleatus and bacteroides sp. Promisable double blind studies have confirmed the therapeutic effect of a gel containing tea tree oil.²⁶

16. Triphala

Triphala is an ayurvedic medicine which is the combination of Emblica officinalis (amla), Terminalia chebula (harada) and Terminalia beler (bihara). The main action of triphala is the strong inhibitory activity on PMN-type MMPs (matrix metalloproteinases) involved in the extracellular matrix (ECM) degradation during periodontitis. A study was done to evaluate this inhibitory activity where MMP's were extracted from the gingival tissue samples of 10 patients with chronic periodontitis and treated with drug solutions of triphala, kamillosan, doxycyclin and another ayurverdic drug. Triphala showed maximum reduction (76.6%) of MMP-9 activity when compared to other drugs. Triphala has potent antioxidant and antimicrobial activity and inhibited the growth of S. mutans involved in plaque formation when it adsorbed to the tooth surface.²⁷

Other Herbal Supplementations

1. Prunella vulgaris (self heal) extract and a derivative from this plant – Rosmarinic acid was found to suppress lipopolysaccharide induced alteration in human gingival fibroblasts. It reduced the reactive oxygen species production, intracellular GSH depletion as well as lipid peroxidation in lipopolysaccharide treated cell. This suppression of LPS – induced biological changes in gingival fibroblasts is responsible for its anti inflammatory properties.²⁸

2. Leaf, stem and extracts from Echinacea purpurea was confirmed to have inhibitory effect on secretion of proinflammatory cytokines IL-6 and IL-8.²⁹ Echinacea extract is rich in alkyl amides.

3. Diet rich in CoQ10 (Coenzyme Q 10) like green vegetables, cereals, raw nuts (almonds) when routinely used was found to produce significant improvement in modified gingival index, bleeding on probing and peptidase activity derived from periodontopathic bacteria.³⁰

Conclusion

Phytomedicine or naturopathy is a promising preventive and treatment option for periodontitis. Numerous lines of evidence suggest the potential role of certain natural products as host modulatory agents in periodontitis. But these products cannot be adopted as the sole treatment option especially in well established or terminal stages of the disease. These products when used adjunctive to the standardized treatment options, will enhance the clinical therapeutic response. Dentists must also have a thorough knowledge about any possible adverse effects and precautions before implementing these in their practice.

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Influence of orthodontic labial movement of mandibular Incisors on the level of gingival margin- a retrospective case Study

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ABSTRACT

Aim: To evaluate the association between labial movement of lower incisors and the level of gingival margin

Material and methods: 30 subjects between the age group of 14-25 years with class-1 crowding and class-II div.1 cases indicated for non-extraction treatment with fixed functional appliance or class II mechanics. Pre and post-treatment intra-oral casts, photographs and cephalograms were used for the study.

Pre and post-treatment intra-oral casts and photographs were used to record the level of gingival margin from the CEJ. Pre and post-treatment cephalograms were used to determine the skeletal and dental relationship

Results: all the pre and post categories are statistically significant because the p value of all is less than 0.05

Introduction

Incisor inclination is closely related to both saggital and vertical jaw relationship and provides guidelines for orthodontic treatment^{1, 2}. Several researchers claim that the position of the incisors is the key to achieve good facial esthetics^{3, 4}. Hence they advocate labial movement or saggital expansion of mandibular incisors when they are behind the ideal position. But, when the incisors are proclined and the space is needed, the premolars have to be sacrificed and the incisors retracted to obtain treatment goals.

Unfortunately, correction of an overjet does not always lead to an improvement in facial esthetics. Transverse expansion or proclination of incisors are valid alternatives to extraction in cases of crowding. But, lack of stability and development of bony dehiscence causing gingival recession have been demonstrated as side effects subsequent to anterior displacement of lower incisors^{5, 6}.

Based on the above observations, the present study was undertaken:

- to investigate the association between orthodontic labial movement of the lower incisors in non-extraction class I and class II div 1 cases and prevalence of gingival recession

- to compare the reliability of gingival recession recordings using orthodontic casts and intra-oral slides

The null hypothesis was that the labial movement of lower incisors in non-extraction class I and class II div 1 cases can be considered as a risk for the development of gingival recession.

Materials and methods

The sample comprised of 30 pre and post treated orthodontic casts, intra-oral slides and cephalograms of non-extraction class-I and class-II div 1 subjects. The mean age group was 19 years, ranging from 13 -25 years, inclusive of both the sexes.

Class-II div 1 cases were selected with class-I cases non-extraction cases because, in these cases the incisors are further proclined to correct the overjet.

All the recordings on the casts (figs.1 and 2) and slides (figs.3-6) were made using a digital caliper with 1/100th mm scale.

The intra-oral slides were taken with a Nikon camera from a distance of 6 feet. Each intra-oral slide was measured at a distance of 2 meters the measurements were carried on to the nearest millimeter.

Gingival recession on the slides as well as the casts was measured at the mid-labial site of each of the four lower incisors, as the distance between the gingival margin and the CEJ.

When the CEJ was visible, the digital caliper (fig 9), set at 0 reading is placed on the CEJ, and then slowly slid to the marginal gingiva. The distance covered gives the amount of gingival recession.

Pre and post treatment cephalograms gives an idea of the skeletal and dental relationships before and after treatment (figs 7 and8)

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			Pair	ed Difference	25		t	df	Sig(p)
Data		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	2	,	uj	<u></u>
					Lower	Upper			
Pair 1	42 pre-photo -42 post-photo	3503	.5200	9.494E-02	5445	1562	-3.690	29	.001
Pair 2	41 pre-photo - 41 post-photo	6223	.6829	.1247	8773	3673	-4.991	29	.000
Pair 3	31 pre-photo - 31 post-photo	5570	.5680	.1037	7691	3449	-5.371	29	.000
Pair 4	32 pre-photo - 32 post-photo	4503	.7033	.1284	7130	1877	-3.507	29	.001
Pair 5	42 pre-cast - 42 post-cast	3077	.4875	8.900E-02	4897	1256	-3.457	29	.002
Pair 6	41 pre-cast - 41post-cast	5913	.6913	.1262	8495	3332	-4.685	29	.0 <mark>0</mark> 0.
Pair 7	31 pre-cast - 31 post-cast	5770	.5677	.1036	7890	3650	-5.567	29	.0 <u>0</u> 0.
Pair 8	32 pre-cast - 32 post-cast	4800	.5809	.1061	6969	2631	-4.526	29	.000
Pair 9	A-PoG pre - A-PoG post	-2.39	2.80	.51	-3.44	-1.35	-4.690	29	.000
Pair 10	LI-MP pre-LI- MP post	-6.37	5.23	.96	-8.33	-4.42	-6.672	29	.000
Pair 11	LI-NB pre - LI- NB post	-5.90	4.20	.77	-7.47	-4.33	-7.701	29	.000
Pair 12	LI-NB pre in mm - LI-NB post in mm	-2.6067	1.0622	.1939	-3.0033	-2.2100	-13.441	29	.000

Table-I: Comparison difference between the pre and post category of the data

Results

The subjects considered fo the study were all between the age group 14-25 years and the comparison of independent variables obtained from the casts, photographs and cephalograms confirmed the validity of the design of the study.

Since we were comparing the pre and post effect of the collected data, the test of significance was done using the paired 't' test. Significance was denoted by p value less than 0.05 (p<0.05). In this study, we see that all the pre and post categories are statistically significant because the p value of all are less than 0.05. Therefore, we can conclude that there is significant difference between the pre and post values. (Table-1)

The test of significance for the comparison between the pre photo – pre cast and post photo – post cast values was done using chi-square test. There was a statistically significant difference between the pre photo and pre cast values of tooth 42. All other comparisons were not statistically significant. Therefore, we can conclude that there is no significant difference between the pre photo – pre cast and post photo – post cast values. (Table-2)

Discussion

A retrospective analysis of class-I and class-II division

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1 non-extraction orthodontic cases were done using both pre and post-treatment casts, intra-oral photographs and cephalograms to evaluate the amount of gingival recession as a result of labial movement of lower incisors. This study is relevant as labial movement of incisors is the only alternative to extraction of teeth or surgical advancement of lower arch inorder to increase the arch length.

The drawbacks of increasing arch length by labial movement lower incisors have been referred (Walter 1953¹ Mills 1966², Glen et al 1987³, Ngan et al⁴), however the literature has rarely been evidence based.

The present study was designed as a retrospective case study comprising of the age group 14-25 years that were identified as class-I and class-Ii division1 cases with a treatment plan of non-extraction fixed or class-2 functional mechanics.

The number of cases investigated was determined on the basis of a pilot study wherein prevelance and mean of gingival recession in the adolescent population was determined. Hence, a sample size of 30 was chosen which was good enough to give significant statistical result even in the absence of clinically significant results.

Incisor proclination was assessed using pre and post cephalograms. Gingival recession was studied using both

Neetha J. Shetty,



Table II: Comparison between the pre photos – pre casts and post photos – post casts in relation to the collected data.

	Chi-Square Value (X ²)	df	Significance. (p)
42 pre photo *42 pre cast	26.097	12	.010
42 post photo *42 post cast	107.74	182	1.00
41 pre photo *41 pre cast	0.93	12	1.00
41 post photo *41 post cast	146.53	480	1.00
31 pre photo *31 pre cast	1.42	18	1.00
31 post photo *31 post cast	130.78	378	1.00
32 pre photo *32 pre cast	9.56	18	0.95
32 post photo *32 post cast	99.25	306	1.00

pre and post treated casts and intra-oral photographs that were standardized for differences in magnification. A possible bias of the photograph measurement due to differences in orientation caused by inclination was excluded as no significant difference was established between cast and slide measurement (Allais, 2000)⁵.

Here, the question was, to what extent the periodontium has altered due to proclination wherein it was considered as an alternative to extraction. The proclination

undertaken in these cases were expressed as an increase in arch length.

It is well known that gingival recession is an age related problem (baelum et al, 1997⁶). The influence of age in this study was eliminated by taking an younger age group (14-25years). The cases taken into consideration representad the typical malocclusion namely class-1 and class-2 division1 indicated for non-extraction orthodontic treatment. The effect of incisor proclination in class2 division1 has been studied longitudinally by arthun and krogstad, 1987⁷, who found that proclination generated modest recessions.

The present study demonstrated a significant increase in the prevalence of individuals exhibiting gingival recession of lower incisors, especially the central incisors where the recession was more pronounced.

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A comparative evaluation of serum and salivary sialic acid, phosphodiesterase and nitric oxide levels in healthy and chronic periodontitis subjects

* Amitha Ramesh, ** Vidya Jayasheela, *** Biju Thomas, **** Suchetha Kumari

Introduction

Periodontitis is a chronic inflammatory disease of periodontal tissue, characterized by persistent inflammation, connective tissue breakdown, and alveolar destruction. Traditional diagnostic measures, such as periodontal pocket depth, attachment level, plaque index, bleeding on probing and radiographic assessment of alveolar bone loss, are informative to evaluate the disease severity but provide few useful determinant of disease activity. New auxiliary diagnostic tools based on analysis of body fluids, such as saliva, gingival crevicular fluid etc are useful for diagnosis as well as monitoring disease progression.^{1,2}

Sialic acid is found on the carbohydrate branches of glycoproteins exist in conjugate form (glycolipids, glycoproteins, and proteoglycans) on external surface of cell membrane as a membrane bound receptor. It is involved in regulating balance between the external and internal surface of the membrane. Sialic acids are found widely distributed in animal tissues and to a lesser extent in other species ranging for plants and fungi to yeasts and bacteria, mostly in glycoproteins and gangliosides.³

Phosphodiesterase (PDE) is any enzyme that breaks a phosphodiester bond. The cyclic nucleotide phosphodiesterases comprise a group of enzymes that degrade the phosphodiester bond in the second messenger molecules cAMP and cGMP. They regulate the localization, duration, and amplitude of cyclic nucleotide signaling within subcellular domains. PDEs are therefore important regulators of signal transduction mediated by these second messenger molecules.⁴

Nitric oxide (NO) is produced by many cells in the organism with many important physiological functions. Endothelial cells and neural cells constitutively produce NO. Macrophages and other inflammatory cells can induce its synthesis and release. The most important inductors of NO synthesis are bacterial products. NO is synthesized from L-arginine by family of isoenzyme called NO-synthase. NO exist in three isoforms: Neuronal (nNO), endothelial NO (eNO) and inducible NO (iNO). eNO and nNO are released in small amounts following receptor stimulation, where as iNO is expressed in response to proinflammatory stimuli and produces large amounts of NO. iNO activity has been reported to be increased in inflamed periodontal tissues. It has been shown that iNO was strongly expressed by inflammatory cells, basal keratinocytes and fibroblast in

periodontal sites showing clinical attachment loss of greater than $6 \mbox{mm.}^7$

The aim of the present study was to compare the levels of sialic acid, phosphodiesterase, and nitric oxide in serum and saliva in healthy and chronic periodontitis patients.

Material and Methods

The study was conducted on 60 subjects, irrespective of gender, between the age group of 30-60 years who reported to the Department of Periodontics, A.B.Shetty memorial institute of dental sciences, Mangalore. Systemically healthy subjects, non-smokers, and those without history of any periodontal and antibiotic therapy within 6months prior to the study were selected. The subjects were divided in to two study groups: Control group, comprised of periodontally healthy subjects (n=30), and case group consisted of subjects with chronic periodontitis with \geq 4mm of attachment loss involving at least 6 teeth (n=30).

Collection of samples

Informed consent was taken from the subjects prior to the collection of samples.

Unstimulated whole saliva sample was collected by asking the patient to spit in to a glass vial.

About 2mL of venous blood sample was drawn from the subject centrifuged at 3000 rpm for about 10min to collect the serum, followed by biochemical estimation of sialic acid, phoshodiesterase, and Nitric oxide.

Estimation of sialic acid, phoshodiesterase, and nitric oxide

- Sialic acid was analyzed by Diphenylamine method.
- Phosphodiesterase activity was analyzed using
- atomic double beam atomic spectrophotometer.
 - Nitric oxide was analyzed by Griess method.

Estimation of sialic acid by diphenylamine method:

Principle:

Sialic acid (N-acetyl neuramic acid) is one of the carbohydrate components of serum glycoprotein. It is a unique compound since it originates from an aldol condensation of pyruvic acid and 2-acetalindes-2-deoxy D-Mannose (n-acetyl-D-neurasamium) the only occurrence of this alpha amine sugar in the human body. A protein

* Professor, ** Postgraduate, *** Professor and Head, Dept of Periodontics, A.B.Shetty Memorial institute of Dental Sciences, Mangalore. **** Dept of Biochemistry, K.S.Hegde Medical Academy, Mangalore. precipitate of serum containing sialic acid will react with diphenylamine producing a purple color which can be quantitatively estimated as a spectrophotometer of 530nm.

Estimation of phosphodiesterase by bis-pnpp method:

Principle:

Both para-nitrophenyl phosphate and para-nitro phenol are colorless at acidic PH. After 30 minutes incubation at 37oC sodium hydroxide was added, this would stop the reaction due to an increase in the PH of the reaction medium. Para-nitro phenol is yellow at alkaline PH and its concentration was measured as 405nm.

Estimation of nitric oxide by Griess method:

Principle:

This assay determines the nitric oxide concentration based on the enzymatic conversion of nitrate to nitrite by colorimetric detection of nitric as an azo byproduct of the Griess reaction. The Griess reaction is based on the two step diazotization reaction in which acetified nitric oxide produces a nitosating agent, which reacts with sulfanilic acid to produce diazonium ion. This ion is then coupled to N-(1naphthyl) ethylenediamine to form the chromophoric azo derivatives which absorbs light at 540 – 570nm.

Reagents used are Sulphanilamide solution. N-(1-naphthyl)ethylene diamine dihydrochloride solution.

Formula for measurement of nitrite level:

Nitrite concentration in samples was calculated by relating the net optical density of the sample to nitrite concentration in standard curve in the following way:

Nitrite

concentration = Absorbance (net O.D) x concentration of standard

Absorbance of standard

Statistical analysis

Obtained data were subjected to statistical analysis. Mean and standard deviation for each measured parameters were calculated. Unpaired student t-test was used to compare sialic acid, phosphodiesterase, and nitric oxide levels between control and periodontitis group.

p value < 0.05 considered statistically significant.

Results

Table compares the means and standard deviations of Sialic acid, Phosphodiesterase, and Nitric oxide levels in serum and saliva in control and periodontitis group.

Parameters		Control (n=30) Mean±SD	Periodontitis (n=30) Mean±SD	p value
Sialic acid	Serum Saliva	73.32 ± 10.69 67.89 ± 9.923	86.77 ± 23.28 40.42 ± 6.433	0.0413 * < 0.001 **
Phosho	Serum	148.3 ± 41.51	448.3 ± 202.7	< 0.001 **
diesterase	Saliva	144.3 ± 51.61	245 ± 140.2	0.0145 *
Nitric oxide	Serum	31.50 ± 19.15	88.83 ± 22.05	< 0.001 **
	Saliva	15.33 ± 3.939	33.83 ± 9.399	< 0.001 **

* Significant ** Highly significant

The serum sialic acid levels increased significantly in periodontitis group (86.77 ± 23.28) compared to control group (73.32 ± 10.69) with p value 0.0413.

The salivary sialic acid levels significantly reduced in periodontitits group (40.42 ± 6.433) compared to control group (67.89 ± 9.923) with p value < 0.001.

The serum phosphodiesterase levels increased significantly in periodontitis group 448.3 \pm 202.7) compared to control group (148.3 \pm 41.51) with p value < 0.001.

The salivary phosphodiesterase levels significantly increased in periodontitits group (245 \pm 140.2) compared to control group (144.3 \pm 51.61) with p value 0.0145.

The serum Nitric oxide levels increased significantly in periodontitis group (88.83 \pm 22.05) compared to control group (31.50 \pm 19.15) with p value < 0.001.

The salivary Nitric oxide levels significantly increased in periodontitits group (33.83 ± 9.399) compared to control group (15.33 ± 3.939) with p value < 0.001.

Chart 1

Comparison of mean serum sialic acid, phosphodiesterase, and nitric oxide levels between control and periodontitis group.



Chart 2

Comparison of mean salivary sialic acid, phosphodiesterase, and nitric oxide levels between control and periodontitis group.



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Discussion

Periodontitis is the most frequently occurring chronic inflammatory disease of the periodontal tissue. The toxins, enzymes, and metabolites of bacteria (predominantly gramnegative, anaerobic) present in the dental plaque play a key role in the initiation of the inflammatory process. The identification of susceptible individuals or sites at risk from disease, and diagnosis of active phases of periodontal disease represent a challenge for both clinicians and oral health researchers. The biochemical analysis of body fluids such as serum, saliva, and gingival crevicular fluid to identify the biochemical markers of periodontal disease is useful for the estimation of risk of disease onset and severity, monitoring the disease progression and evaluating the therapeutic efficacy.¹

The amount of sialic acid in serum and saliva can be a useful marker of the severity of periodontal disease. The studies have shown reduced salivary sialic acid levels in both gingivitis and periodontitis and the reduction in the sialic acid level was reported to be due to increased utilization of released oligosaccharide unit by microorganisms.⁹ Our study also showed significantly low salivary sialic acid levels in periodontitis group compared to healthy control. The researchers have also demonstrated elevated serum sialic acid levels in various inflammatory diseases. The present study showed elevated serum sialic acid levels in periodontitis group compared to healthy control.

Posphodiesterase (PDEs) activity has been found to be increased in various pathological and physiological conditions such as cellular differentiation, apoptosis, and tumor invasion. They degrade phoshodiester bond in the second messenger molecules cAMP and cGMP. They regulate the localization, duration, amplitude of cyclic nucleotide signaling within subcellular domains. PDE enzymes are often targets for pharmacological inhibition due to their unique tissue distribution, structural, and functional properties.⁴ Inhibitors of PDE can prolong or enhance the effects of physiological processes mediated by cAMP and cGMP by inhibition of their degradation by PDE. In periodontitis the cAMP and cGMP activity increased almost 4.5 times higher than normal subjects. The present study showed increased serum and salivary PDE levels in periodontitis compared to healthy control.

Several studies have discussed the role of NO in the progression of periodontal diseases in human beings. Chen et al. revealed an increase in NO expression in periodontitis whereas Lohianai et al. demonstrated that enhanced formation of NO played a significant role in the pathogenesis of periodontitis.¹⁰ The present study showed significantly increased serum and salivary NO levels in periodontitis group compared to healthy controls. In contrast Aurer et al reported significantly decreased salivary nitric oxide concentration in subjects with chronic periodontitis.8 This report was in disagreement with the vast majority of literature that describes increased levels of NO in periodontal disease. The studies have also indicated the use of nitric oxide synthase inhibitors in the treatment of periodontal disease. In this regard it has been reported that bone resorption in rats with induced periodontal disease could be prevented with isisorbid, an iNO inhibitor, as well as with mercaptoethylguanidine and enzyme arginase, which competes with substrate (L-arginase), thus reducing NO production.²

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Conclusion

Data from our study showed significant increase in the serum and salivary PDE and NO levels in periodontitis group compared to healthy controls. Salivary sialic acid levels significantly reduced in periodontitis group compared to healthy controls, whereas serum sialic acid levels were elevated in periodontitis compared to healthy controls. Analyzing these data we can infer that sialic acid, phosphodiesterase, and nitric oxide can be a used as biomarker of periodontal disease and monitoring disease progression.

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A comparative evaluation of serum myeloperoxidase and neutrophil counts in health and chronic periodontitis

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Introduction

The diagnosis of the active phases of periodontal disease and the identification of patients at risk for active disease represents a challenge for both clinical investigators and clinicians. However as of now, no clinical or laboratory test has been routinely employed in the screening and monitoring of patients with periodontal disease.

Periodontal disease has been associated with several systemic conditions. Some studies have linked periodontal disease with high leukocyte counts. This association of leukocyte counts with periodontal disease needs to be investigated1.

Myeloperoxidase is an enzyme which is present in the primary or azurophil granules of the neutrophils. This polymorphonuclear specific enzyme generates large amount of hypochlorite ions in the presence of hydrogen peroxide and chloride. Products of the myeloperoxidase - hydrogen peroxide - halide system have wide biological reactivities and can mediate a number of physiological effects including microbial killing, tumour cell lysis and inactivation of toxins and inflammatory regulators. Myeloperoxidase enzyme is released due to the interaction of polymorphonuclear neutrophils with micro-organisms during phagocytosis. Myeloperoxidase could participate in the initiation and progression of periodontal disease because MPO-derived oxidants contribute to tissue damage and initiation and propogation of acute and chronic vascular inflammatory disease.

Aims and objectives

-To estimate the level of myeloperoxidase in serum of systemically healthy subjects with and without chronic periodontitis

-To compare the levels of myeloperoxidase in serum of systemically healthy subjects with and without chronic periodontitis

- To estimate the neutrophil counts in serum of patients with and without chronic periodontitis

Materials and methods

The subjects for the study were selected from the out patients visiting the Department of Periodontics, A.B. Shetty Memorial Institute of Dental Sciences, Derlakatte, Mangalore. The sample size included forty patients from both sexes with an age range of 25-65years. They were divided into two groups:

GROUP ONE - Twenty patients showing loss of attachment \leq 4 mm (systemically healthy)

GROUP TWO- Twenty patients with chronic periodontitis showing loss of attachment \ge 4 mm.

A screening examination comprising of the medical history, dental history and clinical attachment levels was carried out for patient selection.

Inclusion Criteria

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- 1. Subjects in the age group of 25-65 years
- 2. Subjects with minimum complement of 20 teeth
- 3. Subjects with loss of attachment ≥4mm in Group

4. Subjects with a high standard of oral hygiene & history of regular oral prophylaxis in Group I

Exclusion Criteria

1. Subjects with any systemic disorders are excluded.

2. Patients who have received periodontal therapy/ antibiotics/anti-inflammatory drugs/steroids in the past 6 months are excluded

3. Pregnant women, lactating women and women in their menstrual phase are excluded

4. Individuals with habit such as smoking are excluded

Method of collection of serum

• Periodontal disease activity was recorded at BASELINE for all groups using mouth mirror and Williams graduated periodontal probe.

Informed consent was taken from the patient

• 2 cc venous blood was drawn & sent for myeloperoxidase and neutrophil count immediately

Myeloperoxidase analysis

Myeloperoxidase estimation was done using the 4aminoantipyrine method and then analysed spectrophotometrically.

Statistical analysis

Data was analysed using unpaired test by SPSS ver17 & MS Excel.

P<0.05 was considered to be significant

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COMPARISON OF SERUM MYELOPEROXIDASE IN HEALTH AND CHRONIC PERIODONTITIS

	Ν	Mean	Std.	Mean	р
			Deviation	diff	
Healthy	20	.04100	.008844	0.04225	<0.0005
Periodontitis	20	.08325	.006859		
Total	40				



Since p < 0.005, a statistically significant difference is seen in the serum myeloperoxidase levels in health and chronic Periodontitis

COMPARISON OF NEUTROPHIL COUNTS IN HEALTH AND CHRONIC PERIODONTITIS

	Ν	Mean	Std. Deviation	Mean diff	р
Healthy	20	3.135	1.0409	.4250	0.256
Periodontitis	20	3.560	1.2763		
Total	40				



p value is 0.256 indicating that there is no statistically significant difference in the neutrophil counts in health and chronic periodontitis.

Results

A total of forty subjects were selected for the study. The study group consisted of twenty patients who were healthy without chronic periodontitis and twenty patients with chronic periodontitis. Quantitative evaluation of myeloperoxidase levels and neutrophil counts in serum were done in both the groups; results were tabulated. Mean values and standard deviations were calculated.

The mean values of myeloperoxidase levels were correlated in both groups and the results were statistically analysed.

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Discussion

Periodontal disease is considered to be of episodic pattern with phases of activity and inactivity rather than a continuously progressive lesion. Disease activity involves a complex interaction between the periodontopathogens, defense mechanism of the host and their products. This interaction between the periopathogens and the host defense may be reflected by certain constituents which are identified as markers of disease progression.

Results clearly showed that myeloperoxidase level is an indicator of periodontal disease activity.

Group one consisted of twenty patients with CAL≤4mm. The mean myeloperoxidase level was found to be 0.04 These values were used as a control and compared with MPO levels in the other group

Group two consisted of twenty patients with CAL≥4mm and random blood. The mean MPO level was found to be 0.08. These values are comparatively higher than values obtained in group 1.

Neutrophil count values in both groups did not show any statistically significant difference.

On comparision between both groups, increase myeloperoxidase was found in group two. This may be attributed to the periodontal tissue destruction which is mediated by the interaction between host and bacterial agents including a number of enzymes.

Myeloperoxidase activity in peripheral blood neutrophils, gingival crevicular fluid and whole saliva of patients with periodontal disease was assessed. It was suggested that a relationship exists between myeloperoxidase activity and the pattern and severity of periodontal breakdown. It was also postulated that the increase in myeloperoxidase activity in periodontal disease can be attributed to the increased number of neutrophils, the degranulation of these cells and also their hyperactive state in the presence of chronic antigenic stimulus.

Conclusion

The following conclusions were arrived at;

1) Myeloperoxidase level is increased in the serum of patients with chronic periodontitis in comparison with systemically healthy individuals.

2) Myeloperoxidase may be considered for use as a potential biomarker of periodontal disease activity.

3) Neutrophil counts showed no difference in the healthy and chronic Periodontitis groups.

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Comparative evaluation of salivary vitamin C levels in smokers and Non-smokers with chronic periodontitis – A biochemical study

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Introduction:

Periodontitis is an infectious disease of the tooth supporting structures. The pathogenesis of periodontitis is due to the interaction between the dental plaque bacteria and the host response to it resulting in tissue destruction. Various risk factors local and systemic have been implicated in the initiation and progression of periodontitis. Nutrition is an important factor in maintaining periodontal health.¹

Vitamin C has long been a candidate for modulating periodontal diseases. Severe vitamin C deficiency is known to cause scorbutic gingivitis. Histologically severe vitamin C deficiency results in impaired collagen formation, poor wound healing and ruptured capillaries.³

Cigarette smoking is known to contain numerous oxidants causing tissue damage. Free oxygen species have been implicated in periodontal destruction. Vitamin C is known as a powerful scavenger of reactive oxygen species, which forms part of the body's antioxidant defense system. Low dietary vitamin C may compromise the body's ability to neutralize these tissue destructive oxidants. It is known that additional vitamin C is required during infectious diseases and tissue regeneration.³

The present study is designed to compare the salivary vitamin C levels in smokers and non-smokers with chronic periodontitis.

Objectives of the study:

 \cdot $\,$ To evaluate the salivary vitamin C levels in smokers with chronic periodontitis.

• To evaluate the salivary vitamin C levels in nonsmokers with chronic periodontitis.

• To compare and correlate the salivary vitamin C levels among smokers and non-smokers with chronic periodontitis.

SCREENING EXAMINATION:

- · Informed consent of the patient.
- Dental History.
- Medical History.

Periodontal status assessed by gingival index (Loe

& Silness), and clinical attachment level.

Materials and methods:

A total of 40 subjects reporting to the Department of Periodontics, A.B.Shetty memorial Institute of Dental Sciences with chronic periodontitis were selected for the study. The subjects were divided into 2 groups of 20 each (smokers and nonsmokers). A detailed case history with clinical attachment loss measurements was recorded. The estimation of vitamin C in saliva was done by DNPH Spectrophotometric analysis.

Inclusion criteria:

GROUP A:

- 1) 20 subjects with loss of attachment > 3 mm
- 2) Minimum complement of 20 teeth should be present

3) Smokers with chronic periodontitis

- GROUP B :
 - 1) 20 subjects with loss of attachment > 3 mm
 - 2) Minimum complement of 20 teeth should be present
 - 3) Non-smokers with chronic periodontitis.

Exclusion criteria:

• Subjects with the history of antimicrobial therapy in the past 6 months.

- · Subjects using vitamin supplements
- · Subjects on any medications
- · Pregnant and lactating women
- · Subjects with systemic diseases

Method of saliva collection

 \varnothing Patients were instructed not to consume any food or drinks at least one hour prior to the sample collection

Ø Samples were collected in the morning.

Ø 2ml of unstimulated whole saliva was collected, transferred into a sterile glass vial and sent for estimation immediately

To 0.5 ml of saliva 1 ml of 15% Tricholoroacetic acid was added in a centrifuge tube. Vertex mixed for 15 seconds and centrifuged at 1800g for 15 minutes. Then 500 µl of supernatant is removed to the other tube and 150µl DTC (di-nitro phenol hydrazine, Thiorea and cupric sulfate) was added. Samples are vertex mixed for 10 seconds closed with

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Statistical analysis:

The data collected was statistically analyzed by 'unpaired student t test'.

COMPARISON OF SALIVARY VITAMIN C LEVELS IN SMOKERS AND NON SMOKERS WITH CHRONIC PERIODONTITIS

Group	N	Mean	Std. Deviation	Mean diff	Р
Non Smokers	20	2.1905	.36546	.5335	<0.0005
Smokers	20	1.6570	.14819		



Since p < 0.0005, hence a statistically significant difference exists in the salivary vitamin C levels between the smokers group and non smokers group.

Discussion:

"Periodontal disease is an inflammatory disorder that increases tissue damage and loss. Since vitamin C is known as a powerful scavenger of reactive oxygen species, which form part of the body's antioxidant defense system, low levels of dietary vitamin C may compromise the body's ability to neutralize these tissue destructive oxidants," as explained by Genco.¹⁰

Our study concluded that low salivary Vitamin C levels was associated among smokers compared to that of non smokers with chronic periodontitis.

Cigarette smoking is a well established risk factor for periodontitis and second to bacterial plaque. Smoking is associated with a two-eight fold increased risk for periodontal attachment and or bone loss, depending on the disease severity and smoking dose.⁹ Smoking is the single major preventable risk factor for periodontal disease. The habit can cause bone loss and gum recession even in the absence of periodontal disease. A number of studies indicate that smoking and nicotine increase inflammation by reducing oxygen in gum tissue and triggering an over-production of immune factors called cytokines, which in excess are harmful to cells and tissue.

Furthermore, when nicotine combines with oral bacteria, such as P. gingivalis, the effect produces even greater levels of cytokines and eventually leads to periodontal connective tissue breakdown. Studies suggest that smokers

are 11 times more likely than non-smokers to harbour the bacteria that cause periodontal disease and four times more likely to have advanced periodontal disease.

(1)

It is widely recognized that blood vitamin C levels is lower in cigarette smokers than in non-smokers indicating an increased risk of metabolic turnover, and efficiency of absorption of vitamin C in smokers.⁷ A recent report suggested that smokers need an additional 35mg of Vitamin C daily because of an increase in the oxidative stress and metabolic turnover of vitamin C.³ As suggested by Sulochana et al smoking acutely increases urinary excretion of vitamin C suggesting an accelerated metabolism in smokers. In a study conducted by Gordon et al they reported that the risk ratio for Hypovitaminosis C was threefold greater in smokers when compared with non-smokers. In addition former smokers had higher vitamin C levels than current smokers indicating that the influence of smoking on vitamin C levels were reversible.⁷

Conclusion:

Our study concluded that decreased salivary Vitamin C levels were seen in chronic periodontitis patients who were smokers in comparison with the non-smokers, and our studies are consistent with the studies conducted by Gordon et al and Meiko et al. Further long term studies with larger sample size needs to be carried out in order to obtain a conclusive inference.

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[Outline] ... A study released today in the August issue of the Journal of Periodo... Researcher Robert Genco D.D.S. Ph.D. chair of the Oral Biology D... Periodontal disease is an inflammatory disorder that increases tiss... Researchers also found that tobacco users especially had higher lev...

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Subepithelial connective tissue graft in the management of attachment loss on a periodontally compromised tooth - a case report

* Biniraj K.R

ABSTRACT

Management of denuded root surface resulting from gingival recession especially in an esthetic zone had always been a challenging but equally satisfaction rewarding procedure in the field of periodontal plastic surgeries. But when periodontal pocket mask such receded root surfaces, the condition is often unappreciated until it is superimposed by conditions like periodontal abscess, pathologic migration or tooth mobility. This later stage of identification makes the management of the lesion complex or even impracticable. The present case report details about the successful management of one such complex case of root recession on a compromised lower incisor tooth with grade 11 mobility, distal tipping and absence of attached gingiva on its labial side.

The surgical management procedure was designed upon the basic concept of Subepithelial connective tissue graft technique described by Langer in 1985. The pre surgical preparation and the surgical technique where modified to suite the challenges of compromised condition of the tooth. The stepwise illustration of the complete procedure is presented in detail.

The follow up of the condition after sixth month indicated an exceptional clinical attachment gain of 6 mm with mobility being reduced considerably. A tremendous improvement in its periodontal support was noticed clinically as well as radiographically.

Case details

A 26-year-old lady presented with a complaint of progressive widening of space between lower anterior teeth. She had a pathologically migrated 41 tooth with a history of repeated periodic swelling and pain on its labial gingiva that regresses on antibiotic medication. Clinically the tooth had Grade 11 mobility, an attachment loss of 8 mm throughout facial surfaces and a pocket depth of 5 mm with an absolute lack of attached gingiva on its labial side. The radiographic view showed an angular bone loss appearing circumferentially and periodontal ligament space widened throughout its root length. These features made the tooth relatively non-indicative for retaining except for the stable neighboring teeth conditions and the favorable age factor of the patient.

A treatment plan comprising of endodontic treatment,

splinting and later a combined pocket elimination flap surgery with root coverage plastic surgical procedure was explained to the patient. Despite its failure possibility and complexity, the patient accepted this treatment plan.

Management:

The aim of its management plan was to restore the periodontal support of 41

- The objectives were to
- 1. To arrest the ongoing Periodontitis
- 2. Restore the attachment loss
- Pre surgical preparation:

The pre surgical preparation considered the ample loss of periodontal support, the past history of recurring periodontal abscess and the future requirement of prosthesis to meet the esthetic need of that area. The 41 was



The Pre-operative Clinical and Radiographical view of the area:

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Subepithelial connective tissue graft in the management of attachment loss on a periodontally compromised tooth

endodontically treated and splinted to nearby 42 with composite resin for temporary stabilization, thorough supra gingival and possible sub gingival scaling was done and the area was allowed to heal for 2 weeks.

Surgical treatment:

Considering the area of involvement, the presence of localized deep periodontal pocket with sub gingival calculus and lack of attached gingiva, a surgical technique combining the incisions and procedures of modified Widman flap surgery and sub epithelial connective tissue autograft were adopted for the management of this defect.

STEP WISE SURGICAL ILLUSTRATION:

Recipient site Preparations: (modified Widman flap surgical technique and root debridement)



Full thickness palatal graft was procured; connective tissue separated and trimmed to fit the defect.



The graft stabilized in the recipient area with a separate suture and the flap sutured over it.



3 days post operative view of ongoing healing process of graft tissue & 10 days post operative view at the time of suture removal exhibiting fast union of free graft to the flap tissue



THE PRE & POST SURGICAL COMPARISON OF THE AREA AFTER 6 MONTHS

Pre operative views:



Post operative views:



The comparative records clearly indicate 6 mm clinical attachment gain and radiographically, the area shows a tremendous improvement in its periodontal support. The tooth is now ready for prosthetic rehabilitation.

Summary & Conclusion:

Periodontal plastic surgeries to create a zone of attached gingiva in cases of complete attachment loss due to periodontitis is indeed a challenging procedure, especially when the concerned tooth exhibit grade 11 mobility, deep pocket and pathologic migration with ample bone loss. A judicious pre surgical preparation of the area, followed by utilization of a predictable surgical technique for the restoration of feeble periodontal support is proven to have overcome such challenging and compromised situations.

An adequate attached gingiva around a tooth forms the bedrock for its underlying supporting periodontal structures 1, 2. The lack of attached gingiva here was managed by the technique of subepithelial connective tissue graft surgical procedure described by Langer and Langer in 19853, 5 and also Levine RA4 and Raetzke6. Achievement of 6 mm of clinical attachment gain is indeed a very encouraging result.

However the patient side compliance in respect to future maintenance of the area is obligatory to have a longterm predictability of such procedures2. The present case report throws light upon the need of rationale thinking before the concluding decision of extracting similar teeth or settling with yet another compromised result of conventional pocket elimination periodontal surgeries.

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