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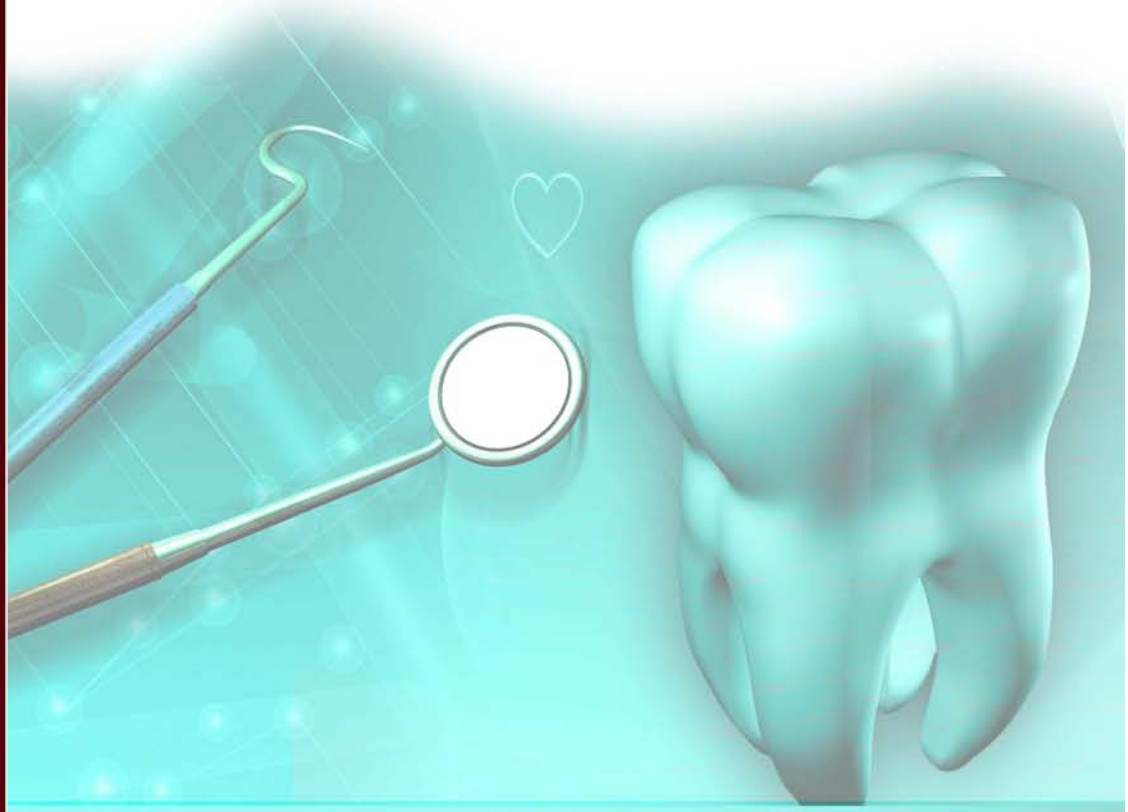

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Journal of Interdisciplinary Dental Sciences

Contents

Executive Editorial

To carry a work with responsibility is a big responsibility in itself. Yes, it is indeed a matter of immense satisfaction to bring out this issue of the journal which got delayed a bit because of some unavoidable circumstances, the main being to bringforth only quality manuscripts which stand out in their approach towards the satisfaction of intellectual hunger. I feel blessed to have such an enriching experience at such a young age of coming across papers of varied interests not only pertaining to my specialty but others as well where I am coming across lots of information including the recent advances in them and the innovations coming in their approach towards patient management.

With this, I expect the readers will be satisfied and the manuscripts selected will be appreciated by them. I also want all the readers of the journal to come up with criticism, not to add, a healthy criticism if they think the authors can be improved in their approach towards their subject with the valuable experiences of the readers as ultimately all of us cherish a goal of reaching perfection.

The journal will shortly start publishing such reviews in the form of letters to Editor.

I wish the journal goes high in its reach to the intellectual people simultaneously expressing my desire for their support for the journal. Not to mention, the journal actually is in its toddler stage and mistakes do creep in despite stringent precautions. So, your support is highly appreciated. I also want to invite you all for your suggestions in improving the journal so that our dream of getting unmatched is met with as early as possible.

With best regards,

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Efficacy of Peripheral Alcohol Block inTrigeminal Neuralgia: A Pilot Study

Dr. Dwarkadas Adwani[a], Dr. Milind Naphade[b], Dr. Nitin Adwani[c], Dr. Bhushan Bhagat[d], Dr. Abdul Qahar Qureshi[d],

Abstract: The neurosurgical management of trigeminal neuralgia must incorporate a strong working knowledge of the disease, its diagnosis, course, effective use of medications and all available surgical procedures.

Aim and objective of study: To evaluate the effectiveness of peripheral nerve block with alcohol injection for the management of trigeminal neuralgia.

Methods and materials: The study included twenty patients clinically diagnosed with trigeminal neuralgia who were included in the study. All the patients were treated with peripheral alcohol block (2% lidocaine with 1:2, 00,000 adrenaline and 0.5 ml of absolute alcohol) targeting the inferior alveolar nerve. A pre-operative Dexamethasone Sodium 8 mg was administered intravenously to all the patients to overcome any undue inflammatory response.

Results: No patients reported with post-injection swelling, and pain. No patients reported with postoperative numbness, burning sensation at the site of injection and post operative trismus. No other significant side effects were noted.

Conclusion: In this study, longer duration of pain relief was obtained from the neuralgias involving mandibular nerve providing a better patient comfort from this disease of excrutiating pain. Although long term follow up is necessary.

Key words: Peripheral nerve block, trigeminal neuralgia

Introduction:

Trigeminal neuralgia (TN) is a well recognized disorder characterized by lancinating attacks of severe facial pain (1).The diagnosis of TN is based primarily on a history, characteristic of pain and trigger zone that are consistent with specific, widely accepted research and clinical criteria for the diagnosis (2).The pain in TN typically consists of lancinating paroxysms. Most commonly V2 (maxillary) and V3 (mandibular) branch of trigeminal nerve is involved. Right side is more often involved than the left (1). Analgesics such as aspirin and ibuprofen are generally not effective against trigeminal neuralgia (3). Most clinicians still prefer medicine therapy as the first line of management, Carbamazepine being the drug of choice. Dilantin sodium and Baclofen alone or in combination with carbamazepine are also used. These medications were found to be initially effective for pain control in 90% of patients (3).One must keep in the mind that these drugs can cause side effects. This necessitates a regular patient monitoring and blood tests to ensure that the drug levels remain safe to minimize side effects (3,4). Surgical treatment modalities are usually sought either because of failure of medicinal treatment or if the patient experiences intolerable side effects of long-term medication (4). Different operative procedures for treating TN used are percutaneous ablative procedures, intracranial rhizotomy, peripheral rhizotomy, cryotherapy, posterior fossa decompression, electrofrequency thermocoagulation and peripheral neurectomy of branch of trigeminal nerve (5,6).

Peripheral alcohol injection is minimally invasive treatment option and can play significant role in the management of trigeminal neuralgia (7). They are particularly useful in those refractory to medical management and in those who are unable or unwilling to undergo neurosurgical treatment (4,7).

The purpose of this study was to evaluate the outcomes of peripheral alcohol injection block for the management of trigeminal neuralgia.

Materials & methods:

The study included twenty patients who were clinically diagnosed with TN of Mandibular nerve were included in the study irrespective of age and sex.

Patients allergic to Lignocaine and medically compromised patients were excluded from the study to avoid any untoward side effects. The diagnosis was based on a detailed case history, clinical examination, diagnostic block and control of pain by carbamazepine. Orthopantomograph (OPG) was performed for every patient to exclude local pathology. Third branch of trigeminal nerve involved was identified according to the site of pain and confirmed by giving diagnostic block and local anesthetic injection.

Intravenous Inj. Dexamethasone Sodium 8mg was administered preoperatively to avoid any unwanted inflammatory responses to alcohol. Standard intra-oral injection technique was used for the inferior alveolar nerve block following administrationof 1 ml of local anesthesia (2% lidocaine with 1:2,00,000 adrenaline) and 0.5 ml of absolute alcohol.

The relief of pain was graded on a 4-point scale (4).

0 :- No pain

1 :- Occasion pain; no medication required

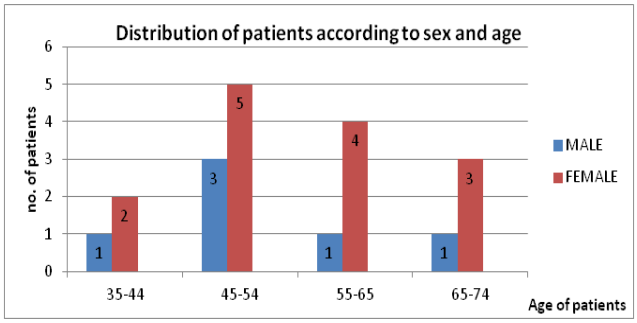
2 :- Mild pain; controlled with minimal dose of medication (<=300mg Carbamazepine/day)

3 :- Moderate to severe pain; increase dose of medication required (>300mg Carbamazepine/day)

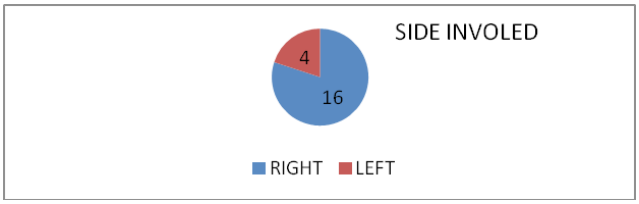
Patients were reviewed periodically after one day, one week, one month, three months, and six months. Pain relief was evaluated after 1 month post treatment to determine the efficacy of alcohol injection in TN patients. Other parameters like postoperative trismus, inflammatory reaction and alteration in pain were also considered.

Results:

All the 20 patients with trigeminal neuralgia of (V3) third division of trigeminal nerve were taken for this study. There were 14 females and 6 male patients. The right side of the face was involved in 16 cases and the left side in rest of the 4 patients. No case presented with bilateral involvement. Mandibular (V3) division was involved in all cases.

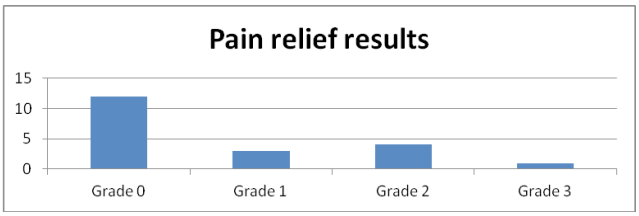


Graph1



Graph2

Total relief from pain was recorded in 12 of the patients who were graded on 0 scale. 4 patients presented with Grade 2 pain relief and 3 patients with grade 1 pain relief. One patient reported back with Grade 3 pain even after alcohol injection which required increased dosage of Cabamazapine.



Graph3

No patients reported with post-injection swelling, postoperative numbness at the site of injection and postoperative trismus. Although 5 of the patients presented burning sensation at the injection site following solution deposition which required an addition dose of 1ml Lignocaine 2% at the same site which resolved the side effect in all the patients. No other significant side effects were noted.

Discussion:

Trigeminal neuralgia is inimitable among chronic pain syndromes for its remarkable and

intense symptoms. The definite cause of trigeminal neuralgia is still not resolute therefore there is no treatment which will entirely alleviate symptoms in a patient. The first line of treatment is medicinal such as carbamazepine or gabapentin where is used to reduce the intensity of pain.

Many patients however will strongly consider the option of surgery rather than embark on lifelong polypharmacotherapy. It must be appreciated that over 50% of trigeminal neuralgia sufferers will eventually require a surgical procedure, when their medical treatment fails to provide adequate pain relief or causes intolerable dose-related drug side effects. These patients may be managed with a variety of invasive procedures.

Micro vascular decompression surgery offers the advantages of attacking the presumed etiology, preserving the trigeminal nerve function. Success and complication rates are closely related to surgical experience and expertise may show complications like hearing loss, permanent trigeminal numbness, and anesthesia dolorosa. Rhizotomy patients also have major morbidities. Other complications include needle-related complications such as intracranial hemorrhage, vascular injury and myocardial infarction.

It is our experience that many patients were unwilling to undergo an intracranial procedure, because of the apparent risks. So peripheral surgical procedures, which offer short to medium-term relief of symptoms are preferred. Neurectomy indicates the sectioning and avulsion of the terminal branch of the trigeminal nerve. It is suggested that its canal is subsequently obliterated to prevent the regrowth of terminal fibers. Complete anesthesia of the nerve distribution is the inevitable sequelae. Recurrence of the pain is to be expected and retreatment is technically more challenging. Because of the removal of the terminal nerve, there is no further role for peripheral techniques in these patients, and this is one reason its use has been largely abandoned.

Peripheral alcohol injections have been widely used both at the level of the gasserian ganglion and more peripherally. No matter which techniques are used, injections must be placed accurately, because alcohol is highly toxic. Care must be taken to not inject excess alcohol subcutaneously, and one must use an aspiration technique to avoid injecting into the accompanying vessels. The technique is generally reliable, reporting high rates of pain relief. In addition we used intravenous steriod to reduce possible inflammatory action of alcohol.

Conclusion:

In this study, longer duration of pain relief was obtained in mandibular nerve probably because this nerve can be targeted precisely during injections. Further follow up is mandatory however to arrive at a definitive conclusion.

References:

1. Scrivani S, Mathews E.S and Maciewicz RJ. Trigeminal neuralgia. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005;100:527-38.

2. Bennetto L, Patel N, Fuller G.Trigeminal neuralgia. Neurology : December 2008, Midlife and Beyond,Geriatric Medicine

3. Chole R, Patil R, Shirish S. Degwekar S.S and Bhowate R.R. Drug Treatment of Trigeminal Neuralgia: A Systematic Review of the Literature. J Oral Maxillofac Surg,2007; 65:40-45.

4. Sohail A, Saeed M, Samir R, Qazi S. Efficacy of Peripheral Glycerol Injection inthe Management of Trigeminal Neuralgia. Pakistan Oral & Dent. Jr. 26 (1) June 2006.

5. Turgn M, Benli K , Ozgen T, Salam S, Bertan V , Erbengi A. Twenty-five years experience in the treatment of trigeminal neuralgia.Comparison of three different operative procedures in forty-nine patients; Journal of Cranio-Maxillofacial Surgery. 1996; 24: 40-45.

6. Toda K, Hiroshima. Operative treatment of trigeminal neuralgia: review of current techniques. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008;106:788-805.

7. McLeod N, Patton D.W. Peripheral alcohol injections in the management of trigeminal neuralgia. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2007;104-12.

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Oral Health & Ayurveda

Dr. Ashwini A. Patil (Thakare)[a], Dr. Bharat Deosarkar[b], Dr. Soniya Niras[c], Dr. Vidhya Chaudhari[d]

Abstract:

Oral diseases continue to be a major health problem world-wide. Oral health is integral to general well-being and relates to the quality-of-life that extends beyond the functions of the craniofacial complex. The standard Western medicine has had only limited success in the prevention of periodontal disease and in the treatment of a variety of oral diseases. Hence, the search for alternative products continues and natural phytochemicals isolated from plants used in traditional medicine are considered to be good alternatives to synthetic chemicals. The botanicals in the Ayurvedic material medica (Dravyaguna) have been proven to be safe and effective, through several hundred to several thousand years of use. The exploration of botanicals used in traditional medicine may lead to the development of novel preventive or therapeutic strategies for oral health. The present scientific evidence based review is focused on the possible role of Ayurveda in the management of various orofacial disorders.

Keywords: Oral health, ayurveda.

Introduction:

Oral diseases continue to be a major health problem world-wide.[1] Dental caries and periodontal diseases are amongst the most important global oral health problems, although other conditions like oral and pharyngeal cancers and oral tissue lesions are also of significant concern.[2] The link between oral diseases and the activities of microbial species that form part of the micro biota of the oral cavity is well-established.[3] The global need for alternative prevention and treatment options and products for oral diseases that are safe, effective and economical comes from the rise in disease incidence (particularly in developing countries), increased resistance by pathogenic bacteria to currently used antibiotics and chemotherapeutics, opportunistic infections in immunocompromised individuals and financial considerations in developing countries.[4,5] Despite several chemical agents being commercially available, these can alter oral micro biota and have undesirable side-effects such as vomiting, diarrhoea and tooth staining.[6,7] Furthermore, the standard Western medicine has had only limited success in the prevention of periodontal disease and in the treatment of a variety of oral diseases. Hence, the search for alternative products continues and natural phytochemicals isolated from plants used in traditional medicine are considered as good alternatives to synthetic chemicals.[8]

Ayurveda is the ancient Indian system of health-care and longevity. It involves a holistic view of man, his health and illness. Ayurvedic treatment is aimed at patient as an organic whole and treatment consists of salubrious use of drugs, diets and certain practices.[9] There are approximately 1250 Indian medicinal plants[11] that are used in formulating beneficial measures according to Ayurvedic or other ethnicity. The botanicals in the Ayurvedic material medica have been proven to be safe and effective, through several hundreds to several thousands years of use.[12] The exploration of botanicals used in traditional medicine, may lead to the development of novel preventive or therapeutic strategies for oral health.[13] As most of the oral diseases are due to bacterial infections and it has been well-documented that medicinal plants confer considerable anti-bacterial activity against various microorganisms including bacteria's responsible for dental caries.[14]

Considering the importance of various traditional or complementary alternative medical CAM systems, the present scientific evidence based review of literature is focused on the possible role of Ayurveda in the management of various orofacial disorders.

Ayurveda and the concept of health:

Sushruta Samhita, the surgical compendium of Ayurveda, defines health as "the equilibrium of the three biological humors (*doshas*), the seven body tissues (*dhatus*), proper digestion and a state of pleasure or happiness of the soul, senses and the mind."[16]

A balance among the three *doshas* is necessary for health. Together, the three *doshas* govern all metabolic activities. When their actions in our mind-body constitution are balanced, we experience psychological and physical wellness. When they go slightly out of balance, we may feel uneasy. When they are more obviously unbalanced, symptoms of sickness can be observed and experienced.[17,18]

Ayurveda and orofacial diseases:

According to the *Shalakyatantra* (one of the branches of Ayurveda), 65 varieties of oral diseases can arise in seven anatomic locations-8 on the lips, 15 on the alveolar margin, 8 in connection with the teeth, 5 on the tongue, 9 on the palate, 17 in the oropharynx and 3 in a generalized form.[19]

For the treatment of these diseases Ayurveda advocates procedures such as oral cleansing, extractions, excisions, flap surgeries etc. Along with the treatment of orofacial diseases, Ayurveda recommends some daily use therapeutic procedures for the prevention of and maintenance of oral health. These include: *Dant Dhavani* (Brushing), *Jivha Lekhana* (Tongue scrapping) and *Gandoosha* (gargling) or oil pulling and tissue regeneration therapies. Some of the scientifically proven beneficial effects of these procedures are described below:

**Dant Dhavani* (brushing): *Avurveda* recommends chewing sticks in the morning as well as after every meal to prevent diseases. Ayurveda insists on the use of herbal brushes, approximately nine inches long and the thickness of one's little finger. These herb sticks should be either "*kashaya*" (astringent), "*katu*" (acrid) or "*tikta*" (bitter) in taste. The method of use is to crush one end, chew it and eat it slowly.[20] The *neem* (*margosa* or *Azadirachta indica*) is a famous herbal chewing stick. Fresh stems of *liquorice* (*Glycyrrhiza glabra*), *black catechu* or the *cutch tree* (*Acacia Catechu* Linn.),[21] *Arjuna* tree (*Termmalia arjuna*), *fever nut* (*Caesalipinia bouduc*) and *milkweed plant* (*Calotropis procera*) [22] can also be used for brushing. Chewing on these stems is believed to cause attrition and levelling of biting surfaces, facilitate salivary secretion and possibly, help in plaque control while some stems have an anti-bacterial action.[22] Present-day research has shown that all the chewing sticks described in ancient *Avurveda* texts (Circa 200 BC) have medicinal and anti-cariogenic properties.[23]

**Jivha Lekhana* (tongue scrapping): It is ideal to use gold, silver, copper, stainless steel for the scrapping of the tongue. Tongue scrapping stimulates the reflex points of the tongue, removes bad odor (halitosis), improves the sense of taste, stimulates the secretion of digestive enzymes and removes millions of bacterial growths (approximately 500 varieties) Clinical evidence also shows that use of tongue scrapers on a regular basis has a significant role in eliminating anaerobic bacteria and decreases bad odor.[24]

**Gandusha* (gargling) or oil pulling: Oil pulling is an ancient Ayurveda procedure that involves swishing oil in the mouth for oral and systemic health benefits. It is mentioned in the *Avurvedic* text *Charaka Samhita* where it is called *Kavala* or *Gandusha* and is claimed to cure about 30 systemic diseases ranging from headache, migraine to diabetes and asthma. Oil pulling has been used extensively as a traditional Indian folk remedy for many years to prevent decay, oral malodor, bleeding gums, dryness of throat, cracked lips and for strengthening teeth, gums and the jaw.[25,26] Oil pulling therapy can be done using oils like sunflower oil or *sesame* oil.[27] Oil pulling therapy is very effective against plaque induced gingivitis both in the clinical and microbiological assessment.[28,29]

*Tissue regeneration therapies: In *Avurveda*, the well-known herb, *Amla* (*Phyllanthus emblica*) is considered a general rebuilder of oral health. *Amla* works well as a mouth rinse as a

decoction. One to two grams per day can be taken orally in capsules for the long-term benefit to the teeth and gums. *Amla* supports the healing and development of connective tissue when taken internally.[30] Regular use of *Bilberry* and *hawthorn berry* fruits stabilize collagen and strengthens the gum tissue.[31] *Liquorice* root promotes anti-cavity action, reduces plaque and has an anti-bacterial effect.[30] Herbs such as *yellow dock root*, *alfalfa leaf*, *cinnamon bark* and *turmeric root* are taken internally to strengthen *Astidhatu*, for example, the skeleton and the joints, have proven to be good for long term health of teeth.[31]

Ayurvedic herbs with various oral health related properties:

Ayurvedic medications have stood the test of time and since time immemorial been used for various ailments. Recently, there is renewed interest in use of various Ayurvedic drugs for oral and dental health. Various plants and natural products have been used for their pharmacological applications viz. antiulcer, wound healing, anti-inflammatory, antimicrobial and antioxidant properties etc.[31,32,33] In this section, we have tried to review the recent studies undertaken to use of natural products for oral diseases and also have looked into the multitude prospects and perspectives of Ayurveda in the management of orofacial diseases.

Conclusion:

Oral diseases are one of the most important problems in public health and are on the rise in developing countries. Most of the oral diseases are caused due to lack of oral hygiene and bacterial infections. The procedure and the drugs useful for oral health are very well described in Ayurvedic literature. The anti-bacterial activity of medicinal plants are due to the presence of potential bioactive compounds, which help to reduce bacterial load in the oral cavity and thus prevent the formation of plaque, dental caries and ulcers. Use of indigenous plants in oral health and hygiene has a long history in different parts of the world. Therefore, this knowledge is likely to vanish soon as many of these ethno-phytotherapeutic remedies are followed only by a few in rural areas. New generation is ignorant of this traditional knowledge. Because of younger generation's lack of knowledge on the identification, collection, preservation and processing of the plant species for medicinal use it is therefore very crucial to conserve these ethno-cultural practices before they are lost definitively. The traditional knowledge of Ayurveda should be integrated with modern dentistry. For this, the active principles of plants should be incorporated into modern oral health-care practices and dentists should be encouraged to use natural remedies in various oral health treatments. As well as we can take the help of some Ayurvedic procedures such as Kawal Gandush. Combinely use of Ayurvedic drugs will make dentistry much safer, affordable and more accessible for the lower socio-economic groups in society.

References:

1. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ. 2005;83:661–9. [PubMed]

2. Petersen PE. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century: The approach of the WHO Global Oral Health Programme. Community Dent Oral Epidemiol. 2003;31(Suppl 1):3–23. [PubMed]

3. Jenkinson HF, Lamont RJ. Oral microbial communities in sickness and in health. Trends Microbiol.2005;13:589–95. [PubMed]

4. Tichy J, Novak J. Extraction, assay, and analysis of antimicrobials from plants with activity against dental pathogens (*Streptococcus* sp.) J Altern Complement Med. 1998;4:39–45. [PubMed]

5. Badria FA, Zidan OA. Natural products for dental caries prevention. J Med Food. 2004;7:381–4. [PubMed]

6. Park KM, You JS, Lee HY, Baek NI, Hwang JK. Kuwanon G: An antibacterial agent from the root bark of Morus alba against oral pathogens. J Ethnopharmacol. 2003;84:181–5. [PubMed]

7. Chung JY, Choo JH, Lee MH, Hwang JK. Anticariogenic activity of macelignan isolated from

Myristica fragrans (nutmeg) against Streptococcus mutans. Phytomedicine. 2006;13:261–6. [PubMed]

8. Prabu GR, Gnanamani A, Sadulla S. Guaijaverin: A plant flavonoid as potential antiplaque agent against Streptococcus mutans. J Appl Microbiol. 2006;101:487–95. [PubMed]

9. Sharma S. Ayurveda and health. In: Sharma PS, editor. Realms of Ayurveda. 1st ed. New Delhi: Arnold-Heineman Publishers; 1979. pp. 117–34.

10. Chatterjee A, Pakrashi S. History of Indian medicine. In: Chatterjee A, editor. The Treatise on Indian Medicinal Plants. 1st ed. Vol. 1. New Delhi: National Inst. Science Communication and Information Resources; 1991. pp. 221–4.

11. Kosta S, Tiwari A. A fusion of ancient medicinal plants with modern conventional therapies on its multifaceted anti diabetic properties. Pharmacol. 2009;1:64–77.

12. Borchers AT. Traditional Asian medicine and oral health. J Tradit Med. 2004;21:17–26.

13. Kelmanson JE, Jäger AK, van Staden J. *Zulu* medicinal plants with antibacterial activity. J Ethnopharmacol. 2000;69:241–6. [PubMed]

14. Goldstein BH. Unconventional dentistry: Part I. Introduction. J Can Dent Assoc. 2000;66:323–6.[PubMed]

15. Samhita S. 1st ed. Ch 21, Stanza 9. New Delhi, India: Motilal Banarasidas Publishers; 1983. Sutrasthanam; pp. 335–6.

16. Sharma PV. In: Charaka Samhita: Sutrasthanam. 23rd ed. Ch. 20, Stanzas 11-13. Sharma P, editor. Varanasi, India: Chaukambha Orientalia; 1981. pp. 112–4.

17. Sharma PV, Sharma P. Charaka Samhita: Vimanasthanam. 23rd ed. Ch 5. Varanasi, India: Chaukambha Orientalia; 1981. pp. 226–40.

18. Chakravorty RC. Head and neck diseases in an ancient Indian surgical text (The *Sushruta-samhita*)Med Hist. 1971;15:393–6. [PMC free article] [PubMed]

19. Telles S, Naveen KV, Balkrishna A. Use of Ayurveda in promoting dental health and preventing dental caries. Indian J Dent Res. 2009;20:246. [PubMed]

20. Athavale VB. Dant rogas. In: Athavale VB, editor. Dentistry in Ayurveda. 1st ed. New Delhi: Chaukhamba Sanskrit Pratishthan; 1999. pp. 7–11.

21.Naik GH, Priyadarsini KI, Satav JG, Banavalikar MM, Sohoni DP, Biyani MK, et al. Comparative antioxidant activity of individual herbal components used in Ayurvedic medicine. Phytochemistry.2003;63:97–104. [PubMed]

22. Venugopal T, Kulkarni VS, Nerurker RA, Damle SG, Patnekar PN. Epidemiological study of dental caries. Indian J Pediatr. 1998;65:883–9. [PubMed]

23. Kadam A, Prasad BS, Bagadia D, Hiremath VR. Effect of Ayurvedic herbs on control of plaque and gingivitis: A randomized controlled trial. Ayu. 2011;32:532–5. [PubMed]

24. Bethesda M. A closer look at Ayurvedic medicine. Focus on complementary and alternative medicine. National Center for Complementary and Alternative Medicine (NCCAM). US National Institutes of Health (NIH) 2006;12:123–39.

25. Hebbar A, Keuskar V, Shetti A. Oil pulling: Unraveling the path to mystic cure. J Int Oral Health.2010;2:11–4.

26. Asokan S. Oil pulling therapy. Indian J Dent Res. 2008;19:169. [PubMed]

27. Amith HV, Ankola AV, Nagesh L. Effect of oil pulling on plaque and gingivitis. J Oral Health Community Dent. 2007;1:12–8.

28. Asokan S, Emmadi P, Chamundeswari R. Effect of oil pulling on plaque induced gingivitis: A randomized, controlled, triple-blind study. Indian J Dent Res. 2009;20:47–51. [PubMed]

29. Singh A, Purohit B. Tooth brushing, oil pulling and tissue regeneration: A review of holistic approaches to oral health. J Ayurveda Integr Med. 2011;2:64–8. [PubMed]

30. Amruthesh S. Dentistry and Ayurveda-V: An evidence based approach. Indian J Dent Res. 2011;2:3–9.

31. Cowan MM. Plant products as antimicrobial agents. Clin Microbiol Rev. 1999;12:564–82.[PubMed]

32. Ahmad I, Beg AZ. Antimicrobial and phytochemical studies on 45 Indian medicinal plants against multi-drug resistant human pathogens. J Ethnopharmacol. 2001;74:113–23. [PubMed]

33. Treadway L. *Amla* traditional food and medicine. Herbalgram. 1994;31:26.

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Hollow Complete Denture For A Light Weight Prosthesis: A Case Report

Dr. Anil Kumar K.[a], Dr. Amrita Pandita[b]

Abstract:

Fabrication of a prosthesis incorporating stability, retention and support which ultimately provide satisfaction to the patient is the ultimate goal of a prosthodontist. But in certain conditions such as long lip length or severely resorbed ridges with increased inter ridge distance, the weight of a maxillary/mandibular denture is often a dislodging factor. Hence, a light weight denture is required for better retention. This article describes a case report of completely edentulous patient successfully rehabilitated with a hollow mandibular denture where a simplified technique of fabricating a light weight mandibular denture was used.

Keywords: Severely resorbed mandibular ridge, hollow mandibular denture.

Introduction:

A severely resorbed mandible poses a clinical challenge for the fabrication of a successful complete denture. Conventional restoration of the severely atrophied mandibular ridge has sparked a number of designs to accommodate patients who have difficulty wearing a mandibular denture.The success of a complete denture relies on the principles of retention, stability and support. The prosthodontist's skill lies in applying these principles efficiently in critical situations. Severely resorbed mandibular edentulous ridges that are narrow and constricted with increased inter ridge space provide decreased support, retention and stability. The consequent weight of the processed denture only compromises them further. This article describes a case report of an edentulous patient with resorbed ridges where a simplified technique of fabricating a light weight mandibular complete denture was used for preservation of denture bearing areas. It has also been proved that prosthesis weight can be reduced by making the denture base hollow. Different approaches like using a solid 3-dimensional spacer, including dental stone , silicone putty , modelling clay , or cellophane wrapped asbestos have been used during laboratory processing to exclude denture base material from the planned hollow cavity of the prosthesis.

Case report:

A 65-year-old patient walked into the department of prosthodontics with a chief complaint of ill fitting lower denture. Intraoral examination revealed a severely resorbed lower ridge (fig.1). Since the ridge was severly resorbed and vertical dimension was more, fabrication of a hollow complete mandibular complete denture was advised.

The primary impressions, final impressions, master casts were made by using standard techniques for both maxillary and mandibular arches. Jaw relation and the trial of waxed dentures were completed in the patient. Till the dewaxing stage, all steps were same as in conventional denture. After dewaxing, half of the heat cure PMMA (Trevalon, Dentsply India Pvt. Ltd., Gurgaon, India) in dough stage was positioned accurately over the dewaxed mould and then polyvinylsiloxane (putty consistency) is mixed and were placed over it (fig.2).

The thickness of the applied putty provided the hollow space in the mandibular denture. Above that, the remaining heat cure resin was packed and cured at 74 degree C for 7-8 hours. An opening was made with a bur into the denture base distal to most posterior teeth to remove the spacer (fig.3). The polyvinylsiloxane was then removed by scraping with a sharp instrument. The cavity was cleaned and disinfected. Later, these openings were closed with the autopolymerizing resin (Trevalon, Dentsply, Gurgaon) in dough stage (fig.4). The dentures were

then polished in usual manner. The sealing of the cavity was then verified by placing it in water and checking for any bubbles (fig.5). The dentures were inserted in the patient's mouth and instructions were given (fig.6).

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Discussion :

Patients with severely resorbed mandibular ridges often suffer from problems of insufficient retention and stability with the mandibular denture. They also present with mucosal intolerance to loading, pain, difficulties with eating and speech, loss of soft-tissue support, and altered facial appearance. The choice for rehabilitation for severely resorbed ridges can be implant supported overdenture, and ridge augmentation but many a times the patient who come with such a problem are geriatric patients with systemic illness, economic constraints, possess reluctance for a long duration treatment procedure and unwillingness for any kind of surgical procedure. Hence, the best way is to rehabilitate them with the conventional way. A severely resorbed mandibular ridge results in a more constricted residual ridge, decreased supporting tissues and a resultant large restorative inter ridge space. The latter may result in a heavy mandibular complete denture. A number of clinicians recommend "weighted" mandibular dentures for severely resorbed lower ridges. A.H.Grunewal (1964)

recommended that gold base being heavy, helps in, retention of lower denture and has closest adaptation to the underlying tissues. J.L.Wormley et.al. (1974) also described the advantages of weighted dentures apart from offering the advantages of a cast metal base along with the ease of adjustment and relining. However, studies have shown that weight may not contribute to the retention and stability of a lower denture. Extra weight may, in fact, cause an accelerated resorption of the residual ridge. This may be due to the continuous pressure exerted on the residual ridge by the heavy denture even at rest. In order to avoid this problem, the presented cases were treated with a hollow mandibular complete denture, which resulted in approximately 25% of reduction in the weight of the denture in comparison with the conventional denture. This may be applicable to situations where there is severe atrophy of the residual alveolar ridges and placement of implants is not a realistic option.

Holt processed a shim of acrylic resin over the residual ridge and used a spacer (Insta-mold; Nobilium, Albany, NY). The resin was indexed and the second half of the denture processed against the spacer and shim. The spacer was then removed and the 2 halves luted with autopolymerized acrylic resin using the indices to facilitate positioning. The primary disadvantage of such techniques is that the junction between the 2 previously polymerized portions of the denture occurs at the borders of the denture. This is a long junction with an increased risk of seepage of fluid into the denture cavity increasing the risk of leakage.

O'Sullivan et al. described a modified method for fabricating a hollow maxillary denture. A clear matrix of trail denture base was made. The trail denture base was then invested in the conventional manner till the wax elimination. A 2 mm heat polymerized acrylic resin shim was made on the master cast using a second flask. Silicone putty was placed over the shim and its thickness was estimated using the clear template. The original flask with the teeth was then placed over the putty and shim and the processing was done. The putty was later removed from the distal end of the denture and the opening was sealed with autopolymerizing resin. Though this technique was useful in estimation of the spacer thickness, but removal of putty was found to be difficult especially from the anterior portion of the denture. Moreover, the openings made from the distal end had to be sufficiently large to retrieve the hard putty.

Summary :

Rehabilitation of severely resorbed ridges is a challenge to the prosthodontist. Even though, the choice of rehabilitation can be overdentures, implant retained overdentures, ridge augmentation, etc., many a times the patients who come with such a problem are geriatric patients with many systemic illness. Hence, the best way is to rehabilitate them with conventional complete dentures. Apart, from modifying the impression technique to get maximum denture bearing area, modifying the type of denture also may be better accepted by patients. Hence, less denture weight provides for healthy and comfortable living.

References:

1) Holt RA Jr. A hollow complete lower denture. J Prosthet Dent 1981; 45:452-4

2) Worley JL, Kniejski ME. A method for controlling the thickness of hollow obturator prostheses. J Prosthet Dent 1983; 50:227-9.

3) Fattore LD, Fine L, Edmonds DC. The hollow denture: an alternative treatment for atrophic maxillae. J Prosthet Dent 1988; 59:514-6.

4) Grunewald ah. J prosthet dent 1964;14:432-41.

5) Wormley jh, brunton da. J prosthet dent 1974;34:101-2.

6) O'Sullivan M. The hollow maxillary complete denture: A modified technique. J Prosthet Dent 2004;91:591-94.

7) Carlsson ge. Gerodontology.2004;21:65-70.

8) Oki k et al. J oral Rehabil 2002 ; 29:594-603.

9) Fattore ld, Fine l, Edmonds dc. J prosthet dent 1988;59:514-6.

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REVIEW ARTICLE

Temporary Anchorage Devices: A Systematic Review

Dr. Chandrakant Bangar[a], Dr. Sunil Kumar B.[b]

Abstract:
The control of anchorage is one of the most crucial factor in orthodontic treatment planning. Recently a number of case reports have appeared in the orthodontic literature documenting the possibility of overcoming anchorage limitations via the use of temporary anchorage devices which are biocompatible and can be fixed to the bone for the purpose of moving teeth, with the devices being subsequently removed after treatment. The purpose of this article is to provide an overview of the current status of orthodontic implants and a discussion of established techniques.

Key words: Temporary anchorage devices.

Introduction:

"Give me a place to stand and rest my lever on and I can move the earth" these words were spoken by Archimedes[1] (287-212 B. C), the great Greek mathematician, who presented the same problem on a greater scale, that the orthodontists are facing today, the problem of adequate anchorage. During orthodontic treatment the teeth are exposed to forces and moments, and these acting forces always generate reciprocal forces of the same magnitude but in opposite direction. To avoid unwanted tooth movements and maintain treatment success, these reciprocal forces must be diverted[2].

The principle of orthodontic anchorage has been introduced since the 17th century, but it does not appear to have been clearly understood until 1923 when Louis Ottofy[3] defined it as "the base against which orthodontic force or reaction of orthodontic force is applied." Most recently, Daskalogiannakis[4] defined anchorage as "resistance to unwanted tooth movement." It can also be defined as the amount of allowed movement of the reactive unit.

Now a days mini implants are used in orthodontics as temporary anchorage devices (TADs) [5] which can be temporarily fixed to bone for enhancement of anchorage. Enhancement is mainly achieved by supporting the teeth of the reactive units or by obviating the need for the reactive unit altogether.

Temporary anchorage devices can be located transosteally, subperiosteally or endosteally and they can be fixed to the bone either mechanically (cortically stabilized) or biochemically (osseointegrated).The incorporation of TADs into orthodontic treatment made possible infinite anchorage which has been defined in term of implants as showing no movement (zero anchorage loss) as a consequence of reaction forces.[5-7]The present paper is an attempt to analyze all the aspects of orthodontic implant

Orthodontic implants can be classified in following way:

Classification of orthodontic implants:

1. According to the shape and size:

I. Conical (Cylindrical)
a. Miniscrew implants
b. Palatal implants
c. Prosthodontic implants
II. Miniplate implants
III. Disc implants (onplants)

2. According to implant bone contact:

I. Osseointegrated
II. Nonosteointegrated

3. According to the application:

I. Used only for orthodontic purposes. (Orthodontic implants)
II. Used for prosthodontic and orthodontic purposes. (Prosthodontic implants)

Following types of temporary anchorage devices are most commonly used in orthodontics:

Mini Screw:

Titanium miniscrews may be one of the ideal anchorage systems that fulfill the clinical needs of the orthodontist. A clinical need depends upon the following factors:

1. Size and length of the mini implants: The diameter of the mini screw will depend upon the site and space available in maxilla, narrower implant is preferred if it has to be placed between the roots. It is available in either 1.5 or 2.0 mm diameters. The 1.5 mm diameter screw comes in 6.0, 8.0 or 10.0 mm lengths while the 2.0 mm diameter screw comes in 7.0, 9.0 or11.0mm lengths.[8]

2. Shape of the implant: This determines the bone implant contact area available for stress transfer and good primary stability. The most commonly shapes used include cylindrical or cylindrical-conical with smooth or threaded surface. Studies have shown that the degree of surface roughness is related to the degree of osseointegration.

3. Implant materials: The material must be non-toxic, bio compatible, resistant to stress, strain, corrosion and possess excellent mechanical properties. Commonly used materials are–Stainless steel, chromium cobalt alloy (bio-tolerant) Titanium and carbon (bio-inert) Hydroxyapatite and ceramics (bio-active).[9]

Palatal Implant:

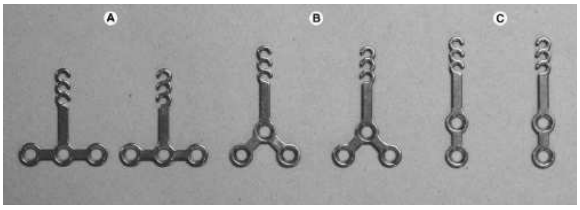
Palatal implants (fig 1) are titanium screws with a machined or modified surface (SLA sand blasted, large grit, acid etched) to increase the implant surface area. These surface modifications compensate for the reduced length of the palatal implants.

Most commonly used palatal implants of Straumann Orthosystem® (Institut Straumann AG,Waldenburg, Switzerland) was developed by Wehrbein. Specifically designed for use in orthodontics, this single unit Self-tapping palatal implant of commercially pure titanium has a length of 4 or 6 mm, a diameter of 3.3 mm, and an SLA surface. Its 2.5-mm transmucosal collar has a highly polished surface.[10]

Mini plate:

The mini plates (fig 2) are made of commercially pure titanium that is biocompatible and suitable for osseointegration. The mini plates mostly consist of three components, the head (exposed intraorally), the arm, and the body. The head component consists of three continuous hooks for attachment of orthodontic force elements. The head component can be classified according to the direction of the hooks.

The arm component is transmucosal and is available in three different lengths—short (10.5 mm), medium (13.5 mm), and long (16.5 mm) to accommodate individual morphological differences. The body component is positioned subperiosteally and is available in three different configurations 1. T-plate, 2.Y-plate, 3. I-plate. The T-plates can be modified into L-plates by cutting off one of the screwholes.[7]



Clinical implications:

Temporary anchorage device can implicated in following condition

1. Molar intrusion

Miniscrews can be a reliable source of anchorage; it is difficult to place them precisely in the narrow space between the roots of the first and second molars without interfering with the roots. In some cases, more than one screw might even be needed to withstand a relatively high intrusion force.

2. Molar distalization

Miniscrews + Distal Jet maybe a solution. After the Distal Jet appliance has been placed and activated, palatal miniscrews are inserted between the roots of the first and second premolars, mesial to the activation locks attached to the anterior rests. The miniscrews block mesial movement of the appliance during distalization, thus preventing loss of anterior anchorage

3. Correction of canted occlusal plane

A canted occlusal plane is often considered impossible to level with traditional orthodontic treatment. Miniscrews, on the other hand, provide skeletal anchorage for intrusion of the appropriate teeth on the canted side

4. Closure of extraction spaces

Loss of posterior anchorage during extraction space closure can exacerbate the curve of Spee and deepen the bite. Miniscrews provide reliable skeletal anchorage for anterior retraction in either arch, whether a single tooth at a time or en masse

Conclusion:

Success of orthodontic treatment relies on anchorage control. Anchorage preparation thus is a very important part of orthodontic treatment. Before to initiation of orthodontic therapy, it is essential to careful evaluation the anchorage demands of an individual case so that appropriate treatment modalities can be executed. Various sources of anchorage have been used from the17th century till date. Every anchorage source has some advantages and some limitations. Application of temporary anchorage devices in orthodontics for the purpose of anchorage is better alternative to conventional anchorage system.

References:

1. Compton, F. E: Compton;s pietorial Encyclopedia, Chicago, 1935, F.E. Compton co., p.255.
2. Ingalill Feldmann : Orthodontic anchorage: a systemic review, Angle Orthod 2006; 76:493-501.
3. Ottofy L: Standard Dental Dictionary. Chicago, Laird and Lee, Inc,1923.
4. Daskalogiannakis J: Glossary of Orthodontic Terms. Leipzig, Quintessence Publishing Co, 2000.
5. Herman R, Cope J. Temporary anchorage devices in orthodontics; Mini implants. Semin Orthod 2005,11;32-9.
6. Dalstra M, Cattaneo PM, Melsen B. Load transfer of mini screws for orthodontic anchorage. Orthod 2004; 1;53-62.
7. Junji Sugawara and Makoto Nishimura.Minibone Plates:The Skeletal Anchorage System Semin Orthod 2005 11:47-56.
8. Dalstra M, Cattaneo PM, Melsen B. Load transfer of mini screwsfor orthodontic anchorage. Orthod 2004;1;53-62.
9. Sherman AJ. Bone reaction to orthodontic Forces on vitreouscarbon dental implants. Am J Orthod 1979;76:618-37.
10. Wehrbein H, Glatzmaier J, Mundwiller U, et al. The Orthosystem: anew implant system for orthodontic anchorage in the palate. J Orofac Orthop 57:142-153, 1996.

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Saliva as a Diagnostic Tool in Oral Lesions : An Overview

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Abstract:

Saliva has been portrayed as a unique yet complex body fluid. Saliva a biofluid is readily accessible totally through non invasive method. The discovery of salivary diagnostic methods in oral diseases has been a major milestone in dentistry. Saliva contains various proteins , enzymes , hormones that are used as markers for oral diseases. This article enlightens on the importance of saliva as a diagnostic tool & reviews on various salivary biomarkers that are used in diagnostic purposes.

Key Words: Saliva, Biomarkers, Proteomics.

Introduction:

Saliva is a complex and dynamic biologic fluid, which over the years has been recognized for the numerous functions it performs in the oral cavity. Modern technology, however, has unveiled a plethora of compounds never before detected in saliva (eg, drugs, pollutants, hormones; but also biomarkers of bacterial , viral, and systemic disease). It involves non invasive procedures and easily collected and stored and ideal for early detection of disease as it contains specific soluble biological markers (biomarkers). Saliva contains multiple biomarkers which make it useful for multiplexed assays that are being developed as point-of-care (POC) devices, rapid tests, or in more standardized formats for centralized clinical laboratory operations[1].

Salivary Biomakers:

A number of markers show promise as sensitive measures of oral disease and the effectiveness of therapy. Furthermore, analysis of saliva may offer a cost-effective approach to assessment of oral diseases in large populations. Although we mentioned only proteomic markers, saliva is a pool wherein various genomic and microbiological markers are also found.

Salivary biomarkers have been classified into proteomic, genomic and microbiological biomarkers[2].

PROTEOMIC MARKERS	GENOMIC MARKERS	MICROBIAL MARKERS	OTHER MARKERS
Immunoglubilins	Cathepsin C Gene Mutation	Aggregatibacter Actinomycetemcomi Tans	Calcium
Acid phosphatise Alkaline Phosphatise ,	Collagen gene mutation IL-1& IL-10 Polymorphism	Campylobacter Rectus Mycoplasmas	Cortisol PMNs
Cathepsin B Aminopeptidases	TNF Polymorphism	Porphyromonas Gingivalis Prevotella Intermedia	Picolines Pyridines
CD14, Histatin MMP 1, MMP 2, MMP 3, MMP8 , MMP9 , MMP13			

Salivary proteomicsfor dental caries:

Salivary defense systems including the salivary proteins play a significant role in maintaining the health of the oral cavity and preventing caries as stated by Mazengo et al [9]. Saliva can be easily used to monitor the risk for caries. Dental caries is a complex disease, characterized by demineralization of tooth structure. With a protective role, several salivary phosphopeptides appear to be involved in remineralization processes, delaying the loss of tooth structure. Significant amount of salivary phosphopeptides (PRP1/3, histatin-1 & statherin) were associated with the absence of dental caries, emphasizing the importance of these peptides in the maintenance of tooth integrity. In a recent study on early childhood caries, it was found that, a higher number of proline-rich protein bands significantly correlated among caries free subjects, substantiating the protective role of this protein, also a higher

number of glycoprotein bands were observed in the whole saliva of subjects with early childhood caries[2].

Salivary Proteomics for existing periodontal diseases

Saliva contains biomarkers specific for unique physiological aspects of periodontitis. **Interleukin (IL) 1â** is a proinflammatory cytokine that stimulates the induction of adhesion molecules and other mediators which in turn facilitate and amplify the inflammatory response. Its levels correlated significantly with periodontal parameters.Combined levels of **IL-1 & MMP8** increases the risk of experiencing periodontal diseases by 45 fold[1º]. **MMPs-** MMP-8 a key enzyme in extracellular collagen matrix degradation, derived predominantly from PMNs during acute stages of periodontal disease also correlated significantly with periodontal activity. Patients with periodontal disease are shown to have higher salivary concentrations of IgA, IgG and IgM specific to periodontal pathogens compared with healthy patients. There is a significant correlation between salivary ACP & calculus formation. Mixed whole saliva of adult periodontitis patient reveals highest enzyme activities with **ALP[2].**

Salivary proteomics for oral lichen planus:

Oral lichen planus (OLP) is a chronic inflammatory mucosal disease with a cell-mediated immunological pathogenesis. Saliva from patients with OLP comprised various proteins. A total of 31 protein spots representing 14 proteins with at least two-fold difference in abundance were found in OLP.Among these, the expression of urinary **prokallikrein** was increased while soft palate, lung and nasal epithelium carcinoma associated protein **(PLUNC)** was decreased OLP. It was found that the levels of salivary **CD44s and CD44v5** (Isoforms of CD44) from OLP patients were significantly higher. **IFN-ã and IL-4** levels in whole unstimulated saliva screened by ELISA in OLP patient showed a low-level IFN-ã but high-level IL- 4 expression profile in saliva, with a lower ratio of salivary IFN-ã/IL-4 compared to healthy controls. Imbalance of **Th1/Th2 cytokines** with Th2- predominant profile in saliva may be involved in OLP[3] Thus salivary IL-4 level may be a fine biomarker reflecting the severity of OLP[11].

Salivary proteomics for autoimmune diseases:

Autoimmune diseases are characterized by the production of auto antibodies that attack the healthy tissue. The primary sjogrens syndrome & mikulicz disease is a systemic autoimmune disease in which the immune cells attack & destroy the salivary & lacrimal glands. Mass spectrometry analysis showed 16 down regulated & 25 up regulated proteins in primary SS patients. These proteins study has indicated that WS from patients with primary SS contains molecular signatures that reflect damaged glandular cells and an activated immune response in this autoimmune disease. These candidate proteomic and genomic biomarkers may improve the clinical detection of primary SS once they have been further validated[1]. It was found that whole saliva contains more informative proteins, peptides, and mRNA, as compared with gland-specific saliva, that can be used in generating candidate biomarkers for the detection of primary SS[3]

Salivary proteomics in pempigus vulgaris:

There is a positive correlation between indirect immunofluorescence titres and **Anti-Desmoglein 3 Elisa** levels in pemphigus vulgaris patients Saliva Desmoglen ELISA could be used for diagnosis of PV[3]. Salivary Dsg1 antibodies has a significant correlation with mucosal severity. There is only one report about salivary **Desmoglein (Dsg) 1 And 3** enzyme-linked immunosorbent assay (ELISA) in pemphigus vulgaris (PV)[4].

Salivary biomarkers in oral malignant lesions :

A vast number of molecular markers have been correlated with OSCC outcome, illustrating the complex events leading to carcinogenesis and cancer progression. Some of the proposed markers are frequently debated and sometimes results seem to contradict each other Cancer biomarkers may be useful for prediction/detection of lymph-node metastasis in patients with OSCC. These biomarkers

may help differentiate patients who clinically have no detectable disease but are potential candidates for lymph nodes metastasis.Many previous studies have also revealed proteins that promote the metastasis in oral/head and neck cancer. **IL-6 & IL-8** are involved in the pathogenesis of OSCC and have been linked with increased tumor growth & metastasis hence its levels serve as an informative biomarkers in OSCC[6]. Several salivary proteins have been revealed at differential levels between the OSCC patients. Out of this the 5 important biomarkers include **M2BP , MRP14 , CD59 Profilin & Catalase**.[5]. Investigators found that serum concentration of IL-1á, IL-6, TNF-á, soluble TNF receptor I (sTNF-RI), andC-reactive protein (CRP) were higher in patients with oral squamous cell carcinoma than in controls and the increased serum levels appeared to be related to the clinical stage of disease[7].Saliva contains some messenger ribonucleic acid (mRNA) fragments which are at a higher levels in OSCC patients .These includes the Salivary specific **Statherin, Histatin 3,**Proline-rich proteins **PRB1, PRB2 & PRB3,** Ubiquitously expressed **Spermidine N1 acetyl transferase (SAT), Â - Actin & Glyceraldehyde-3 Phosphate Dehydrogenase**. **Serum Amyloid A-4, superoxide dismutase, ficolin 2, CD-5 antigen-like protein, plasma retinol-binding protein, RalA binding protein 1 and transthyretin** may also diagnostic value for OSCC[5].SAA was confirmed as a prognostic biomarker for myeloma in a recent study.[6]

References:

1. Saliva as a Diagnostic Fluid-Daniel Malamud.
2. Salivary Proteomic Biomarkers for Oral diseases-Rahul khatariya, A.R.Pradeep.
3. Salivary Diagnostics Reloaded- Tharun Varghese & Ambil Sara Varghese.
4. Salivary Concentration of TNF , IL-1, IL-6- Mahanez Sahab Jameez, Mohammed Islami.
5. Diagnostic Aids for Diagnosis of Oral Precancerous Condition- Diana Messadi, Division of Oral Biology, University of LA.
6. Salivary Markers for Oral Cancer Detection-Markopolous et al , Bentham Open Dentitry Journal 2010 , 172-178.

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