E - MIDAS JOURNAL

"An Official Journal of IDA - Madras Branch"

Chennai/Volume:2/Issue:2/Pages:1-52/June2015
www.idamadras.com

Contents

1. PRESIDENT'S MESSAGE 1

2. SECRETARY'S MESSAGE 2

3. EDITOR'S MESSAGE 3

4. EDITORIAL BOARD 4

5. EDITORIAL 5-7

6. ORIGINAL PAPERS

6.1 Diode Lasers – Its Applications In Clinical Dentistry - *Dr. Vidyaa Hari Iyer, Dr. Padmapriya Ramalingam* 8-13

7. CASE REPORTS

7.1 Pouch and Tunnel Technique for Root Coverage using Connective Tissue Graft – A Case Report - *Dr. Renuga Devi. G, Dr. Mithra. D, Dr. Archana P.M, Dr. Ravishankar. P.L* 14-16

7.2 Dual wash impression technique of recording impression for resorbed mandibular edentulous ridges - *Dr. Surya. R, Dr. Vidya Shree Nandini. D, Dr. Chandra Sekharan Nair. K* 17-18

8. REVIEW

8.1 Review of Commercial Toothpastes Available in India which Flashes 'n' Number of Times for Treating Tooth Sensitivity Based on their Clinical Studies - *Mr. Chellavignesh Satyanaranan, Dr. Delfin Lovelina Franchis* 19-20

8.2 Invisible Aligners – A Review - *Arun kumar. C, Usha.S, Dr.Priyanka.K.Cholan, Dr.Iniyan* 21-24

8.3 Clinical Aspects of Regenerative Endodontic Procedures - A Review - *Dr. Nachimuthu Jayaprakash, Dr. Jayaraman Karunakaran, Dr. Mani Jeevitha, Dr. Rajendran Gayathiridevi* 25-28

8.4 Tobacco and Oral Health - *Dr. Leelavathi. L* 29-31

9. ADVERTISEMENT & PLACEMENT CELL 32-33

10. BRANCH ACTIVITIES MARCH - MAY 2015 34-52

President's Message

Dr. Vidyaa Hari Iyer
President
IDA Madras Branch

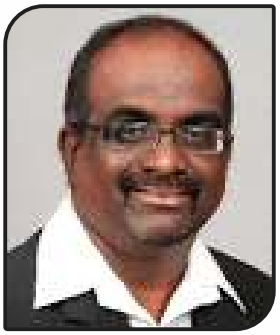
It gives me immense pride and pleasure to release the second e-Midas Journal by Dr. Dilip and his young and enterprising team. The journal is now getting a constant flow of articles from all genres - Original Papers, Research Work, Case Reports, Case Series and Review Articles. We encourage authors from all specialties, general practitioners and students to record interesting cases and submit to our esteemed editorial team.

It has been a constant strive by our team to deliver world class quality articles of clinical importance to satiate all our readers. We hope with the constant support from all our IDA – Madras branch members, this journal would reach greater heights in all its future publications.

I wish this edition and the editorial team a huge success.

Dr. Vidyaa Hari Iyer

Secretary's Message



Dr. H. Thamizhchelvan
Hon. Branch Secretary
IDA - Madras Branch

Greetings to all,

"Run, walk or crawl towards your goal of life"

Indeed it is happy to write secretary report for this prestigious second edition of Midas e-journal of this year 2015.Indeed no words to appreciate the young, energetic editorial team of IDA Madras headed by Dr. C.K. Dilip Kumar.

IDA Madras Branch have completed five CDE for this year, have conducted many dental screening and treatment camps in co-ordination with various dental colleges and RI 3230 in around Chennai.

I am happy that second edition is getting released at SRM Kattankulathur. Third edition is proposed to be released during october 3rd week at MIDAS Scientific Session.

Next 6 months IDA Madras will be organising a couple of CDE's MIDAS for students and two mega events,

1. FDI - CDE 2015 with two international speakers and couple of national speakers at SRM Ramapuram on Oct 30th & 31st.
2. Global Summit - A 3 day intellectual workshop with eminent speakers from all over globe during the month of November.

Best wishes to all.

H. Thamizhchelvan

Dr. H. Thamizhchelvan

Letter from the Editor

Dr. C.K. Dilip Kumar
Editor-in-Chief
IDA - Madras Branch

As the editor of the e-Midas journal it gives me a feeling of pleasure along with immense responsibility. I am highly grateful to all the authors who have shown and played an active role in submitting their valuable work, I have been enlightened with interesting topics which have come my way as an editor for publication. I would like to encourage students and faculty to continue writing ethical manuscripts for publication process.

Today our world is witnessing growth of science and technology at a lightening pace; but it is our duty as professionals to bring forward and publish true and ethical science. The editorial board shall make a sincere attempt to improvise the journal to the ever demanding needs of quality and standard.

"Knowledge will bring you the opportunity to make a difference"

Dr. C.K.Dilip Kumar

Editorial Board

EDITOR-IN-CHIEF

Dr. C.K. Dilip Kumar

ASSOCIATE EDITORS

Dr. R. Ramya

Dr. Aby John

Dr. Priyanka Cholan

ASSISTANT EDITORS

Dr. R. Bhavani

Dr. Md. Abdul Rahim Akbar

Dr. Jeshly Joshua

EDITORIAL

Periodontal vaccine- mission POSSIBLE!!

INTRODUCTION[1,2]

Periodontitis has got a multifactorial etiology, with microbial, genetic, environmental and systemic factors playing an evident role. In the present scenario periodontal therapy is focused on the elimination of periodontal pathogens with minimal surgical intervention and development of beneficial microbiota. Therefore, availability of a vaccine for preventing or modulating periodontal disease in humans, would be of immense benefit for the human society.

Recipe for cure by disastrous agents-Vaccines!!!

From the time of EDWARD JENNER's discovery of small pox vaccine in 1796, antigens of infectious pathogenic bacteria and viruses have been the targets for a variety of vaccines against a number of infectious diseases. Thus, most vaccines target one or multiple antigenic components of mono-infecting bacteria or viruses. Despite the considerable numbers of cultivable microorganisms identifiable in the subgingival niche, researchers have narrowed the number of putative periodontal pathogens down to six or seven, P. gingivalis, T. denticola and T. forsythia, A. actinomycetemcomitans, P. intermedia, C. rectus, and F. nucleatum, which are predominantly cultivated in sites demonstrating disease activity1. Socransky et al[1] proposed the red complex namely P. gingivalis, T. denticola and T. forsythus, as the predominant disease-associated organisms. Present researches are based on these periodontopathic bacteria which forms the basis of periodontal vaccine development.

Table 1: Components of periodontal bacteria tested for antigenicity and potential as vaccine candidates:

Generic name	Species name	Antigenic components
Porphyromonas	Intermedia	Whole cell -noninvasive 381 6235.2 (monkey isolate)
Porphyromonas	Macacae	Whole cell
Treponema	Denticola	Whole cell ATCC 35404
Fusobacterium	Nucleatum	Whole cell ATCC 25586
Actinobacillus	Actinomycetemcomitans	Formalinized whole cell Leucotoxin
Actinomyces	Viscosus	Fimbrial adhesins of T14V

How does Vaccine Work???

The principle of vaccination is based on two key elements of adaptive immunity namely specificity and memory[2]. The antigen(s) of a vaccine induces clonal expansion in specific T and/or B cells leaving behind a population of memory cells. These enable the next encounter with the same antigen(s) to induce a secondary response which is more rapid and effective than the normal primary response[2].

Vaccines may be synthetic or natural, Monovalent or polyvalent. In practice, this means isolating or creating an organism, that is unable to cause full blown disease, but that still retains the antigenic components responsible for inducing the host's immune response. One way is to kill the organism using formalin , these are called "inactivated" or "killed" vaccines. Another way is to use only the antigenic part of the disease causing organism, for example the capsule, the flagella, or part of the protein cell wall, these vaccines are called "acellular vaccines"[3].

A third way of making a vaccine is to "attenuate" or weaken a live microorganism by aging it or altering its growth conditions, one of the most successful vaccines, probably because they multiply in the body thereby causing a large immune response. However, these vaccines also carry the greatest risk because they can mutate back to the virulent form at any time, resulting in induction of the disease rather than protection against it[3].

"Toxoids" are vaccines made from toxins which are adsorbed onto aluminum salts to decrease their harmful effects & is administered with an "adjuvant". Immunological adjuvants (i.e. lipopeptides, lipopolysaccharides, heat-shock proteins, or zymosan) used in combination with specific antigens in vaccines are used to amplify T-cell immune responses or to absorb complement C3[3]. Animal studies have demonstrated that adjuvants often interact with Toll-like receptors and activate macrophages, monocytes, and leucocytes, resulting in stimulated secretion of inflammatory products. Thus, adjuvants can have effects on antigen delivery, induction of immune modulatory cytokines, and effects on antigen-presenting cells[3].

Primary goals of a successful vaccine:[4]

- It should be safe to administer
- It should induce the right kind of immunity
- Vaccine should be effective against the particular infectious agent and prevent the disease
- It should be stable and have a long shelf life.
- Vaccines should be affordable by the general population.

Types of periodontal immunization[5]**:**

Active immunization

- Whole bacterial cells
- Sub unit vaccines
- Synthetic peptides as antigens

Passive immunization

- Murine monoclonal antibody
- Plantibodies

Genetic immunization

- Plasmid vaccines
- Live, viral vector vaccines

Most experiments on immunization of periodontitis, despite its poly-infectious nature, have been directed toward a very limited number of antigenic components of a single specific pathogen, either P. gingivalis or A. actinomycetemcomitans.

Pathways to explore.....

Aggregatibacter actinomycetum comitans- feasible vaccine?

Harano et al. prepared an antiserum against a synthetic fimbrial peptide of *A. actinomycetemcomitans* and found that it blocked the adhesion of the organism to saliva-coated hydroxyapatite beads, to buccal epithelial cells, and to a fibroblast cell line[6]. Also, subcutaneous and intranasal immunization of mice with capsular serotype b-specific polysaccharide antigen of *A. actinomycetemcomitans* resulted in a specific antibody that efficiently opsonized the organism[7].

Furthermore, when mice were immunized with anti surface-associated material from *A. actinomycetemcomitans,* it yielded a raised protective opsonic antibody response and rapid healing of the primary lesions following a challenge with live *A. actinomycetemcomitans*[8]. However, relatively few studies have been conducted on developing vaccines against *A. actinomycetemcomitans.*

P.gingivalis- A promising vaccine??!!!

P.gingivalis, a gram negative non-motile pleomorphic rod & obligate anaerobe is an aggressive& opportunistic periodontal pathogen producing a series of virulence factors including many proteases (for the destruction of Ig, complement factors & heme sequestering proteins), gingipains, a group of cysteine proteases, are major weapons in its arsenal of attack on the periodontal region. Gingipains consist of Arg-gingipains (RgpA and RgpB) and Lys-gingipains[9] they dysregulate the host defense mechanisms, resulting in tissue destruction and alveolar bone resorption. Its fimbriae mediated adhesion and its lipopolysaccharide capsule defends against phagocytosis and it has a capacity to invade soft tissues also.

Table 2: P.gingivalis antigenic structure that confers antigenicity

S no	Virulence factor	Antigenic structure	Mode of action
1.	Lipopolysaccharide	Polysaccharide chain – O specific antigen, core polysaccharide, Lipid A	Endotoxic activity, stimulates host inflammatory response, significant immunological activity
2.	Capsule	Polysaccharide heteropolymer- six serotypes (KI – K6)	Antiphagocytic activity
3.	Fimbriae	6 fimA genotypes (type I – V, Ib) fim A type IV – most Virulent	Adhesion and invasion to epithelial cells
4.	Extracellular proteolytic enzymes	Cysteine endopeptidases	Proteolytic activity

Table 3: P. gingivalis components tested for antigenicity and potential as vaccine candidates

S. No	P. gingivalis components	Potential vaccine candidates
1.	Whole cell	Whole cell - Heat or formalin killed
2.	Fimbriae	Fimbrial proteins - 43 and 73 Kda Recomb. Streptococcus gordonii expressing P.gingivalis Fimbrillin A Domains
3	Capsular Polysaccharide - A7436	Capsular Polysaccharide - A7436
4	Outer Membrane Fraction and Outer Membrane Vesicles of W50	Outer Membrane Fraction and Outer Membrane Vesicles of W50
5	Extracted hemagglutinin	Recombinant Hag B, ATCC 33277 HA2 sequence cloned with E. coli, S. typhimurium X4072 expressing HagB gene of P. gingivalis 381 Recombinant S. enterica serovar Typhimurium avirulent vaccine strain expressing HagA Recombinant HagB from P. gingivalis 381 expressed in E.coli & Monophosphoryl lipid A (detoxified derivative of LPS of Salmonella enteric serovar Minnesota R595)
6	Porphypain-2	Gingipains RgpA and RgpB Rgp-Kgp Protein Adhesion Complex (PAC) of ATCC 33277 and W50 Functional binding motif or active site peptides of Rgp-Kgp PAC RgpA DNA vaccine Catalytic domain of Lys-gingipain (KGP) – DNA Vaccine
7	Heat Shock Protein 60	

Limitations for Periodontal Vaccines

However, several issues should be addressed pertinent to the development of a sophisticated vaccine against human periodontitis. Firstly human periodontal disease is multifactorial caused by manifold pathogens. The intricacy of the periodontopathic bacteria might be a problem as a substantial number of bacteria appear to be involved in periodontal disease. The multiplicity of pathogenic organisms indicates that vaccine design against periodontitis is very complex. Secondly, bacterial whole cells or crude extract preparation for vaccination is not desirable because the antigenic determinants of bacteria potentially possess a high risk of cross-reactivity with human counterparts.

Some more of the serious complications may stem from the vaccine or from the patient. Vaccines may be contaminated with unwanted proteins or toxins, or even live viruses. Supposedly killed vaccines may not have been properly killed; attenuated vaccines may revert to the wild type[2]. The patient may be hypersensitive to minute amounts of contaminating proteins, or immuno-compromised, in which case any living vaccine is usually contraindicated.

Also importantly, animal models for vaccine trials may pose inconsistencies with human models in major histocompatibility complex-restriction of antigens presented by antigen presenting, thus obscuring the immunodominant epitope(s). A humanized mouse system has been projected that has been reconstituted with human peripheral blood lymphocytes. This system needs to meet the requirement of least leakiness of a mouse immune system. More recently, a genetically engineered mouse system, such as the NOD.CB17-prkdc^{scid}/J mouse, has been

initiated for the study of infectious and autoimmune diseases in humans. This model may also prove to be a valuable tool for the study of periodontal disease and putative periodontal vaccines[10].

As an innovative strategy, vaccines using cross-reactive immunodominant epitopes as antigenic molecules in an attempt to stimulate antigen-specific regulatory T-cells (Tregs, Cd4+, CD25+, FoxP3+), secreting IL-10 and TGF-β, may provide new clues for periodontal disease prevention, through the induction of either immune tolerance or an effector function[11].

Recently, a variety of strategies to enhance the immunogenicity of antigenic components of B- or T-lymphocytes have been adopted in vaccine trials against periodontal disease. These include, but not limited to, immunization of dendritic cells pulsed with antigens, the use of improved adjuvant formulas (e.g. the use of alum as an alternative to HSP-based adjuvant), the use of recombinant plant monoclonal antibodies (plantibodies)[12,13] and the use of transgenic microorganisms as antigen vectors[14]. These efforts leave challenging areas to be chased further in the search for a more refined design that may guarantee the efficiency and safety of extended immune memory.

A peep into the future…. Beware!!

Every Endeavour of human started as a dream so also this notion of periodontal vaccines. With animal studies proving beyond doubt the validity of these vaccines, researches are still undertaken to unravel the mystery with humans. Science has seen innumerous advancements in the recent decades again re-emphasizing our close proximity to success… This will soon be in public eye, soon be an actuality spoken about in every part of the world ,with the periodontal vaccines taking control, who knows there might not be a chance for a periodontist…. ???!!!!!??????

REFERENCES

1. Socransky SS, Haffajee AD, Cugini MA, Smith C, Kent RL. Microbial complexes in subgingival plaque. J Dent Res 1997: abstr. 76: no. 3023.
2. Roitt, Brostoff, Male. Text book of Immunology, Fourth Edition,1998.
3. Wikipedia.org. vaccines- Wikipedia, the free encyclopedia (cited on sept 2012). Available from http://en.wikipedia.org/wiki/Vaccine.
4. Nikhil Sharma, Nitin Khuller. Periodontal Vaccine: A New Paradigm for Prevention of Periodontal Diseases. Journal of oral health and community dentistry 2010;4:23-28.
5. Kudyar.N, Nitin Dani, Swapna Mahale. Periodontal vaccine: A dream or reality. J of Indian society of Periodontology 2011;15:115-20.
6. Harano K, Yamanaka A, Okuda K. An antiserum to a synthetic fimbrial peptide of Actinobacillus actinomycetemcomitans blocked adhesion of the microorganism. FEMS Microbiol Lett. 1995;130: 279–285.
7. Takamatsu-Matsushita N, Yamaguchi N, Kawasaki M, Yamashita Y, Takehara T, Koga T. Immunogenicity of Actinobacillus actinomycetemcomitans serotype b-specific polysaccharide-protein conjugate. Oral Microbiol Immunol. 1996;11: 220–225.
8. Herminajeng E, Asmara W, Yuswanto A, Barid I, Sosroseno W. Protective humoral immunity induced by surface-associated material from Actinobacillus actinomycetemcomitans in mice. Microbes Infect.2001;3:997–1003
9. Holt SC, Kesavalu L, Walker S, Genco CA. Virulence factors of Porphyromonas gingivalis. Periodontol 2000 1999: 20: 168-238.
10. Jeom-Il Choi, Gregory J. Seymour. Vaccines against periodontitis: A forward-looking review J Periodontal Implant Sci 2010;40:153-163.
11. Belkaid Y. Regulatory T cells and infection: a dangerous necessity.
12. Ma JK, Hiatt A, Hein M, Vine ND, Wang F, Stabila P, et al. Nat Rev Immunol 2007;7:875-88. Generation and assembly of secretory antibodies in plants. Science 1995;268:716-9.
13. Shin EA, Lee JY, Kim TG, Park YK, Langridge WH. Synthesis and assembly of an adjuvanted Porphyromonas gingivalis fimbrial antigen fusion protein in plants. Protein Expr Purif 2006;47:99-109.
14. Sharma A, Honma K, Evans RT, Hruby DE, Genco RJ. Oral immunization with recombinant Streptococcus gordonii expressing porphyromonas gingivalis FimA domains. Infect Immun 2001;69:2928-34.

Dr. Priyanka.K.Cholan
Associate Editor,
e-MIDAS Journal,
Senior lecturer,
SRM Dental College & Hospital,
Ramapuram, Chennai.

Original Paper

Diode Lasers – Its Applications In Clinical Dentistry

Dr. Vidyaa Hari Iyer[1], Dr. Padmapriya Ramalingam[2]

1, Director
2, Assistant Doctor
Smile Dental Clinic
30/34 Ramanujam Street,
T.Nagar, Chennai – 600017.

Received : 15.04.2015
Review Completed : 28.04.2015
Accepted : 05.05.2015

ABSTRACT

Lasers, relatively a new treatment modality applicable in all specialties of dentistry has evolved rapidly in the last 2 decades, promising predictable outcomes for the patient and stress free dentistry for the consulting doctor.

Lasers broadly classified as soft and hard tissue lasers are extremely safe and comfortable to the patients and are precise and effective to perform treatment in various fields of dentistry. In today's scenario incorporating lasers into dental practice has involved state of art technology in almost 5-10% of the clinical setup.

Keywords: Laser, Soft tissue laser, Diode, Minimal bleeding, Painfree dentistry.

INTRODUCTION

LASER is an acronym for "Light Amplification by Stimulated Emission of Radiation". In 1960, Theodore H. Maiman invented the first working ruby laser. In 1962, Robert N. Hall invented the first diode laser which is commonly used in soft tissue management in dentistry today.

In 1917, Albert Einstein a physicist described the theory of stimulated emission. Laser light is significantly different from ordinary light as it is monochromatic (single colour / wavelength), coherent (waves are in phase), collimated (beam is parallel and non-divergent) and therefore has more energy. Laser light is emitted in a very thin beam and by focusing and defocusing this beam a dentist can vary its effect on the tissue and bring about dramatic changes as laser tissue interaction in the host tissue. The various laser tissue interactions are reflection, absorption, transmission and scattering of which absorption is the most desired property of lasers. Lasers are within the visible and infrared portion of the non-ionizing part of the Electro-Magnetic spectrum and emit thermal radiation.

Lasers have to be used with caution and laser safety is very important. Few laser safety protocols generally followed are:

- Wearing protective eyewear with an Optical Density of 5 or more. "Patient first on – patient last off " is the slogan to be followed at all times.
- Laser plume hazards such as vaporized water, carbon particles, cellular products have to be evacuated with the high vacuum suction.
- Avoid using alcohol spray pre and intra laser operation to reduce fire hazard.
- Keep the laser always in stand-by mode when not in use and the protective covering over the foot switch enclosed.
- Prevent test firing with the tip on the skin.
- Minimize the reflective surfaces in the operatory and
- optimize the use of plastic instruments.
- Have a caution board placed outside the operatory to avoid traffic during laser operation.

Diode lasers[1] are the commonly used soft tissue lasers in dentistry today. The various wavelengths available are 810nm, 940nm and 980nm. The chromophore within the host tissue is hemoglobin and melanin, in which the diode laser energy is highly absorbed. The diode lasers have excellent ability to cut accurately in contact mode and can deliver continuous or gated (pulsed or chopped) mode.

Clinical Cases

Diode lasers are commonly used for bringing about a soft tissue interaction in the host tissue. The ideal laser tissue interaction includes identifying the target tissue in the host, using appropriate wavelength, and using minimal power values (laser settings) to bring about desired tissue interaction, exposure of laser energy for minimal time and to achieve maximum thermal relaxation in host tissue to prevent collateral thermal damage to surrounding tissues. Lasers use the property of reflection to diagnose dental caries with Diagnodent. However there are quite a few clinical applications of diode lasers in everyday clinical dentistry which acts as a practice builder:-

1. Frenectomy(complete removal of the frenum)/Frenotomy (displacement of the frenum apically):

Removal of the thick frenum which gets attached between the central incisors causing a midline diastema is one of the most frequently used applications of lasers. Such frenal attachment is also observed in the buccal aspect which is severed when there is a pull in the posterior region, causing gingival recession. (Figures 1a, 1b, 1c)

2. De-pigmentation:

Hyper pigmentation of melanin in the basal cell layer of the gingival epithelium gives a dark brownish hue to the gingiva. Removal of such hyper pigmented gingiva enhances the gingival esthetics in one's smile[2,3]. (Figures 2a, 2b, 2c)

3. Gingivoplasty/Gingivectomy :

Bundling of soft tissue inter dentally causes food entrapment and a nidus for the bacteria. Removal of this tissue aids in sculpting the gingiva for better esthetics and ease of maintenance especially in Orthodontic patients. (Figures 3a, 3b, 3c)

4. Crown lengthening :

Soft tissue overgrowth on a single or multiple teeth gives an unaesthetic smile. Bringing a balance between the biological width and the anatomical crown display[4,5,6] enhances one's aesthetic appearance. Such soft tissue crown lengthening procedures can be done easily with soft tissue lasers. (Figures 4a, 4b, 4c)

5. Gingival Troughing:

Hyperplastic tissue along the finish line of prepared teeth which is the recipient of a crown/ bridge can be removed with the use of lasers. Lasers can be used within the gingival sulcus which brings about a predictable gingival retraction with minimal collateral damage[7]. (Figures 5a, 5b, 5c)

6. LANAP:

Laser Assisted New Attachment Procedure [LANAP] is a laser aided periodontal therapy which involves pocket debridement with scaling and root planning[8,9,10,11] followed by pre and post laser debridement. 1-2mm of the external pocket epithelium is also vaporized in order to promote the junctional epithelial formation within the periodontal pocket. (Figures 6a, 6b, 6c)

7. Root Canal Disinfection:

Lasers aid in sterilization of the main and lateral canals within the root canal complex. Primarily being bactericidal in their action, laser assisted sterilization[12,13,14,15,16] of root canals also reduce pain and peri-radicular pathology and helps treat them non-surgically. (Figures 7a, 7b, 7c)

8. Ulcers:

Low level laser therapy (LLLT) has significantly reduced pain, swelling, redness and burning sensation on oral ulcers. The immediate relief with ulcers is brought about by the "Eschar formation" which acts as a laser band-aid offering a protective covering over the ulcer. (Figures 8a, 8b, 8c)

9. Operculectomy:

Hyperplastic gingival proliferation or the soft tissue covering an erupting impacted tooth is painful because of the masticatory impact of the opposing tooth. Such tissue can be easily excised in to with laser using minimal or no injections, in a blood- less field thereby enabling better visualization. (Figures 9a, 9b, 9c)

10. Laser assisted bleaching:

Post bleaching sensitivity, a major concern in traditional bleaching methods has been phenomenally reduced due to laser assisted bleaching. A patented chromophore incorporated in the bleaching gel activated with laser energy thereby initiating the redox process brings about a radical change in the shade of the stained teeth. The visible shade change to a lighter hue brought about by laser assisted bleaching is much appreciable by the patients due to reduced sensitivity. (Figures 10a, 10b, 10c)

11. Excision of soft tissue pathology:

Bad oral habits, sharp teeth and other local factors initiate an irritant to the soft tissue thereby causing a proliferative overgrowth in many intra oral sites which gives rise to an oral pathology. Such lesions of clinical interest can be excised using laser bringing about desirable post operative healing[17]. (Figures 11a, 11b, 11c)

12. LLLT:

Low Level Laser Therapy is relatively a fast advancing physiotherapeutic pain relieving dental modality used in immediate relief of trismus, TMJ dysfunction syndrome, neuralgic pain, and pain at post impaction and extraction sites[18]. (Figures 12a, 12b, 12c)

13. Wound healing at extraction socket:

Lasers when used in extraction sites post tooth removal act as a bactericidal agent and bring about faster wound healing and less eventful post operative complications even in medically compromised patients. (Figures 13a, 13b, 13c)

14. Smile Design:

Soft tissue esthetic enhancement corrections such as gingivectomy, gingivoplasty crown lengthening, de-pigmentation[19] bring about an enhanced treatment outcome to ones' smile. This improves ones' appearance and also aids in enhanced psychological factors such as self confidence and increased self esteem. (Figures 14a, 14b, 14c)

15. Pontic preparation:

Lasers are used for sculpting the soft tissue in the saddle region beside the abutment teeth receiving the fixed partial denture. This aids in ease of maintenance and a healthy gingiva next to the abutment teeth[20]. (Figures 15a, 15b, 15c)

Discussion

Dental soft tissue lasers have evolved as an adjunct or alternative treatment modality in various aspects of clinical dentistry. Hemoglobin and melanin being the important chromophores for soft tissue diode lasers, management of bleeding and removal of pathological lesion is easily achieved. The advantage of laser include minimal use of local anesthetics, minimal need for medication, minimal need for suturing, bactericidal action thereby reducing the bacterial population, reduced post operative swelling and scarring, fast and better healing and more relaxed appointment for both the patient and the doctor.

Conclusion

Diode lasers have become an alternative treatment modality due to its various advantages over traditional methods such as surgical scalpel and electrocautery. Lasers have gained its inclusion as a diagnostic tool in caries detection and as therapeutic tool in treatment for various dental procedures in dental clinics.


Figure 1a - Pre-operative view of the frenum


Figure 1b - Intra-operative view using lasers


Figure 1c - Post-operative view after the frenectomy procedure


Figure 2a - Dark pigmented band of gingiva


Figure 2b - Intraoperative view of the depigmentation procedure


Figure 2c - One day post operative view of the gingiva


Figure 3a - Pre-operative view of hyper plastic gingiva


Figure 3b - Intra-operative view using lasers


Figure 3c - Post-operative view after gingivoplasty procedure


Figure 4a - Pre-operative view of partially erupted canine


Figure 4b - Intraoperative view using lasers


Figure 4c - Immediate post-operative view after crown lengthening procedure


Figure 5a - Pre-operative view after crown preparation 25


Figure 5b - Intra-operative view using lasers for troughing


Figure 5c. Post-operative view after gingival troughing procedure

Figure 6a - Pre-operative view before LANAP

Figure 6b - Intra-operative view using lasers

Figure 6c - One week post-operative view

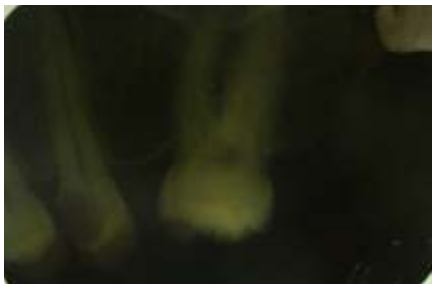


Figure 7a -Radiographic view of decayed premolar

Figure 7b - Mid- endodontic usage of lasers for bactericidal effect

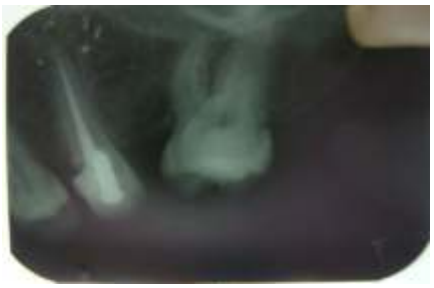


Figure 7c - Post obturation radiographic view

Figure 8a - Pre-operative view of multiple aphthae in the lower labial mucosa

Figure 8b - Intra-operative view using lasers for LLLT

Figure 8c - Immediate post-operative view of LLLT effect on ulcer healing

Figure 9a - Pre-operative view of operculum covering 48 distally

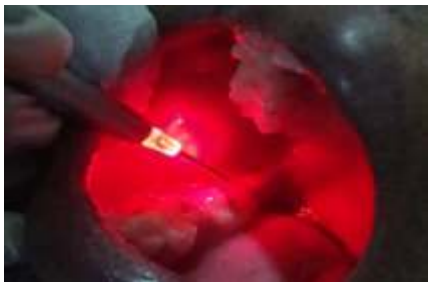


Figure 9b - Intra-operative use of lasers

Figure 9c - Immediate post-operative view

Figure 10a - Preoperative view of the stained teeth

Figure 10b - Laser assisted bleaching procedure

Figure 10c - Immediate postoperative view showing 4 shades lighter


Figure 11a - Eruption cyst present on erupting 43 region


Figure 11b - Intraoperative view using lasers for excision


Figure 11c - One day postoperative view


Figure 12a - Only one finger mouth opening due to TMJ pain


Figure 12b - LLLT on the TMJ


Figure 12c - Two finger mouth opening post operative view


Figure 13a - Decayed 46 with suppuration


Figure 13b - Extraction followed with LLLT


Figure 13c - One week post operative view


Figure 14a - Hyperplastic gingiva bundling between the teeth midorthodontically


Figure 14b - Intraoperative view using lasers


Figure 14c - Sculpted gingiva giving an aethetic smile


Figure 15a - Bundled soft tissue in pontic region


Figure 15b - Intraoperative view using lasers


Figure 15c - Sculpted pontic region

References

1. Dr.Udatta Kher Diode Lasers:The Cutting Edge Sep-Dec 2011 Vol 1 N0 1 International Journal of Laser Dentistry.
2. Dr.C.S.Baiju, Dr.Himanshu Khashu, Dr.Smriti Manchand Comparative Clinical Evaluation of Gingival Depigmentation using Scalpel and Diode Laser: Case Series Vol 5 Issue 1 April 2011 Solaze Journal of Laser Dentistry.
3. Dr.Natasha F.Merchant,Dr.Shelika Merchant Laser assisted depigmentation procedure – A case report Vol.4 Issue 1 March 10 Solaze Journal of Laser Dentistry.
4. Dr.Sanjay .Bhawar,Dr.Dipti D.Rathi LASER Assisted Crown Lengthening procedure – A case report Vol.4 Issue 1 March 10 Solaze Journal of Laser Dentistry.
5. Dr.Gurkeerat Singh, Dr.Deepak Rai, Dr.Ankur kaul, Dr.Aditya Chhibber . An Aid to Decreasing Orthodontic Treatment Time – Soft – Tissue Lasers. Vol 3 Issue 1 Jan 09 Solaze Journal of Laser Dentistry.
6. Dr.Deepak Rai, Dr.Sheetal Rai Diode laser assisted circumferential supracrestal fibrotomy (CSF) in orthodontics Vol 4 Issue 2 Dec 10 Solaze Journal of Laser Dentistry.
7. Dr.Shafath Ahmed, Dr.Arunkulanthaivelu, Dr.Sharan kumar, Dr.Ravi Varma. The Importance of Laser Troughing in tooth preparation to maintain the marginal finish line: A case report. Vol 4 Issue 2 Dec 10 Solaze Journal of Laser Dentistry.
8. Aoki. A., Sasaki K.M., Watanabe. H, Ishikawa. I. (2004) Lasers in nonsurgical periodontal therapy. Periodont 2000 36, 59-97.
9. Moritz, A.,Schoop, U., Goharkhay, K., Schauer, P., Doertbudak, O., Wernisch, J., Sperr, W. (1998) Treatment of periodontal pockets with a diode laser. Lasers Surg Med 22 (5), 302-11.
10. Moritz A., Gutknecht, N., Doertbudak, O., Goharkhay, K., Schoop, U., Schauer, P., Sperr, W.(1997) Bacterial reduction in periodontal pockets through irradiation with a diode laser: a pilot study. J Clin Laser Med Surg 15, 33-37.
11. Gutknecht, N., Zimmermann, R., Lampert, F. (2001 a) Lasers in Periodontology: state of the art. J Oral Laser Applications 1, 169-179.
12. Gutknecht, N., Moritz, A., Conrads, G.,Sievert, T., Lampert, F, (1996) Bactericidal effect of the Nd:YAG laser in in vitro root canals. J Clin Las Med Surg 14, 77-80.
13. Klinke, T., Klimm, W., Gutknecht, N.(1997) Antibacterial effects of Nd:YAG laser irradiation within root canal dentin. J Clin Las Med Surg 15, 29-31.
14. Moritz, A., Gutknecht, N., Goharkhay, K. et al. (1997) in vitro irradiation of infected root canals with diode laser: results of microbiologic, infrared spectrometric and stain penetration examination. Quint Int 28, 205-209.
15. Blanc P,Bourgeois P, Doyer J P: Study and evaluation of Root Canal Sterilization with CO2 Laser. 4th Int. Congress on Lasers in Dentistry, Singapore 1994 .100% eradication of E.Faecalis after CO2 laser.
16. Gutknecht, N., Kanehi, S., Moritz, A., Mittermayer, C., Lampert, F. (1998): Effects of Nd:YAG-laser irradiation on monolayer cell cultures. Lasers Surg Med 22, 30-36.
17. Dr.Chandrashekar Yavagal 'Diode' Scalpel ! : The Holy Grail of Pediatric Soft Tissue Surgery Vol 3 Issue 1 Jan 09 Solaze Journal of Laser Dentistry.
18. Goharkhay, K., Moritz, A., Wilder-Smith, P., Schoop, U., Kluger, W., Jakolitsch, S., Sperr, W. (1978) Effects on oral soft tissue produced by a diode laser in vitro. J Oral Surg 36, 932-7.
19. Steven Parker Use of an 810-nm diode laser in a combined Gingivoplasty, Frenectomy, and Second-Stage Implant Recovery procedure J Laser Dent 2008; 16 (1): 32-38.
20. Iyer VH, Manali SR. Interdisciplinary approach using diode laser for esthetic management of missing anterior teeth. Int J Laser Dent 2013;3(1):24-28.

About the Author

Dr.Vidyaa Hari Iyer is a leading practitioner in T.Nagar, Chennai practicing since 1994 and Director of Smile Dental Clinic – a Laser assisted multi-specialty clinic. She is the President of Indian Dental Association, Madras Branch. She has done her Fellowship in LASER Dentistry from University of Genova-Italy, and Diplomate in Laser Dentistry conducted by AALZ & RWTH Aachen University, Germany at IALD Mumbai. She has undergone training in Laser Applications from World Clinical Laser Institute (WCLI) – Taipei Taiwan. She conducts a number of hands-on courses on Hard and Soft tissues both locally and nationally. She has won Outstanding Academic Excellence Award, Bronze award from International College of Dentists for Lasers. She has lectured widely in almost all cities of India and is the visiting faculty for Manipal University and IALD – Mumbai. She has numerous International and National publications to her credit. She has held the post of Treasurer both during the IALD, Chennai workshop and IALD International Conference at Chennai. She is a life member of IALD and SOLA.

Dr.Padmapriya Ramalingam is an assistant doctor at Smile Dental Clinic, Chennai. She is a Diplomate in Laser Dentistry conducted by IALD Mumbai. She has over two years of clinical practice in Laser dentistry both in hard and soft tissue. She is a life member of IALD.

Address for Correspondence

Dr. Vidyaa Hari Iyer
Director - Smile Dental Clinic
30/34 Ramanujam Street, T.Nagar, Chennai – 600017.
Tel: 098401-76088, Email: vidyaahari@gmail.com

Pouch and Tunnel Technique for Root Coverage using Connective Tissue Graft – A Case Report

Dr. Renuga Devi. G[1], Dr. Mithra. D[2], Dr. Archana P.M[3], Dr. Ravishankar. P.L[4]

1,2 Postgraduate Student,
3 Reader,
4 Professor & HOD,
Department of Periodontics,
SRM Kattankulathur Dental College,
Potheri

Received : 06.05.2015
Review Completed : 16.05.2015
Accepted : 20.05.2015

ABSTRACT

Gingival recession is defined as the displacement and destruction of the soft tissue margin apical to cementoenamel junction. To minimize incision and reflection of flaps, Pouch and Tunnel technique can be used which also helps to provide abundant blood supply to the donor connective tissue into the pouch beneath papillary tunnels as well as allows intimate contact of donor tissue to the recipient site.

Keywords: Pouch and Tunnel Technique, Root Coverage, Connective Tissue Graft, Gingival recession

INTRODUCTION

Gingival recession is defined as the displacement and destruction of the soft tissue margin apical to cementoenamel junction. Obtaining predictable root coverage supported by a significant level of tissue regeneration has become an essential element of periodontal plastic surgery. Methods to achieve root coverage procedures include laterally positioned flap[1], Coronally Positioned Flap[2], Sub epithelial Connective Tissue Graft[3], Free Gingival GrafT[4], Guided tissue regeneratio[5], pouch technique[6]. Among these procedures connective tissue graft(CTG) + pouch & tunnel gives good aesthetic results.[7]

To minimize incision and reflection of flaps, Pouch and Tunnel technique can be used which also helps to provide abundant blood supply to the donor connective tissue into the pouch beneath papillary tunnels as well as allows intimate contact of donor tissue to the recipient site.

Advantages of pouch and tunnel technique

- Good blood supply to the graft
- Less tissue trauma
- Early healing
- Treating multiple gingival recessions in a single surgical procedure
- Good esthetics outcome

Free gingival grafts have a number of disadvantages. Esthetics may be compromised because of the colour difference between the graft and recipient site tissues, while there is also the problem of a large denuded site in the palate, which must heal by secondary intention. These disadvantages have been overcome by the use of connective tissue (CT) grafts, which involve placement of de-epithelialized connective tissue into the recession defect. Healing of the donor site is by primary intention, reducing discomfort for the patient. The colour match with the tissues is also better. Connective tissue grafts are commonly harvested from the palate, provided there is adequate thickness of tissue. The retro-molar pad area can also be used because of the thickness of the sub-mucosa in this area. This graft material is carefully sutured into place and a coronally advanced flap placed and sutured over it. Among the various surgical approaches used to treat gingival recession, connective tissue graft in combination with the coverage of the graft by overlying flap can be considered the gold standard for treating gingival recession defects[8]. Because the success and predictability of this surgical- technique, various modifications have been proposed, including connective tissue graft with or without epithelial collar, partially or totally covered by pedicle flap, with an envelope or tunnel design preparations covered by undetached papilla[9]. The main advantages of the connective tissue graft procedures are thought to derive from the availability of two sources of blood supply to the graft: one from the recipient bed and the other from the overlying flap, and the perfect chromatic integration and an optimal esthetic outcome[10]. Since the success rate of root coverage depends on the survival of graft tissue itself, it has been suggested that the overlying flap should cover most of the graft. This is thought to provide enough blood supply to nourish the underneath portion of the graft over the denuded root[11]. The proper flap design is also an important step toward obtaining satisfactory root coverage outcomes with connective tissue grafting approach. An envelope or a pouch flap design was proposed by Raetzke (1985)[6] eliminating vertical incisions. The advantages of the technique are the maintenance of the blood supply to the flap, a close adaptation to the graft, and reduction in postoperative discomfort and scarring. Allen (1993) reported the use of a technique where a connective tissue graft is placed in a tunnel preparation. This technique allows the maintenance of a greater thickness flap apical to the recession, which will cover the denuded root surface for multiple adjacent recession defects[12].

CASE REPORT

A female patient aged 23 years reported to the department of periodontics,SRM kattankulathur dental college with the chief complaint of lowering of gums. Clinical

examination revealed Millers class II recession in relation to 13,14,15 (Fig.1).The distance from CEJ to marginal gingiva was 3 mm in relation to 13 and 5mm in relation to 14. Root coverage using palatal connective tissue graft was planned.

Fig.1: Pre-Operative

PRESURGICAL PROCEDURE

Preparation of the subject includes scaling and root planing of the entire dentition and oral hygiene instructions. Detailed instructions regarding self-performed plaque control measures will be given. One week after phase I therapy, only those patients who maintained optimum oral hygiene are subjected to surgical procedure after recording all the baseline measurements. The surgical procedure was explained to the patient and an informed consent was obtained.

SURGICAL TECHNIQUE

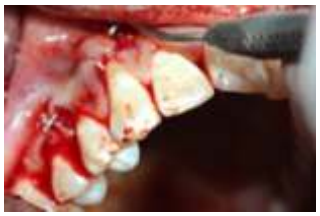


Fig.2: Creating a tunnel

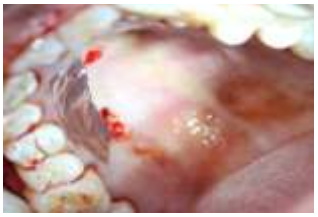


Fig.3: Donor site

After anesthetising the area, Sulcular incision was made around the teeth adjacent to recession. Using an orbans interdental knife and 15c blade (Fig. 2& 3), vertical incision was given mesial to 13 to create a tunnel beneath the adjacent papilla of 13,14,15, into which the connective tissue was placed. A split thickness pouch was created apical to papilla.

Fig.4: Harvested connective tissue graft

Fig.5: Graft in situ

A connective tissue graft was harvested from palate by using trap door technique. Tin foil was used to get the correct amount of connective tissue. Two separate sutures were utilised for sliding connective tissue graft. The suture needles were passed into the tunnel entering from mesial aspect of the interdental papilla of 13 and 14 and exit from the distal aspect of 14. With the graft held in position, it was pushed through the tunnel with a dull instrument (periosteal elevator) and pulled at the same time with the sutures from other end to place the graft in the pouch such that it covers the exposed root of both the teeth (13, 14,15). Simple interrupted sutures were placed to secure the graft at the recipient site.4 0 vicryl was used for suturing. Moderate pressure with sterile gauze dampened with saline was applied for five minutes to control bleeding in the palatal donor site and then sutures placed using simple interrupted sutures.4 0 vicryl and 3 0 silk was used for suturing.

Fig.6: Recepient site sutured

Fig.7: Donor site sutured

The patient was recalled after 4weeks for re-evaluation of donor and surgical site. The donor site appeared almost normal in colour and health after four weeks and the recipient site was healthy with excellent colour match with adjacent tissue. Complete root coverage was achieved in 14,15 where as in 13 recession was reduced to 1mm from 4mm postoperatively (Fig.no.8)

Fig.8: Post-Operative 4 weeks

DISCUSSION

The ultimate goal of any mucogingival surgery is predictable and esthetic root coverage. The advantage of using a subepithelial connective tissue grafts is that it provided significant root coverage, clinical attachment and keratinized tissue gain and is considered as a gold standard in treating recession type defects.[1] The tunnel procedure was used so that it preserves the intermediate papilla and may accelerate the initial wound healing. The tunnelling also applies less traction and preserves the gingival height.[2] Due to minimal trauma at the recipient site, the procedure may be of advantage in recessions as compared to the coronally repositioned flap.[3] The results of the tunnel procedure and its modification have demonstrated favourable root coverage in many studies.

Creeping attachment first described by Goldman13 Q is the increased gingival coverage over a denuded root surface that takes place over an extended period of time after surgery. Creeping attachment gives an additional coverage of 0.8mm on average in 95.5% of sites which provides the extra attachment needed for 100% root coverage.

The results in this case report indicated complete root coverage i.r.t 14 and 15 and recession was reduced to 1mm from 4mm i.r.t 13 post operatively. The remaining 1mm recession i.r.t 13 may also get reduce and attain complete root coverage over a period of time due to creeping attachment.

CONCLUSION

Pouch and tunnel technique gives early healing and less trauma to the tissue, connective tissue gives good colour match and attachment. Hence pouch and tunnel with connective tissue graft will be ideal for treatment of multiple gingival recessions.

REFERENCES

1. Grupe HE,W.R. Repair of gingival defects by a sliding flap operation. J Periodontol. 1956. 27,92-95.
2. Allen EP,. Use of mucogingival surgical procedures to enhance esthetics. Dental Clinics of North America 1988:32:307-330.
3. Langer,B and Langer,L. Subepithelial connective tissue graft technique for root coverage. J Periodontol 1985. 56,715-720.
4. Sullivan HC& Atkins JH. Free autogenous gingival autografts.I .Principles of successful grafting. Periodontics 1968;6:121-129.
5. Pin Prato GP, Tinti C, Vincenz G, Magnani C, Cortellini P, Clauser C. Guided tissue regeneration versus mucogingival surgery in thetreatment of human buccal gingival recession. J periodontol. 1992;63:919–28.
6. Raetzke,P.B. Covering localised areas of root exposure employing the envelope technique. J Periodontol 1985;56:397-402.
7. Salhi et al Coronally adanced flap versus the pouch technique combined with a connective tissuegraft to treat Millers class 1 gingival recession : a randomized controlled trial J Clin Periodontol 2014 ;41:387-395.
8. Al-Zahrani, M.S., Bissada, N.F., Ficara, A.J., Cole, B., 2004. Effect of connective tissue graft orientation on root coverage and gingival augmentation. Int. J. Periodont. Rest. Dent. 24 (1), 65–69.
9. Harris, R.J., Harris, L.E., Harris, C.R., Harris, A.J., 2007. Evaluation of root coverage with two connective tissue grafts obtained from the same location. Int. J. Periodont. Rest. Dent. 27 (4), 333–339.
10. Wilcko, M.T., Wilcko, W.M., Murphy, K.G., Carroll, W.J., Ferguson, D.J., Miley, D.D., et al., 2005. Full-thickness flap/subepithelial connective tissue grafting with intramarrow penetrations: three case reports of lingual root coverage. Int. J. Periodont. Rest. Dent. 25 (6), 561–569.
11. Souza, S.L., Macedo, G.O., Tunes, R.S., Silveira e Souza, A.M., Novaes Jr., A.B., Grisi, M.F., et al., 2008. Subepithelial connective tissue graft for root coverage in smokers and non-smokers: a clinical and histologic controlled study in humans. J. Periodontol. 79 (6), 1014–1021.
12. Santarelli GA, Ciancaglini R, Campanari F, Dinoi C, Ferraris S. Connective tissue grafting employing the tunnel technique. A case report of complete root coverage in anterior maxilla. Int J Periodontics Restorative Dent 2001;21:77-83.
13. Goldman H, Schluger S, Fox L, et al. Periodontal Therapy, 3rd ed. St. Louis: C.V. Mosby Co.; 1964:560.

Dual wash impression technique of recording impression for resorbed mandibular edentulous ridges

Dr. Surya. R[1], Dr. Vidya Shree Nandini. D[2], Dr. Chandra Sekharan Nair. K[3]

1 Senior Lecturer,
2 Professor and HOD
Dept. of Prosthodontics & Implantology,
SRM Kattankulathur Dental College and Hospital, Kanchipuram District
3 Professor and HOD
Department of Prosthodontics,
AECS Maruthi College of Dental Sciences and Research Centre, Bangalore

Received : 04.05.2015
Review Completed : 16.05.2015
Accepted : 20.05.2015

ABSTRACT

Residual ridge resorption is most commonly seen in the mandible and its prosthodontic management is always a challenge to a general dentist. One of the methods of improving the retention, stability and support of such severly resorbed atrophic mandible is through proper impression technique. This article describes a modified putty wash technique for recording impression of atrophic mandible with polyvinyl-siloxane impression material.

Keywords: Dual wash impression, atrophic mandible, definitive impression, residual ridge resorption

INTRODUCTION

Residual ridge resorption (RRR) is a cumulative and irreversible process. RRR has multifactorial etiology and implicates both local and systemic causes. It is four times greater in the mandible than in the maxillae because of the smaller denture bearing surface which leads to increased stress than the maxillary ridge[1]. Patient with resorbed ridge may have problems with loss of retention, such as speaking difficulties, pain and difficulty in mastication due to unstable denture. Surgical management requires patient co-operation and may not be feasible all times. Prosthodontic management of such severely resorbed ridges involves special impression techniques, arranging of teeth in neutral zone technique, use of non-anatomical teeth for the posterior teeth. Prosthetic management chiefly involves modification of the impression technique mainly to achieve stability. The main objective of impression in these conditions is the uniform application of pressure over the stress bearing areas, so that the force per unit area is reduced. McCord and Tyson advocated the use of admix impression compound for definitive impression[2,3]. Tan et al advised a technique wherein impression was made with custom tray with window, and, fluid wax and polyvinyl-siloxane were used as impression materials[4].

This article describes a modified dual wash impression technique for recording impression of atrophic mandible with polyvinyl-siloxane impression material.

TECHNIQUE

A 66 year old male patient reported to the department with completely edentulous maxilla and mandible with history of denture wearing for more than 10 years. On examination, mandibular ridge was atrophic (Fig.1) and was classified under American College of Prosthodontics (ACP) class IV[5]. The Impression technique utilised is as follows:

1. Mandibular preliminary impression was made with a stock tray. Tray adhesive was applied on the tray and allowed to dry for 10 minutes (Universal tray adhesive Zhermack, Germany). Preliminary impression was made using putty wash technique with condensation silicone (Zetaplus, Zhermack, Germany) in a stock tray (Fig.2).
2. Custom tray was fabricated for the mandibular ridge with self-cure acrylic resin (DPI-RR, Cold cureacrylic repair material, Mumbai) without a spacer (Fig.3). For the definitive impression, polyvinyl-siloxane impression material (Elite P&P, Zhermack, Germany) was used.
3. Tray extensions were verified and reduced two millimeters short of the sulcus and tray adhesive was applied on the tray and allowed to dry for ten minutes (Universal tray adhesive Zhermack, Germany).
4. Polyvinyl-siloxane putty material was mixed and placed all over the tray and in the borders and border molding was carried out by functional molding of the tissues (Fig.4).
5. Low viscosity polyvinyl-siloxane (Elite P&P, Zhermack, Germany) impression material was used for recording the wash impression.
6. Relief was created over the crest of the ridge by removing the impression material in that area (Fig.5).
7. Another layer of low viscosity polyvinyl-siloxane impression material (Elite P&P, Zhermack, Germany) was used for recording the final wash impression (Fig.6).

The impression was disinfected with 2% glutaraldehye solution (Korsolex, Raman and Weil Pvt. Ltd, India). Beading and boxing was done and the master cast was poured with Type III dental stone (Fig.7).

Further steps in fabrication of the complete denture were carried out in a conventional manner.

DISCUSSION

Management of resorbed ridges is always a difficult task especially in the mandible because of the anatomical limitations. Surgical management involves vestibuloplasty and ridge augmentation procedures. But they are invasive, time consuming and requires patient co-operation.

Prosthetic management of resorbed mandibular ridges involves modified impression techniques mainly to obtain maximum stability and support with sufficient retention. Different techniques and materials were described by various authors in the literature[2,3,4,6,7,8]. Admix compound impression material used in previous techniques may have the disadvantage of discomfort produced by the heat used for manipulation[9]. In this technique, polyvinyl-siloxane impression material provides the advantage of dimensional accuracy, comfort, modifiability if necessary and multiple casts can be poured[7,8]. Relief in the putty material in this technique helps in relieving the atrophic tissues and the dual wash impression with the low viscosity material helps in obtaining the mucostatic impression without applying undue pressure on the atrophic tissues. It is found that in a study conducted by Al Ahmed, low viscosity polyvinyl siloxane material exhibits least pressure[10]. A window can be created in the tray if the tissues are too flabby or displaceable. Dhananjay et al also proposed the two stage impression technique in atrophic mandible for uniform pressure distribution[8].

SUMMARY

This technique allows for recording the atrophic mandible with uniform pressure and maximum accuracy to provide better stability and adequate retention.

REFERENCES

1. Winkler S. Essentials of Complete Denture prosthodontics. 2nd Ed. A.I.T.B.S publishers, New Delhi, 1996:pp.22-38.
2. Mc Cord JF, Tyson KW. A conservative prosthodontic option for the treatment of edentulous patients with atrophic (flat) mandibular ridges.Br Dent J 1997;182:469-72.
3. McCord JF, Grant AA. Impression making. Br Dent J 2000;188:484-492.
4. Tan KM, Singer MT, Masri R, Driscoll CF. Modifiedfluid wax impression for a severely resorbededentulous mandibular ridge. J Prosthet Dent 2009;101:279-282.
5. McGarry TJ, Nimmo A, Skiba JF, Ahlstrom RH, Smith CR, Koumjian J H. Classification system for complete edentulism. J Prosthodont1999;8:27-39.
6. Lynch CD, Allen PF. Management of theflabby ridge: using contemporary materialsto solve an old problem. Br Dent J 2006;200:258-61.
7. Chandrashekharan NK, Kunnekel AT, Verma M, Gupta RK. A technique for impressing the severely resorbed mandibular edentulousridge. J Prosthodont 2012;21:215-8.
8. Dhananjay SG, Ashwini YK, Gangadhar SA, Lagdive SB, Pai UY. Two-step impression for atrophic mandibular ridge. Gerodontology 2012;29(2):e1195-7.
9. Grant AA, Johnson W. An introduction to removable denture prosthetics. 1st ed. Churchill livinstone Inc, New York,1983:pp.169-178.
10. Al-Ahmad A, Masri R, Driscoll CF, von Fraunhofer J, Romberg E. Pressure generated on a simulated mandibular oral analog by impression materials in custom trays of different design. J Prosthodont 2006;15(2):95-101.

Fig.1 Atrophic mandibular ridge

Fig.2 Primary impression with Condensation silicone

Fig.3 Mandibular Special tray

Fig.4 First step in final impression with putty

Fig.5 Second step in final impression with crestal relief

Fig.6 Final wash impression

Fig.7 Master Cast

Review of commercial toothpastes available in India which flashes 'n' number of times for treating tooth sensitivity based on their clinical studies

Mr.Chellavignesh Sathyanarayanan[1], Dr.Delfin Lovelina Franchis[2]

1, Intern
2, Senior Lecturer
Dept. of Public Health Dentistry,
Tagore Dental College & Hospital,
Rathinamangalam,
Chennai - 127.

Received : 25.05.2015
Review Completed : 03.06.2015
Accepted : 05.06.2015

ABSTRACT

Get closer than ever to your customer so close that you tell them what they need well before they realize it themselves." As the saying goes today marketing strategies have gone beyond the science. Innovations and marketing are the two eyes which make a name into trusted brand. Today customers are bombarded with many health claims to buy a toothpaste for sensitivity. Toothpastes are the at home" desensitizing agents which acts either by occluding the dentinal tubules or blocking the neural transmission. Day by day the science behind tooth pastes are growing which is known to the product developer and his/her competitor but common man only know the endorser who stands in front of the camera. This article deals with the science behind the toothpastes marketing for tooth sensitivity.

Keywords: Marketing and dentistry, Innovations in toothpastes, Dentin hypersensitivity, Toothpaste.

INTRODUCTION

Dentin sensitivity is one of the most commonly encountered problems in dental office. It is usually associated with exposed dentinal surfaces. Since there is no specific receptors in the pulp the perception of stimuli is always pain irrespective of the stimulus (Thermal, Chemical, Mechanical). Clinically it is described as an exaggerated response to application of stimulus to exposed denine regardless of its Location[1,2]. The terms Dentine sensitivity or Dentinal hypersensitivity used interchangeably to describe the same clinical condition. To prevent dental hypersensitivity there are various treatment option like application of bonding agents, G.I.C and recent advancements like application of dental lasers. But at home treatment option includes toothpastes, mouth rinses, etc. Since it is a most common clinical and painful condition with an incidence ranging from 4 to 74% [3-7]. Due to its large prevalence rate there is large need of solution to the problem which ultimately paves the way for the various health and pharmaceutical companies to give various toothpastes as solution which reaches the needy through advertisements. "Whatever the product or brand maybe it should be enhanced with more credibility. The current strategy is using an endorser to get more authenticity to the product [8].

PATHOGENESIS

Dentin hypersensitivity occurs as two stages:
Lesion localization and lesion initiation. Lesion localization occurs by loss of enamel by attrition, erosion, abfraction, etc. Lesion initiation is by three major mechanisms.
1. Direct innercation theory.
2. Odontoblast receptor.
Fluid movement/ hydrodynamic theory.

TOOTHPASTES AND ITS ACTION

Colgate sensitive Pro-Relief Desensitizing Paste:
This tooth paste contains 8% arginine and calcium carbonate which helps in the formation of dentin-like material over the applied tooth surface (i.e exposed dentinal tubules).

According to the study released by the company the claim is based on the pre-procedural cleaning offered by the dentist along with the tooth Paste [10].

Mechanism:
Arginine and calcium carbonate normally present in the saliva. Whereas in this toothpaste Arginine 8% and calcium carbonate works together to accelerated the natural mechanism of deposition of dentin-like material into the dentinal tubules.
The results are being confirmed by Scanning electron microscopy (SEM). This demonstrates that Arginine (8%) and calcium carbonate rapidly helps in action and completely occluding dentinal tubules [11].

Sensodyne Repair and Protect:
It contains NovaMin technology, which seeks out and forms a tooth-like layer over areas of the tooth where dentine is exposed.
What is NovaMin Technology?!
NovaMin is the brand name of a particulate bioactive glass that is used in dental care products for remineralisation of teeth. The active ingredient is the inorganic chemical calcium sodium phosphosilicate. NovaMin delivers silica and ionic calcium, phosphorus, and sodium, which are necessary for bone and tooth mineralization.[12]

How it works?!
NovaMin particles bind to the tooth surface. When the particle comes in contact with saliva and water reacts with the water to release calcium and phosphate ions. These ions are protected by glass particles so that they can be delivered to specific locations rather than as a liquid solution. Sodium ions in the particles exchange with hydrogen cations, which allows the calcium and phosphate ions to be released. A calcium phosphate layer then forms and crystallizes as hydroxylapatite a form of hard and strong mineral in teeth.

The chemical reaction that leads to hydroxylapatite is:

$$5Ca2+ + 3PO43- + OH- \rightarrow Ca5(PO4)3(OH)$$

What other competitive companies says?!

Only 10+ published abstracts and studies mainly from the manufacturers. Used for the relief of root surface hypersensitivity and occlusion of dentinal tubules.[13]

Other products containing Novamin Tech:

NuCare prophy paste

Denshield, etc...

Himalayas Herbals Sensitive Toothpaste:

Himalaya's Sensitive Toothpaste is a herbal formulation for tooth sensitivity. It contains natural substances which blocks exposed dentinal tubules that are sources of teeth sensitivity.

Key ingredients:

- **Miswak** inhibits the build-up of dental plaque and is therefore beneficial in the prevention of tooth decay. The herb reduces gum inflammation, prevents gum bleeding, and its astringent property strengthens gums.
- **Menthol** from mint oils has cooling and analgesic properties which also give long lasting fresh breath.
- **Almond,** rich in tannins, has astringent properties that tighten gums. Almond Shell contains triterpenoids, flavonoids and phenolics, which possess free radical scavenging properties.
- **Spinach** contains natural oxalate compounds, which help in forming phytocomplexes on teeth. This occludes dentinal tubules and blocks the transmission of pain from the surface to the tooth's nerves. These oxalate compounds produce protective films on the molars, and thus, help to prevent tooth destruction. Naturally derived Potassium nitrate inhibits pain in hypersensitive teeth through its desensitizing effect on dentinal nerves.[14]

Pepsodent Expert Protection Pro Sensitive:

Pepsodent Pro-Sensitive is the toothpaste with a combination of Hydroxyapatite, Zinc Citrate and Potassium Citrate.

It contains

1. Potassium Citrate

Soothes the sensitivity receptors.

2. Hydroxyapatite

The building block of tooth enamel crystals - it is deposited into the open dentinal tubules and helps to prevent painful stimulus reaching the pain receptors. HAP enters the open dentine channels and reduces its permeability thus giving relief from sensitivity.

3. Zinc Citrate

Inhibits plaque bacterial metabolism and is clinically proven to help keep gums healthy. This protects gums from future recession, thus reducing the risk of future tooth sensitivity.

4. Flouride 1000ppm

For clinically proven protection against caries.

There is no clear explanation or component which helps in effective binding of the hydroxyapatite crystals to the tooth surfaces.

CONCLUSION

And let's be clear it's not enough just to limit ads for things that aren't healthy and promissory. It's also going to be critical to increase marketing for things that are healthy. Due to marketing competitions companies offers numerous claims which are not clear to the eyes of common man. Intitatives must be taken by the government of India, Dental council to scrutinize and approve the products and their marketing ads esp. for healthcare sectors.

REFERENCES

1. Addy M. Tooth wear and sensitivity: Clinical advances in restorative dentistry. Dentine hypersensitivity: Definition, prevalence distribution and aetiology. Martin Dunitz; pp. 239-48.
2. Addy M. Etiology and clinical implications of dentine hypersensitivity. Dent Clin North America. 1990;34:503-14.
3. Rees JS, Jin U The prevalence of dentine hypersenstivity in a hospital clinic population in Hong Kong. J Dent. 2003;31:453-61.
4. Flynn J, Galloway R, Orchardson R. The incidence of hypersensitive teeth in the west of Scotland. J Dent. 1985;13:230-6.
5. Fischer C, Fischer RG, Wennberg A. Prevalence and distribution of cervical dentine hypersensitivity in a population in Rio de janeiro, Brazil J Dent. 1992;20: 272-6.
6. Irwin CR, McCusker P. Prevalence of dentine hypersensitivity in general dental population. J Irish Dent Assoc. 1997;43:7-9.
7. Taani DQ Prevalence of and distribution of dentin hypersensitivity and plaque in dental hospital population.. Quintessence Int. 2001;32:372-6.
8. A study on the effectiveness of professional testimonials as an appeal in television commercials of health- care products.. International journal of Innovative research, Vol – 2 Issue 5 May 2013.
9. Ochardson R, Gilliam D. Managing dentin hypersensitivity. Journal of American Dent Assoc. 2006;137:990-8.
10. D Hamlin, K Phelan Williams, E Delgado et al. A clinical investigation of the efficacy of a desensitizing paste containing 8% Arginine and calcium carbonate for the reduction of dentin hypersensitivity when applied prior to Dental Prophylaxis. A journal of dentistry 2009.
11. Petrou I, Heu R, Stranick M, Lavender S, Zaidel L, Cummins D, Sullivan RJ, Hsueh C, Gimzewski JK (2009). "A breakthrough therapy for dentin hypersensitivity: how dental products containing 8% arginine and calcium carbonate work to deliver effective relief of sensitive teeth". (primary). J Clin Dent 20 (1): 23–31. PMID 19489189.
12. http://web.archive.org/web/20091008000658/http://www.gcamerica.com/images/pdfs/recaldent_comparison.pdf
13. http://www.himalayawellness.com/products/personalcare/sensitive-toothpaste.htm
14. http://www.pepsodent.in/product-pro-sensitive.php

Invisible Aligners – A Review

Arun kumar. C[1], Usha.S[1], Dr.Priyanka.K.Cholan[2], Dr.Iniyan[3]

1 Intern,
Tagore dental college and hospital,
Rathinamangalam, Chennai
2 Senior Lecturer,
Department of Periodontics,
3 PG Student,
Dept. of Oral & Maxillofacial Surgery,
SRM Dental College and Hospital,
Ramapuram, Chennai

Received : 17.05.2015
Review Completed : 27.05.2015
Accepted : 02.06.2015

ABSTRACT

Malocclusion is one of the most prevalent clinical conditions. While most individuals seek orthodontic treatment to improve their appearance, malocclusion may also be responsible for various dental problems such as tooth decay, tooth loss, gum disease, jaw joint pain and headaches. The only option available for correction of malocclusion till now was traditional orthodontic treatment i.e. braces. Although braces are generally effective in correcting a wide range of malocclusions, they are subject to many limitations and disadvantages like unattractive appearance, discomfort, frequent lacerations, poor oral hygiene etc. Due to these limitations of braces, only a relatively small proportion of people with malocclusion seek traditional orthodontic treatment thereby creating a large need gap. Invisible aligners were incorporated to cater to this large unmet need for an orthodontic system that addresses these patient concerns and also there is an unmet need among dental professionals for a treatment modality that increases the predictability and efficiency of treatment and enhances profitability of practice also.

Keywords: invisalign, clearpath, esthetic orthodontic treatment, clear aligners.

INTRODUCTION

The practice of orthodontics is faced with new trends. Adults are increasingly aware of the influence of appearance in their personal and professional lives. The frequency of malocclusions in adults is equal to or greater than that observed in children and adolescents[1]. A 1999 study showed that the number of adults seeking orthodontic care has been declining. Furthermore, this study concluded that this trend is not likely to improve without a biological or technological breakthrough[2]. Adults make up only a small percentage of the patients in orthodontic practices in the United States[3]. Possible explanations for the small number of adult patients include fear of pain or discomfort and esthetic concerns associated with general orthodontic treatment[4]. Moreover, hygiene and periodontal health are confounding factors associated with adult treatment[5]. To increase the adult patients in involving themselves in the orthodontic treatment, Invisible aligners are introduced which satisfies the aesthetic appearance of the adults, which is the main complaint.

HISTORY

In 1945, Kesling[6] introduced the tooth positioning appliance as a method of refining the final stage of orthodontic finishing after debanding. In 1971, Ponitz[7] introduced a similar appliance called the "invisible retainer" made on a master model that prepositioned teeth with base-plate wax. Sheridan and others[8] later developed a technique involving interproximal tooth reduction and progressive alignment using clear Essixappliances.In 1997 Invisalign appliance is introduced and available to orthodontists in 1999.

ABOUT ALIGNERS

An aligner is a custom made clear plastic tray that fits over your teeth and corrects their malpositioning. Aligners are made in medical grade plastic approved by FDA. Each aligner moves teeth a little bit by exerting light, continuous & uninterrupted pressure on them. These aligners provide a hygienic, convenient and a clear solution for the correction of malocclusion without having to wear brackets and wires. These aligners are removable and patients can eat, brush and floss their teeth and enjoy their normal life. These aligners are nearly invisible and nobody can notice the aligners when you are wearing them. Aligners are made by an internationally patented unique process, which involves advanced technology supported by customized software and mechanical systems. The treatment comprises of a series of aligners. Each set has to be worn by the patient for atleast 22hrs in a day for 2 weeks before advancing to the next set. Treatment duration is 6-24 months depending on the severity of case. Recommended age limit for usage is 14 to 65 years of age. Aligners apply precise, light, uninterrupted & continuous forces on the teeth so they are not painful but a slight discomfort may be experienced at the beginning of treatment, which goes away within 24 hours. Aligners are made in medical grade plastic unlike metal wires braces, which hurt your cheeks and lips. Aligners are not a new appliance. Millions of People have already been treated with aligners in developed countries like USA, UK, Middle East and other European countries and their number is increasing every day.

TYPES OF ALIGNER SYSTEMS

1. MANUAL SETUP ALIGNERS: Entire processing & fabrication done by manual process in the laboratory by a technician.

Disadvantages:

a) Non Predictable
b) Multiple impressions required
c) More chair side time
d) Imprecise & inaccurate procedure
e) Cannot treat complex & extraction cases

Examples:

a) Conventional Laboratory Vacuum Forming Technique (e.g. using Biostar machine)
b) MaxDent Ortho's Removable aligner systems

c) MTM Aligners
d) Clear Aligner International

2. CAD CAM ALIGNERS: Entire processing & fabrication is done by an automated process which is anamalgamation of Conventional dental laboratory procedures, Highly precise mechanical &software systems and Digital technology

Advantages:

a) Predictable and can accurately show the results of treatment and exact no. of aligners at
the beginning of the treatment !
b) Only 1 impressions required in the beginning
c) Only 10 minutes of chair side time required per 6 weeks per patient
d) Highly precise, automated & sophisticated procedure
e) Can treat all varieties of cases, including extraction cases, crossbites, rotations, edge to
edge, bi-maxillary protrusion etc.

Examples:

a) Invisalign
b) ClearPath

ADVANTAGES OF ALIGNERS

FOR THE PATIENT

1. CLEAR: It is virtually invisible. Hardly anyone gets to know patient is straightening his/her teeth. So now it can align his teeth and get the smile he always desired without having any social inhibitions.
2. REMOVABLE: patient can remove them to eat, drink, brush, floss or for special occasions.
3. COMFORTABLE: the edges are smooth so they won't irritate patient's gums or cheeks.
4. PREDICTABLE & EFFECTIVE: patient can see the treatment outcome even before starting it and start enjoying a better smile even before completing the treatment.
5. CUSTOMIZED: Doctor will take precise impressions and customize aligners for patient's teeth.

FOR THE DOCTOR

1) EVIDENCE BASED and SCIENTIFIC (PRECISION OF MOVEMENT): The entire process is designed to deliver customized aligner that moves each tooth directly along the most efficient way to achieve the desiredgoal. By optimizing each aligners output, the number of aligners and intermediate changes required are minimized leading to shorter treatment times for patients, and increased capacity for practice.
2) ACCURACY of regeneration of patient occlusion without any digital data manipulation, eliminating any potential inaccuracy of appliance fit.
3) MORE CONTROL OVER TREATMENT: treatment can bemodified in between batches during the course of treatment.
4) FASTER TURNAROUND TIME from the time a case is received to the time aligners are shipped back to the doctor.
5) UNLIMITED MODIFICATIONS to the diagnostic setup.
6) ACCURATE AND PRECISE IPR using original patient dentition without any digital error introduced to it.
7) Original Patient Data used during the whole manufacturing process from casting to treatments and aligner fabrication which adds to the accuracy of the end product and ensures BETTER TREATMENT OUTCOME.
8) DECREASED CHAIR SIDE TIME: It reduces both the frequency and length of patient visits. It also eliminates the need for time-intensive processes such as bonding appliances to the patient'steeth, adjusting arch wires during the course of treatment and removing the appliances at the conclusion of treatment. As such, use of Invisible aligners reduces dental professional and staff chair time and can increase practice throughput.

LIMITATIONS WITH BRACES

Although braces are generally effective in correcting a wide range of malocclusions, they are subject to many limitations and disadvantages. Conventional orthodontic treatment is associated with:

UNATTRACTIVE APPEARANCE: Braces call attention to the patient's condition and treatment. In addition, braces trap food, which can further compromise appearance. Braces can also result in permanent discolorationof teeth. Many adults associate braces with adolescence.

ORAL DISCOMFORT: Braces are sharp and bulky and can abrade and irritate the interior surfaces of the mouth. The tightening or adjustment of braces results in root and gum soreness and discomfort, especially in the few days immediately following an orthodontic visit.

POOR ORAL HYGIENE: Braces compromise oral hygiene by making it more difficult to brush and floss. These problems can result in tooth decay and periodontal damage. Additionally, the bonding of brackets to teeth can cause permanent markings on the teeth.

INABILITY TO PROJECT TREATMENT: Historically, dental professionals have not had means to model themovement of teeth over a course of treatment. Accordingly, they must rely on intuition and judgment to plan and project treatment. As a result, they cannot be precise about the direction or distance of expected toothmovement between patient visits. This lack of predictability may result in unwanted tooth movements and can limit their ability to estimate the duration and course of treatment.

PHYSICAL DEMANDS ON DENTAL PROFESSIONAL: The manipulation of wires and brackets requires sustained manual dexterity and visual acuity, and may place other physical burden on the dental professionals.

ROOT RESORPTION: The sustained high levels of force associated with conventional treatment can result in rootresorption, which is a shortening of tooth roots. This shortening can have substantial adverse periodontal consequences for the patient.

EMERGENCIES: At times, braces need to be repaired or replaced on an emergency basis. Such emergencies cause significant inconvenience to both the patient and the dental professional.

LIMITATIONS WITH ALIGNERS

In some instances, Invisible aligners may have certain limitations relative to conventional treatment. Aligners cost more to produce than conventional braces, and manufacturers charge dental professionals more than they generally pay for the supplies used in conventional treatment. Depending on the individual pricing policies of each dental professional, the cost of Invisible aligners to the patient may be greater than for conventional braces. Dental professionals must also incorporate manufacturer's manufacturing cycle times into their overall treatment plan. Oncea dental professional submits a case to manufacturer, there is generally a turn-around time of 3-4 weeks before the aligners are delivered. Aligners may not be appropriate for all cases, such as severe malocclusion, which may require Aligners to be used in combination with conventional braces for optimal results. In addition, because aligners are removable, treatment depends on patients wearing their aligners as recommended. Some patients may experience a temporary period of adjustment to wearing aligners that may mildly affect speech.

HOW DOES IT WORK

1) GETTING STARTED

Doctor evaluates patient's oral condition and discuss patient problems & treatment goals. Once it's established that invisible aligners is the right treatment option for the patient; the doctor will takeimpressions, photos and x-rays that are necessary for custom aligner manufacturing.

2) CUSTOM TREATMENT PLAN

The doctor sends the records impressions, photos and x-rays to manufacturer with a prescription for custom aligners. They uses these records to create exact 3D models of the teeth. Then working with the doctor at every step, and following the precise instructions provided on the prescription, they maps out a complete treatment plan of gradual adjustment that takes the teeth from where they are currently to where they want them to end up. Once the impressions are processed, the patient & doctor will be able to preview the projected results of treatment in "treatment set-up," a computerized digital representation of teeth before and after treatment.

3) THE ALIGNERS ARE COMPUTER CRAFTED

Once the patient & doctor are satisfied and approve the projected results shown in treatment set-up, the manufacturing process begins. Using the latest digital mapping and moulding technology, they fabricates custom aligners with software guided precision and then sends aligners to the respective doctor for delivery to the patient.

4) PROGRESS WEARING ALIGNERS

Patients are advised to wear the aligners all the time, except while eating and drinking and during daily tooth care, such as brushing and flossing. These aligners are so clear, they are barely noticeable so they won't have an impact on patient's day to day life.

Aligner by aligner, patient will be able to see the difference as teeth slowly adjust and align to the target smile. Patient visits the doctor periodically for check-ups & follow-ups (preferably once every month) to see the progress until he eventually has the great smile he always wanted.

GENERAL INSTRUCTIONS

1. Each aligner has to be worn for exactly 2 weeks i.e. 14-15 days.
2. Each aligner has to be worn all throughout the day except during meals and brushing.
3. In case of loss, damage or breakage of aligner, please report to the ,manufacturer for the new aligner set.

ALIGNER INSERTION

1. Make sure of having the proper aligner - the upper for the top teeth and the lower for the bottom teeth.
2. Doctor/Patient may insert either the upper or lower aligner first. When inserting each aligner, gently push the aligners over front teeth. Then, apply equal pressure, using fingertips, to the tops of left and right molars (Back Teeth) until the aligner snaps into place.
3. If aligners don't fit properly, gently BITE onto cotton or gauze piece to seat aligners into position.

ALIGNER REMOVAL

1. Using your fingers, start on one side at the molars, and slowly work your way around to the other side.
2. To help prevent damage, avoid unnecessary removal.
3. DO NOT use any sharp object to remove aligners.
4. Immediately rinse aligner with water, shake off excess water, and store aligners in the protective case provided with your starter kit.
5. Do Not use excessive force to bend or twist an aligner to get it off.

DAILY CARE AND MAINTENANCE OF ALIGNERS

1. Clean aligners prior to each insertion with a soft bristle tooth brush using water or a small amount of toothpaste.
2. Rinse each aligner thoroughly with water after each cleaning.
3. DO NOT use denture cleaners to clean aligners or soak them in mouthwash. These products can damage the surface of the aligner, causing it to become dull and more visible.

PROPER ORAL HYGIENE

1. Remove your aligners for eating and drinking, except when drinking water (only).
2. Brush and floss teeth after each meal or snack prior to re-inserting aligners.
3. Regular dental checkups and cleaning are recommended for the continued health of your teeth and gums.

STORING YOUR CLEARPATH ALIGNERS

Store aligners in a case when not in mouth. This will help protect them fromloss and damage. Always keep the most recently usedaligners (previous case) also in aseparate case / pouch. Ifcurrent aligner is lost or broken, temporarily go back one stage and use the previous setof aligners while a replacement is beingmade.Keep out of reach of children and pets!.

CONCLUSION

The new system has opened up a new area of adult orthodontics, patients who may not want conventional fixed appliances or for whom traditional removable appliances maybe unsuccessful may go for this treatment. Still some limitations are there in using clear aligners. But as a whole clear aligners are very useful advanced technology in treating orthodontic patients at its best.

REFERENCES

1. Buttke, T.M. and Proffit, W.R.: Referring adult patients for orthodontic treatment, J. Am. Dent. Assoc. 130:73-79, 1999.
2. Gottlieb E. By the numbers. J ClinOrthod 1999;33:278-81.
3. Buttke TM, Proffit WR. Referring adult patients for orthodontic treatment. J Am Dent Assoc 1999;130:73-9.
4. Sergl HG, Klages U, Zentner A. Pain and discomfort during orthodontic treatment: causative factors and effects on compliance. Am J OrthodDentofacialOrthop 1998;114:684-91.
5. Boyd RL, Vlaskalic V. Three-dimensional diagnosis and orthodontic treatment of complex malocclusions with the Invisalign® Appliance. SeminOrthod 2001;7:232-58.
6. Kesling HD. The philosophy of tooth positioning appliance. Am J Orthod1945; 31:297–304.
7. Ponitz RJ. Invisible retainers. Am J Orthod1971; 59(3):266–72.3.
8. Sheridan JJ, LeDoux W, McMinn R. Essix retainers: fabrication and supervision for permanent retention. J ClinOrthod1993; 27(1):37–45.

Clinical Aspects of Regenerative Endodontic Procedures - A Review

Dr. Nachimuthu Jayaprakash[1], Dr. Jayaraman Karunakaran[2], Dr. Mani Jeevitha[3], Dr. Rajendran Gayathiridevi[4]

1, Senior Lecturer,
2, Professor & HOD,
3,4, Intern
Dept. of Conservative Dentistry and Endodontics,
J.K.K Natarajah Dental College,
Komarapalayam, TamilNadu.

Received : 20.05.2015
Review Completed : 27.05.2015
Accepted : 01.06.2015

ABSTRACT

The concept of regenerative endodontics has gained much attention in endodontics in the past decade. The endodontic management of permanent immature teeth remains with challenges. Although treatment modalities for vital pulp therapy in these teeth provide long-term favorable outcome, the treatment of teeth with pulpal necrosis and apical periodontitis are significantly less predictable. Immature teeth diagnosed with pulpal necrosis have been traditionally treated with apexification or apexogenesis approaches. Unfortunately, these procedures provide little to no benefit in attaining continued root development. Regenerative endodontic procedures have evolved as an important alternative in treating teeth with otherwise questionable long-term prognosis because of thin, fragile dentinal walls. These procedures rely heavily on chemical disinfection of the root canal system. This review summarizes the current literature supporting a biological rationale for considering regenerative endodontic treatment procedures in treating the immature permanent tooth with pulpal necrosis.

INTRODUCTION

When a young permanent tooth faces Endodontic infection or physical trauma, it may cause pulpal necrosis and results in incompletely formed roots with wide open apices, reduced root length, and thin root dentinal walls.

Once the source of infection is removed in an affected site, it results in a programmed wound healing. The ideal wound healing is to recreate what occurs during embryonic tissue or organ development (1) and to reconstitute the original biological status structurally and functionally – a process defined as regeneration (2). It is by regeneration and repair a wound healing takes place (3). However if parenchymal cells of an organ is injured completely for e.g. pulpal necrosis, wound healing takes place only by repair and not regeneration (3).

These teeth can be treated with apexification procedures by using either calcium hydroxide treatment (4) or mineral trioxide aggregate (MTA) as an apical plug (5). Though these procedures results in the resolution of signs and symptoms of pathosis, it provides little or no benefit for continued root development (6). Regenerative endodontic procedures (REPs), attempts to restore normal pulpal physiologic functions including continued root development, immunocompetency, and normal nociception in addition to the resolution of symptoms(7).

Regenerative endodontic procedures can be defined as biologically based procedures designed to create and deliver tissues to replace diseased, missing and traumatized pulp-dentin complex. Dr. BW Hermann reported the usage of calcium hydroxide for vital pulp therapy cases [8]. Presently, non-vital infected teeth with immature apex can be treated by – regeneration of pulp dentin complex (tissue engineering technology), and the other in which the formation of new tissue is expected to occur from the structures within the tooth itself, allowing continued root development (revascularization). Thus:

- Pulp revascularization is the process of induction of angiogenesis in an endodontically treated root canal.
- Pulp regeneration is pulpal revascularization plus the restoration of functional odontoblasts and/or nerve fibers.

STEM CELLS

They are the undifferentiated cells that are capable of both self renewal and multilineage differentiation and hence defined as clonogenic. They differentiate into one daughter stem cell and one progenitor cell. It is of two types.

- Embryonic stem cells – they are present within the blastocyst stage of development.
- Postnatal stem cells – they can be isolated from bone marrow, neural tissue, dental pulp and periodontal ligament.

Stem cells can be differentiated from their source as:

- Autologous stem cells – they are harvested from the same individual to whom it will be implanted.
- Allogeneic stem cells – they are from a donor of the same species.
- Xenogeneic cells – it will be from individuals of another species.

For endodontic regeneration, autologous stem cells hold good because of less immune rejection when compared to other group of stem cells. Cells from dental stem structures will have more odontogenic properties in comparison to non dental stem cell population like bone marrow stromal stem cells.

Various sources for postnatal dental stem cells have been successfully studied:

Permanent teeth – Dental pulp stem cells (DPSC): derived from third molar.[9]

- Deciduous teeth – Stem cells from human-exfoliated deciduous teeth (SHED): stem cells are present within the pulp tissue of deciduous teeth. [10]

- Deciduous teeth – Stem cells from human-exfoliated deciduous teeth (SHED): stem cells are present within the pulp tissue of deciduous teeth. [10]
- Periodontal ligament - Periodontal ligament stem cells (PDLSC). [11]
- Stem Cells from apical papilla (SCAP). [12]
- Stem cells from supernumerary tooth – Mesiodens. [13]
- Stem cells from teeth extracted for orthodontic purposes. [14]
- Dental follicle progenitor cells. [15]
- Stem cells from human natal dental pulp- (hNDP). [16]

SCAFFOLD

It should provide a framework for cell growth, differentiation and organization at a local site. In addition it should be porous to allow for placement of cells and also be biocompatible and biodegradable with host tissue. [17, 18]. It should be effective for transport of nutrients and waste. [19]

Materials for scaffold can be natural (collagen,dentin, fibrin, silk, alginate) or synthetic (various polymers like PLA, PGA, etc.). Synthetic polymers are degraded by simple hydrolysis and natural polymers are degraded enzymatically. Collagen is the most widely studied natural scaffold. Polymer hydrogel is a soft three-dimensional scaffold matrix, which can receive an engineered pulp tissue [20]. It can be injected at the site (injectable scaffold delivery). Hydrogels have high water content, soft and rubbery consistency and low interfacial tension with water or biological fluids. Hydrogels can be either photo-polymerizable [21] or self-hardening e.g., silanized hydroxypropyl-methylcellulose, they form rigid structures once they are implanted into the tissue sites. Another injectable scaffold is β-tricalcium phosphate which is alginate in gel phase and forms beads in solid phase. Treated dentin matrix also provides suitable environment for regeneration of dental tissue [22]. Enamel matrix derivatives (Emdogain), whose major component is amelogenins, have also been used as potential scaffolds.

GROWTH FACTORS

These are proteins that bind to receptors on the cell and induce cellular proliferation and/or differentiation. Growth factors stimulate cellular division in numerous cell types, while others are more cells specific. Many events in pulp dentin regeneration are signaled by growth factors. Growth factors that play a vital role are; transforming growth factor (TGF) and bone morphogenetic protein (BMP). TGF-β1 and β3 are important in cellular signaling for odontoblast differentiation and stimulation of dentin matrix secretion.

In a dentin matrix, odontoblasts secrete growth factors which will be protected in an active form through the interaction with other components (23). By addition of purified dentin protein fractions, it stimulates the tertiary dentin matrix secretion through the action of TGF-β1. These growth factors are also involved in injury signaling and tooth-healing reaction. Unlike calcium hydroxide, BMPs induce higher quantity and more homogeneous reparatory dentin. BMP-2, BMP-4 and BMP-7 have been shown to direct the stem cell differentiation into odontoblasts that result in dentin formation making the BMP family the most likely candidate as growth factors.

REVASCULARIZATION

It is the regeneration of cells from tissue within. The body tissue is composed of two components: cells and the surrounding environment. The first attempt was made in 1971 in a young permanent infected tooth with open apex [24] but it was not successful due to limitations in technology, material and instruments available in those times. Presently several case reports documented the revascularization of necrotic root canal systems by disinfection which is followed by establishing bleeding into the canal system via over instrumentation. In this method the root canal space has been disinfected and that the formation of blood clot yields a matrix (e.g., fibrin) that traps the cells capable of initiating new tissue formation. It is different from apexification not only by the closure of root and also results in increased root dentin thickness. The revascularization studies have established following prerequisites:

- Most commonly Revascularization occurs in teeth with open apices and necrotic pulp.
- Open apex.
- Disinfection by triple antibiotic paste consisting of ciprofloxacin, metronidazole and minocycline[25], Calcium hydroxide, [27]
- Effective coronal seal.
- Matrix into which new tissue can grow.
- Young patients.
- Use of anesthetic without a vasoconstrictor when trying to induce bleeding[28]
- No instrumentation of the canals.
- Use of sodium hypochlorite as an irrigant.

The growth of tissue occurs through the formation of a blood clot which serves as a natural protein scaffold. Continued thickening of the dentinal walls and subsequent apical closure was commonly observed in several case reports. The root length is increased by the growth of cementum with the ingress of connective tissue similar to periodontal ligament in the canal space was found [29]. The success of revascularization therapy mainly depends on the immature tooth which has an open apex, short root and intact but necrotic pulp tissue hence, the new tissues are easily accessible to the root canal system with a relatively short distance for proliferation to reach the coronal pulp horn. Minimum instrumentation helps to preserve viable pulp tissue which contributes to further development of open apex root and also the young patients have higher healing potential and more stem cell regenerative capacity.

Considerations for Regeneration Procedures

Current considerations for REPs

Case selection:

- Tooth with necrotic pulp and an immature apex
- Pulp space not needed for post/core, final restoration
- Compliant patient

Informed consent:

- Two (or more) appointments
- Use of antimicrobial(s)
- Possible adverse effects: staining of crown/root, lack of response to treatment, pain/infection
- Alternatives: MTA apexification, no treatment, extraction (when deemed nonsalvageable)
- Permission to enter information into AAE database (optional)

First appointment:

- Local anesthesia, rubber dam isolation, access
- Copious, gentle irrigation with 20 mL NaOCl using an irrigation system that minimizes the possibility of extrusion of irrigants into the periapical space (eg, needle with closed end and side vents, or EndoVac). To minimize potential precipitate in the canal, use sterile water or saline between NaOCl; lower concentrations of NaOCl are advised, to minimize cytotoxicity to stem cells in the apical tissues.
- Dry canals
- Place antibiotic paste or calcium hydroxide. If the triple antibiotic paste is used: (1) consider sealing pulp chamber with a dentin bonding agent to minimize risk of staining, and (2) mix 1:1:1 ciprofloxacin/metronidazole/minocycline (or, if esthetics are crucial, then consider a 1:1 mixture of ciprofloxacin/metronidazole).
- Deliver into canal system via lentulo spiral, MAP system, or Centrix syringe
- If triple antibiotic paste is used, ensure that it remains below the CEJ (to minimize crown staining)
- Seal with 3 to 4 mm of Cavit, followed by immediate restorative material, glass ionomer cement, or another temporary material
- Dismiss patient for 3 to 4 weeks

Second appointment:

- Assess response to initial treatment. If there are signs/symptoms of persistent infection, consider additional treatment time with antimicrobial, or alternative antimicrobial.
- Anesthesia with 3% mepivacaine without vasoconstrictor, rubber dam, isolation
- Copious, gentle irrigation with 20 mL of ethylenediamine tetraacetic acid, followed by normal saline, using a similar closed-end needle
- Dry with paper points
- Create bleeding into canal system by overinstrumenting (endo file, endo explorer)
- Stop bleeding 3 mm from CEJ
- Place CollaPlug/CollaCote at the orifice, if necessary
- Place 3 to 4 mm of white MTA and reinforced glass ionomer and place permanent restoration

Follow-up:

Clinical and radiographic examination:

- No pain or soft tissue swelling (often observed between first and second appointments)
- Resolution of apical radiolucency (often observed 6–12 months after treatment)
- Increased width of root walls (this is generally observed before apparent increase in root length and often occurs 12–24 months after treatment)
- Increased root length

Data from Available at: www.aae.org/Dental_Professionals/Considerations_for_Regenerative_Procedures.aspx.

What Tissue is in the Canal?

Histology after REPs in dogs shows that the radiographic changes in the root may be from the deposition of cementum-like and bone-like tissues (30), suggesting in growth of periodontal ligament tissue versus the pulp tissue. It can be:

1. in growth of cementum and periodontal ligament (PDL)
2. in growth of cementum, PDL, and bone
3. in growth of bone and bone marrow

CONCLUSION

Revitalization therapy for immature permanent necrotic teeth with or without infected pulp has shown increased thickening of the canal walls and/or continued root development, it has become an alternative treatment choice alongside apexification therapy. Clinically, it was said that the pulp tissue was regenerated in the canal to promote maturation of the revitalized tooth. However, animal and human studies revealed that the tissues formed were cementum, or bone-like tissue and fibrous connective tissue similar to periodontal ligament. Future regenerative therapy in endodontics may involve the cleaning and shaping of root canals followed by the implantation of vital dental pulp tissue complex produced in the laboratory.

REFERENCES

1. Martin P, Parkhurst SM (2004) Parallels between tissue repair and embryo morphogenesis. Development 131, 30211–34.
2. Martin P (1997) Wound healing – aiming for perfect skin regeneration. Science 276, 75–81.
3. Kumar V, Abbas AK, Fausto N, Aster J (2009) Robbins and Cotran Pathologic Basis of Disease, 8th edn. Philadelphia, PA: Saunders.
4. Cvek M. Prognosis of luxated non-vital maxillary incisors treated with calcium hydroxide and filled with gutta-percha. A retrospective clinical study. Endod Dent Traumatol 1992;8:45–55.
5. Witherspoon DE, Small JC, Regan JD, et al. Retrospective analysis of open apex teeth obturated with mineral trioxide aggregate. J Endod 2008;34:1171–6.
6. Bose R, Nummikoski P, Hargreaves K. A retrospective evaluation of radiographic outcomes in immature teeth with necrotic root canal systems treated with regenerative endodontic procedures. J Endod 2009;35:1343–9.
7. Diogenes A, Henry MA, Teixeira FB, et al. An update on clinical regenerative endodontics. Endod Top 2013;28:2–23.
8. Herman BW. On the reaction of the dental pulp to vital amputation and calxyl capping. Dtsch Zahnarztl Z 1952;7:1446-7.
9. Langer R, Vacanti JP. Tissue engineering. Science 1993;260:920-6.
10. Miura M, Gronthos S, Zhao M, Fisher LW, Robey PG, Shi S. SHED: stem cells from human exfoliated deciduous teeth. Proc Natl Acad Sci USA 2003;100:5807-12.
11. Ballini A, De Frenza G, Cantore S, Papa F, Grano M, Mastrangelo F, et al. In vitro stem cell cultures from human dental pulp and periodontal ligament: new prospects in dentistry. Int J Immunopathol Pharmacol 2007;20:9-16.
12. Sonoyama W, Liu Y, Yamaza T, Tuan RS, Wang S, Shi S, et al. Characterization of the apical papilla and its residing stem cells from human immature permanent teeth: a pilot study. J Endod 2008;34: 166-71.
13. Huang AH, Chen YK, Lin LM, Shieh TY, Chan AW. Isolation and characterization of dental pulp stem cells from a supernumerary tooth. J Oral Pathol Med 2008;39:571-4.
14. Yang XC, Fan MW. Identification and isolation of human dental pulp stem cells. Zhonghua Kou Qiang Yi Xue Za Zhi 2005;40: 244-7.
15. Huang GT, Gronthos S, Shi S. Mesenchymal stem cells derived from dental tissues vs those from other sources: Their biology and role in regenerative medicine. J Dent Res 2009;88:792-806.
16. Karaöz E, Doğan BN, Aksoy A, Gacar G, Akyüz S, Ayhan S, et al. Isolation and in vitro characterisation of dental pulp stem cells from natal teeth. Histochem Cell Biol 2010;133:95-112.
17. Young CS, Abukawa H, Asrican R, Ravens M, Troulis MJ, Kaban LB, et al. Tissue-engineered hybrid tooth and bone. Tissue Eng 2005;11: 1599-610.
18. Taylor MS, Daniels AU, Andriano KP, Heller J. Six bioabsorbable polymers: in vitro acute toxicity of accumulated degradation products. J Appl Biomater 1994;5:151-7.
19. Karande TS, Ong JL, Agarwal CM. Diffusion in musculoskeletal tissue engineering scaffolds: design issues related to porosity, permeability, architecture, and nutrient mixing. Ann Biomed Engl 2004;32:1728-43.
20. Trojani C, Weiss P, Michiels JF, Vinatier C, Guicheux J, Daculsi G, et al. Three-dimensional culture and differentiation of human osteogenic cells in an injectable hydroxypropyl methylcellulose hydrogel. Biomater 2005;26:5509-17.
21. Luo Y, Shoichet MS. A photolabile hydrogel for guided three dimensional cell growth and migration. Nat Mater 2004;3:249-53.
22. Guo W, He Y, Zhang X, Lu W, Wang C, Yu H, et al. The use of dentin matrix scaffold and dental follicle cells for dentin regeneration. Biomaterials 2009;30:6708-23.
23. Smith AJ, Matthews JB, Hall RC. Transforming growth factor-beta 1 in dentin matrix. Ligand activation and receptor expression. Eur J Oral Sci 1998;106:179-84.
24. Nygaard-Ostby B, Hjortdal O. Tissue formation in the root canal following pulp removal. Scand J Dent Res 1971;79:333-48.

26. Iwaya S, Ikawa M, Kubota M. Revascularization of an immature permanent tooth with apical periodontitis and sinus tract. Dent Traumatol 2001;17:185-7.
27. Chueh LH, Huang GT. Immature teeth with periradicular periodontitis or abscess undergoing apexogenesis: a paradigm shift. J Endod 2006;32:1205.
28. Petrino JA, Boda KK, Shambarger S, Bowles WR, McClanahan SB. Challenges in regenerative endodontics: a case series. J Endod 2010;36:536-41.
29. Chen FM, Zhao YM, Zhang R, Jin T, Sun HH, Wu ZF, et al. Periodontal regeneration using novel glycidyl methacrylate dextran (Dex- GMA)/gelatin scaffolds containing microspheres loaded with bone morphogenetic proteins. J Control Release 2007;121:81-90.
30. Bazley LA, Gullick WJ. The epidermal growth factor receptor family. Endocr Relat Cancer 2005;12:17-27.

Tobacco and Oral Health

Dr. Leelavathi. L

Senior Lecturer,
Dept. of Public Health Dentistry,
Tagore Dental College and Hospital

Received : 27.05.2015
Review Completed : 06.06.2015
Accepted : 08.06.2015

ABSTRACT

Tobacco use has a personal impact on individuals as well as also has a public health impact. Tobacco use results in various systemic condition including cardiovascular disease, lung disease, and numerous types of cancer. Tobacco use is also associated with an increased risk of oral cancer and other mucosal lesions, periodontal disease, caries and impaired healing. In addition, exposure to environmental smoke (second hand smoke) is associated with oral and systemic diseases that include caries, cardiovascular and lung disease, and periodontal disease. Educating and advising patients on tobacco cessation, and referring them or implementing a program, helps patients stop using tobacco and improve their health.

Key words: tobacco use, tobacco dependence, cessation.

INTRODUCTION

Tobacco was introduced in India by Portuguese barely 400 years ago during the Mughal era. Mainly due to a potpourri of different cultures in the country, tobacco rapidly became a part of socio cultural milieu in various communities, especially in the eastern, north eastern and southern parts of the country. India is the second largest producer of tobacco in the world after China.[1] Tobacco has a long history from its usages by the early Americans. Tobacco as a commercial product first arrived in the Ottoman Empire in the late 16th century. It attracted the attention of doctors and became a commonly prescribed medicine for many ailments in olden days. They used tobacco to relieve toothache, to treat ulcers and skin wounds, diseases of lungs, spleen and womb, insect bites, as an antifatigue agent and as a tooth colouring agent.[2] Tobacco use is influenced by a variety of factors, including individual attitudes and beliefs, social norms and acceptability, availability, and advertising campaigns. There are many misperceptions with regard to tobacco use, for example that it aids concentration, suppresses appetite, reduces anxiety and tension, causes skeletal muscle relaxation, and induces feelings of pleasure. Partly as a result of these perceived benefits tobacco consumption is highest in the labour classes and among those from a low socioeconomic status. Several studies have shown that tobacco use is higher among the less educated or illiterate, and the poor and marginalized groups.[3]

TOBACCO USE IN INDIA

Tobacco gained entry into the royal courts of India as a barter commodity to trade Indian textiles by the Portuguese 400 years ago. Since then tobacco consumption continued to rise in India. India is the fourth-largest consumer of tobacco in the world and the third-largest producer of tobacco after China and Brazil. There are about 250 million tobacco users in India who account for about 19% of the world's total 1.3 billion tobacco users. Tobacco is a traditional item of India's foreign trade. India is one of the leading tobacco exporting countries in the world. India counts for 5.8% of the international trade and ranks 5th after Brazil, U.S.A, Turkey and Zimbabwe.[4] India's faces the greatest challenge with the highest rates of oral cancer in the world due to tobacco, and this problem is made more complex by the fact that tobacco is easily available in various forms in different parts of the country.[5]

Tobacco cessation has well-documented health benefits including increased longevity and decreased morbidity and mortality from coronary artery disease, stroke, chronic obstructive pulmonary disease, peptic ulcer disease, and cancer.[4] The tools available to tobacco control include influencing the social and cultural norms concerning tobacco; legislative and regulatory measures to protect the population and to limit tobacco industry marketing tactics.[6]

In India, early experiences with tobacco cessation occurred in the context of primary community education for cancer control. More recently, tobacco cessation clinics have been set up to develop models of intervention, and train health professionals in service delivery.[7]

IMPACT OF TOBACCO USE ON GENERAL HEALTH

Tobacco use has a great impact on general health. The following systemic diseases and conditions are related with tobacco consumption.

- Heart disease - heart attacks, stroke, high blood pressure
- Lung disease - cancer, COPD, chronic bronchitis, emphysema
- Cancer - lung, oral, nasopharyngeal, esophageal, laryngeal, pancreatic, bladder, cervix, and other
- Pregnancy complications - including low birth weight, miscarriage
- Gastric and duodenal ulcers
- Lower bone mass density
- Increased risk of hip fractures
- Post-operative complications[8]

TOBACCO-INDUCED ORAL DISEASE

It is firmly established that tobacco use is a primary cause of many oral diseases and adverse oral conditions.[9,10] Tobacco is a risk factor for oral cancer, oral cancer recurrence, adult periodontal diseases, and congenital defects such as cleft lip and palate in children whose mother smokes during pregnancy. Tobacco use suppresses the immune system's response to oral infection, retards healing following oral surgical and accidental wounding, promotes periodontal degeneration in diabetics and adversely affects the cardiovascular system. These risks increase when tobacco is used in combination with alcohol or areca nut. Most oral consequences of tobacco use impair quality of life be they as simple as halitosis, as complex as oral birth defects, as common as periodontal disease or as troublesome as complications during healing.[10]

Identification and Assessment of Tobacco Use

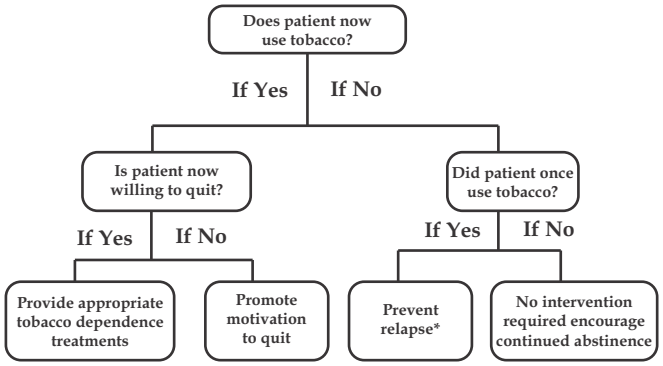
The single most important step in addressing tobacco use and dependence is screening for tobacco use. After the clinician has asked about tobacco use and has assessed the willingness to quit, he or she can then provide the appropriate intervention, either by assisting the patient in quitting (the "5A's") or by providing a motivational intervention, the ("5 R's"). The "5 *A's," Ask, Advise, Assess, Assist, and Arrange,* are designed to be used with the smoker who is willing to quit.

The "5 R's," *Relevance, Risk, Rewards, Roadblocks, and Repetition,* are designed to motivate smokers who are unwilling to quit at this time. Smokers may be unwilling to quit due to misinformation, concern about the effects of quitting, or demoralization because of previous unsuccessful quit attempts. Therefore, after asking about tobacco use, advising the smoker to quit, and assessing the willingness of the smoker to quit, it is important to provide the "5 R's" motivational intervention.

Figure 1 can be used as a guide to identify both current and former tobacco users and to provide the appropriate treatment of all patients. The following three sections address the main three groups of patients:

- Smokers who are willing to make a quit attempt
- Smokers who are unwilling to make a quit attempt at this time and
- Former smokers[11]

Figure 1: Screen for tobacco use status[11]



*Relapse prevention interventions are not necessary in the case of the adult who has not used tobacco for many years.

TREATING TOBACCO USE AND DEPENDENCE

Tobacco dependence is a chronic condition that often requires repeated intervention. However, effective treatments exist that can produce long term or even permanent abstinence.

Three types of counseling and behavioral therapies were found to be especially effective and should be used with all patients who are attempting tobacco cessation:

- Provision of practical counseling (problem solving/skills training);
- Provision of social support as part of treatment (intra-treatment social support); and
- Help in securing social support outside of treatment (extra-treatment social support).

Numerous effective pharmacotherapies for smoking cessation now exist. Except in the presence of contraindications, these should be used with all patients who are attempting to quit smoking.

Five first-line pharmacotherapies were identified that reliably increase long-term smoking abstinence rates:

- Bupropion SR
- Nicotine gum
- Nicotine inhaler
- Nicotine nasal spray
- Nicotine patch

Two second-line pharmacotherapies were identified as efficacious and may be considered by clinicians if first-line pharmacotherapies are not effective:

- Clonidine
- Nortriptyline[11]

Clinical Guidelines for Prescribing Pharmacotherapy for Smoking Cessation[11]

Who should receive pharmacotherapy for smoking cessation?	All smokers trying to quit, except in the presence of special circumstances. Special consideration should be given before using pharmacotherapy with selected populations: those with medical contraindications, those smoking fewer than 10 cigarettes/day, pregnant/breastfeeding women, and adolescent smokers.
Are there pharmacotherapies that should be especially considered in patients with a history of depression?	Bupropion SR and nortriptyline appear to be effective with this population.
Should nicotine replacement therapies be avoided in patients with a history of cardiovascular disease?	No. The nicotine patch in particular is safe and has been shown not to cause adverse cardiovascular effects.
May tobacco dependence pharmacotherapies be used long-term (e.g., 6 months or more)?	Yes. This approach may be helpful with smokers who report persistent withdrawal symptoms during the course of pharmaco therapy or who desire long-term therapy. A minority of individuals who successfully quit smoking use ad libitum NRT medications (gum, nasal spray, inhaler) long term. The use of these medications long term does not present a known health risk. Additionally, the FDA has approved the use of bupropion SR for a long-term maintenance indication.
May pharmacotherapies ever be combined?	Yes. There is evidence that combining the nicotine patch with either nicotine gum or nicotine nasal spray increases long-term abstinence rates over those produced by a single form of NRT.

TOBACCO CONTROL LEGISLATION IN INDIA

With the growing evidence of harmful and hazardous effects of tobacco, the Government of India enacted various legislations and comprehensive tobacco control measures. The Government enacted the Cigarettes Act (Regulation of Production, Supply and Distribution) in 1975. The statutory warning "cigarette smoking is injurious to health" was mandatorily displayed on all cigarette packages, cartons and advertisements of cigarettes. Under the Prevention of Food Adulteration Act (PFA) (Amendment) 1990, statutory warnings regarding harmful health effects were made mandatory for paan masala and chewing tobacco.

The Government enacted the Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act (COTPA), in 2003. The provisions under the act included prohibition of smoking in public places, prohibition of advertisements of tobacco products, prohibition on sale of tobacco products to and by minors (persons below 18 years), ban on sale of tobacco products within 100 yards of all educational institutions and mandatory display of pictorial health warnings on tobacco products packages. The law also mandates testing all tobacco products for their tar and nicotine content. The law pertaining to pictorial warnings on tobacco products packages was implemented with effect from 31st May 2009. In 2004, the government ratified the WHO Framework Convention on Tobacco Control (WHO FCTC), which enlists key strategies for reduction in demand and reduction in supply of tobacco.[1,12]

ROLE OF HEALTH PROFESSIONALS

The major goal for the members of health profession is to use their knowledge and skills to contribute to control what the WHO, has labelled a 'smoking epidemic' in developing countries. Prevention against the diseases that come with tobacco usage is based primarily on public and individual education to drop the habit or preferably not to begin in the first place. Some of the steps to be taken as suggested by WHO include:

- Preventing children from becoming addicted to tobacco
- Providing effective protection from involuntary exposure to tobacco smoke
- Providing effective programme of health promotion and health education
- Effective smoking cessation progamme
- Prominent health warnings on tobacco product packing
- Progressive elimination of tobacco advertising
- Financial measures to discourage tobacco consumption[13]

The scope of preventive dentistry is constantly expanding and can be as far reaching as a professional's imagination, sense of responsibility and efforts. Dentists have been recognized as "ideally positioned to counsel against the use of cigarettes and smokeless tobacco products." They can relay specific information concerning the oral ill effects of tobacco use. The dental encounter probably constitutes a "teachable moment" when the patient is receptive to counselling about life style issues. Because of his expertise in dental and oral matter a dentist makes a unique and important contribution to the smoking withdrawal programme.

Oral health professionals should integrate tobacco use, prevention and cessation services into their routine and daily practice. They should participate in lectures, demonstrations and assist in group discussions.[13]

CONCLUSION

Tobacco dependence is a chronic disease that deserves treatment. Effective treatments have now been identified and should be used with every current and former smoker. A ban on all tobacco advertising, promotion and sponsorship is a powerful tool we can use to protect the world's youth. The tobacco industry employs predatory marketing strategies to get young people hooked to their addictive drug. Health professionals along with policy makers should strive for achieving a smokeless society and hence protecting the health of the upcoming generation.

REFERENCES

1. Jagdish Kaur, D. C. Jain. Tobacco Control Policies in India: Implementation and Challenges Indian Journal of Public Health, July-September 2011; 55 (3): 220-227.
2. Anne Charlton - Medicinal uses of tobacco in history, Journal of the Royal Society of Medicine; June 2004(97).
3. Zaki Anwar Ansari, S Nafees Bano, and M Zulkifle - Prevalence of Tobacco Use among Power Loom Workers - A Cross-Sectional Study. Indian Journal of Community Medicine. 2010 January; 35(1): 34–39.
4. PK. Nag, Sunil Kumar, PR. Tiwari, Shruti Patel, Shiva Murarka-Envis- Nioh, Newsletter, Vol 4, No 2, Apr-Jun 2009.
5. Raval S, Maudgal S, More N – Study on tobacco use and awareness among marginalised children, Indian Journal of Cancer 2010, Vol 47, suppl 1.
6. K. Slama - Tobacco Prevention Division, International Union Against Tuberculosis and Lung Disease, Paris, France, Int J Tuberc Lung Dis (2004)8(10):1160–1172.
7. Effective Implementation of the WHO Framework Convention on Tobacco control through the MPOWER Policy Package- WHO Tobacco Cessation Services in the South-East Asia Region, Vol 2 No 2, 2009.
8. Fiona M. Collins. Tobacco Cessation and the Impact of Tobacco Use on Oral Health. A Peer-Reviewed Publication.
9. Reibel J. Tobacco and oral diseases: an update on the evidence, with recommendations. Med Princ Pract 2003; 12: 22-32.
10. Poul Erik Petersen.Tobacco and Oral Health – the Role of the World Health Organization. Oral Health Prev Dent 2003; 1: 309–315.
11. Quick reference guide for clinicians. Treating tobacco Use and dependence. U.S. Department of Health and Human Services Public Health Service. October 2000
12. Balsaraf SV, Chole R. Tobacco: Culture and legislature worldwide. Int J Med and Dent Sci 2015; 4(1):714-720.
13. Chaly PE, Tobacco control in India. Indian J Dent Res, 18(1), 2007; 18: 2-5.

Placement Cell

Wanted Resident Doctors for the following Clinics

- **Identity Dental Centre**
  Royappettah - 044 2813 3186
- **Eswari Dental Centre**
  Mogappair - 9884105711
- **Kumaran Dental Clinic**
  Jafferkhanpet - 9841295911
- **JN Multispeciality Dental Clinic**
  Avadi - 9791121321

To Add Placement Details
and Other Opportunity
Contact: emidasjournal@gmail.com

CDE PROGRAMS

3rd CDE Program
Clearpath Aligners Workshop
March 2015 at Hotel Taj Vivanta, Chennai

TOTAL MEMBERS ATTENDED: 80

4th CDE Program
Basic Implantology Workshop
April 2015 at Chettinad Health City, Kelambakkam

4th CDE Program
Basic Implantology Workshop
April 2015 at Chettinad Health City, Kelambakkam

TOTAL MEMBERS ATTENDED: 120

5th CDE Program
How to Prepare for Entrance Examinations & Quiz - May 2015
Speed Medical Centre, Egmore

5th CDE Program
How to Prepare for Entrance Examinations & Quiz - May 2015
Speed Medical Centre, Egmore

TOTAL MEMBERS ATTENDED: 48

e-MIDAS Chennai/Volume:2/Issue:2/Pages1-52/March2015

CDH ACTIVITIES

IDA Madras Branch Conducted Camps in Association with Rotary District International 3230 along with Sree Balaji Dental College, Sri Venkateswara Dental College, Tagore Dental College, Meenakshi Ammal Dental College, SRM Ramapuram Dental College & Faculty of Dental Sciences, SRU at Various Places in Chennai.

CDH ACTIVITIES

OTHER ACTIVITIES

ShowCASE 2015

International Dental Congress

ShowCASE 2015, the first international dental congress on case reports was organised by Saveetha Dental College in association with the IDA Madras branch, on May 9-10. The congress attracted a huge delegate count of close to 1000 dentists which included about 90 international registrations. A whooping number of 350 national delegates submitted their cases and presented their reports and 53 dentists from 15 countries submitted their cases for in absentia presentation. The conference was inaugurated on May 9th by Dr. N.M.Veeraiyan (Chancellor, Saveetha University), Chief guest Prof. Dr. A. Parameswaran (Former Principal, Tamil Nadu Government Dental College), Organising chairman of ShowCASE 2015 Prof. Dr. Deepak Nallaswamy, Dean of Saveetha Dental College Prof. Dr. N.D.Jayakumar, President of IDA Madras branch Dr. Vidyaa Hari Iyer and Secretary of IDA Madras branch Prof. Dr. Thamizhchelvan. There was a good trade show with 16 major companies from across the country had their trade stalls.

The event came to a close with the Awards of Excellence show presided over by Prof. Dr. C.V.Subbarao (Former Professor Emeritus, Saveetha University), Prof. Dr. Deepak Nallaswamy and Dr. Vidyaa Hari Iyer. It was a gala event with cash awards summing to a total of Rs.85000/- given to winners of the best case presentations in each specialty, in addition to trophies and certificates.

e-MIDAS Chennai/Volume:2/Issue:2/Pages1-52/March2015

SHOWCASE 2015
INTERNATIONAL DENTAL CONGRESS

World No Tobacco Day
May 31st 2015

World No Tobacco Day

World No Tobacco Day 2015 program was conducted by IDA Madras Branch on May 31st 2015, in association with our various partners RI 3230 along with its 13 constituent rotary clubs, Directorate of Public Health, JIYAA, IAPH and various dental colleges in and around Chennai. Inaugration took place at "Abirami Mega mall", the cheif guest was RI 3230 governor, Rotarian I.S.A.K.Nazar with guest of honors were Rtn.PDG.Abirami Ramanathan and Mrs.Nallammai Ramanathan in the presence of Rtn.Dr.N.Nanda Kumar, IDA President and Secretary. The celebration also took place in various other malls like Mayajaal, Ampa Skywalk, Spencer plaza. Dental college students from various colleges educated the general public through issue of pamphlets, skits, mymes against tobacco menance.

World No Tobacco Day

World No Tobacco Day

World No Tobacco Day

World No Tobacco Day

World No Tobacco Day

e-MIDAS Chennai/Volume:2/Issue:2/Pages1-52/March2015

World No Tobacco Day

World No Tobacco Day

Upcoming Events

Month: July

Venue: Tagore Dental College

Topic : Pulpo Periodontal Lesions

Contact Person: Dr. Priya Prabhakar - 9840875275

Month: August

Venue: Meenakshi Ammal Dental College

Topic : Over Dentures

Contact Person: Dr. G. Lambodaran - 9894946334

Month: October 30 - 31

Venue : SRM Dental College, Ramapuram

Course Name : FDI CDE Series

Contact Person: Dr. Priya Prabhakar - 9840875275

Month: November 6 - 8

Event : International Global Dental Meet 2015

Contact Person: Dr. K.K. Raja - 9840032950