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PRESIDENT'S MESSAGE

Dear Members,

Greetings from IDA Madras Branch!

IDA Madras Branch is the first branch to have been formed, even before independence. We strive to give the best of information and updates to all our members.



Dr. A P Maheshwar
President
IDA Madras Branch

I take this opportunity to invite our members to send interesting articles and case reviews. I would like to inform everyone that the National Students Conference is to be hosted by our branch this year. Further updates will follow.

My hearty congratulations to the young and vibrant editorial team led by Dr. C. K. Dilip Kumar, our Editor. I wish the team many more journals to follow.

Jai Hind !!Jai IDA!!

A handwritten signature in blue ink, appearing to read 'A P Maheshwar', with a stylized flourish underneath.

Dr. A P Maheshwar

SECRETARY'S MESSAGE

Dear friends,

"Difference between an average person and successful people is nothing but only cubic millimeter distance. A cubic millimeter distance is enough for a warrior to enter in to the opponent territory and go ahead n his work"

So Be A Warrior. No body can stop you and hold you.



Dr. H. Thamizhchelvan
Hon. Branch Secretary
IDA - Madras Branch
Hon. Secretary National CDH
IDA (Head Office)

We are born to win. Keeping this in mind IDA Madras is interested in creating new leaders and guiding them in to right path.

I am very happy to say that IDA Madras Branch along with Rotary International Dist 3232 and Faculty of Dental Sciences, Sri Ramachandra University will be going for a Guinness attempt by teaching tooth brushing for 20,000 School Children at Sri Ramachandra University on August 19, 2017.

Second grand event will be that IDA Madras Branch will be hosting National IDA Students conference at Sri Ramachandra University.

Further details will follow

Regards

A handwritten signature in blue ink, appearing to read 'H. Thamizhchelvan'.

Dr. H. Thamizhchelvan

LETTER FROM THE EDITOR

Greetings from E Midas Editorial Team!!!!

We are glad to publish our second issue of this year with 1 review, 2 case report and 1 original article with all the support of the authors. I would like to wish the CDH committee along with Rotary International for attempting guiness world record at chennai on 19th July 2017.



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

As all the students are waiting for the dates of MIDAS event, our branch is proud to say that this time this event is to be organised as National Student Conference in Chennai, so we hope all the support and participation from the dentist and student members for the grand sucess of the conference.

I would request all the members to send in manuscripts to take our journal to higher altitudes.

I thank all my mentors and advisors for their support towards the journal activities.

A handwritten signature in blue ink, appearing to read 'C.K. Dilip Kumar'.

Dr. C.K.Dilip Kumar

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Cariogram – An Expedient Tool for the Clinician to Assess Caries Risk

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Abstract

Caries risk assessment is an integral part of comprehensive management of the disease. A software enabled approach called cariogram has been designed to assess the caries risk of an individual two decades ago by Dr. Douglas Bratthal. The model takes into consideration the multifactorial nature of the disease and acts as both a risk model and a prediction model. Caries risk profile generated by the cariogram is depicted as a pie chart with five sectors each representing a domain embracing different risk factors. This paper attempts to provide all necessary details a clinician needs to know about cariogram so as to exploit its benefits in the clinical decision making process.

Key Words: Cariogram, Dental Caries, Risk Assessment Tool..

Introduction

Caries risk assessment is crucial for the management of the disease and should be considered as the standard of care. If caries were pandemic then there wouldn't have been a necessity for assessing the risk for the disease. Many individuals simply do not suffer from dental caries while some are severely affected and the rest fall somewhere in between ¹. This suggests the presence of stratification among the people in a community based on their exposure to caries risk or protective factors. As clinicians, recognizing the presence of risk factor and modifying the treatment protocol accordingly is more prudent than providing identical treatments to all patients independent of their risk ².

The risk assessment tools available for dental caries are based on either manual or software enabled approaches. A software enabled approach is preferred to manual for the greater precision with which the algorithm embedded in the software works ³. Electronic risk assessment tools for caries include the cariogram which depicts the caries risk profile of an individual as a pie chart with five sectors. The concept and formula for the cariogram model was discovered by Douglas Bratthal in 1976 after an extensive research and the PC version was developed in alliance with Dr. L. Allander and K-O Lybegard. Cariogram was first considered to be an edifying model illustrating the multifactorial nature of dental caries ⁴. Apart from using cariogram as a patient education model it has also been used to assess the caries risk level of large number of individuals in a community ⁵⁻⁹. However in the last two decades the cariogram has progressively evolved to become a clinical reality.

What is a Cariogram?

Cariogram is a model that represents the patients risk profile as a pie chart with five sectors. It is a didactic tool with a graphical picture depicting the caries risk profile in an interactive way and also represents an individual's susceptibility to dental caries. The model also expresses the magnitude with which different risk factors can influence the caries activity for an individual. The model does not propose the occurrence of caries with mathematical exactness but professes the likeliness of the individual to actually suffer from the disease based on the risk scenario ¹⁰.

Objectives of the Cariogram Model

- To illustrate the interaction of caries related factors.
- To represent in percentage the 'actual chance to avoid new cavities'.
- To help one identify which all factors and to what extent do they influence this 'chance'.
- To be used as a tool for patient education and motivation.
- To express caries risk graphically

Furthermore the model also classifies the patients into the high, medium or low risk categories and provides suggestions on how to proceed with the preventive management based on the risk level. This program cannot surpass the judgment of the clinician or examiner but rather would serve to provide as a valuable tool in the clinical decision making process ¹⁰.

The Pie of the Cariogram

Each slice of the cariogram pie chart is given a color and represents a particular domain as shown in Figure 1. Each domain embraces certain risk factors with weights allocated on a differential basis. The five domains include.

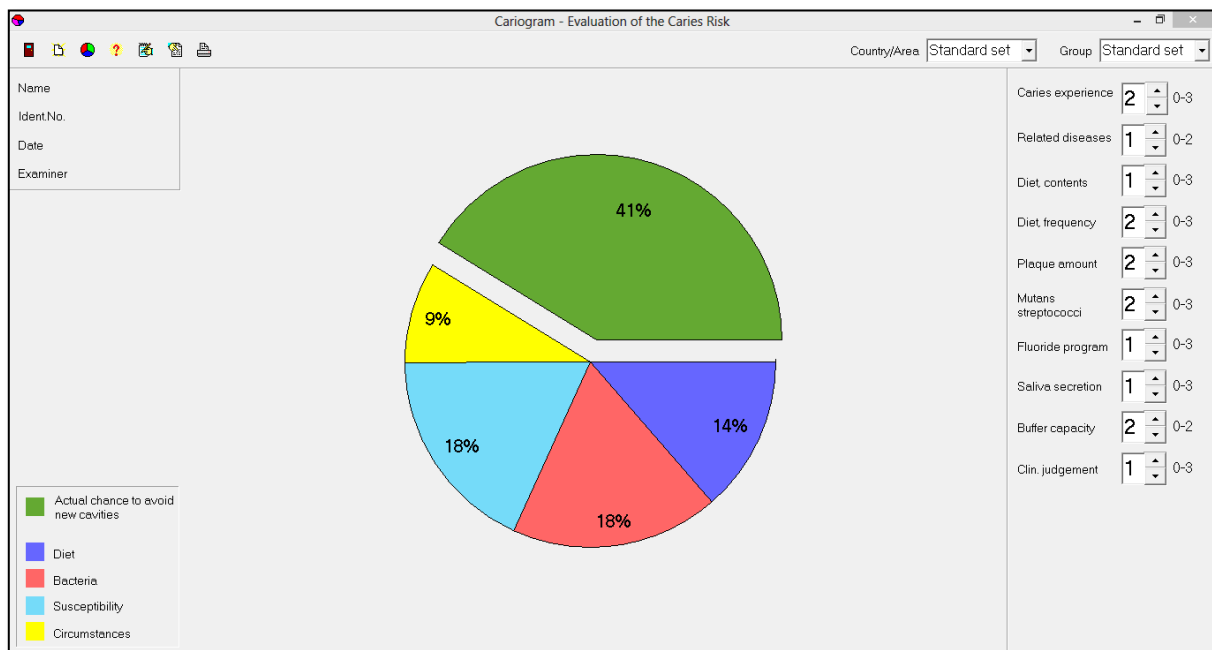


Figure 1: Cariogram Pie Chart

- Green sector - Actual chance to avoid new cavities
- Dark blue sector - 'Diet' which include diet content and frequency
- Red sector - 'Bacteria' which is based on a combination of Plaque amounts and Mutans streptococcus
- Light blue sector - 'Susceptibility' which comprises of salivary flow rate, buffering ability and fluoride program
- Yellow sector - 'Circumstances' which takes into account the past caries experience and related general diseases

Those factors which have relatively stronger impact on caries are given more weight when compared to the other factors. Ten factors that have direct influence on the carious process are taken into consideration. The algorithm constructs the pie chart based on the values entered for each of the criteria. The factors that influence dental caries can be divided into two groups; those which have direct influence on the disease process like salivary flow rate, cariogenic diet, etc. and the other group will be those factors like socioeconomic status which can indirectly affect the cariogenic process. The cariogram model includes only the biological factors that have immediate direct impact on dental caries ¹¹. Following are the ten criteria encompassed by the cariogram model and details on how each one is to be assessed are also highlighted.

1. Caries experience – can be objectified using DMFT or DMFS index
2. Related general disease – can be elucidated by taking a detailed medical history
3. Diet contents – can be obtained by tabulating a 3 day or 1 day diet chart or by taking Lactobacillus count
4. Diet frequency – Can be determined from the diet history
5. Plaque amount – Sillnes and Loe index or any other suitable index can be used to record this.
6. Mutans streptococci – Strip mutans test can be used or the bacteria can be cultured in a suitable media and counted.
7. Fluoride program – details can be obtained on fluoride exposure in the form of pastes, mouth wash, topical application, etc by interviewing the subject
8. Saliva secretion – can be determined by calculating the unstimulated/stimulated salivary flow in ml per minute.
9. Saliva buffer capacity – Dentobuff test can be used or traditional Erricson method or any other similar method can be used
10. Clinical Judgment – This factor is included in the cariogram model to take into consideration the examiners opinion. A pre-set score of 1 automatically is given by the cariogram implicating that the clinician's inference is same as that of the cariogram's representation. If there is a disparity in the opinion, then the examiner has all right to change the score and the pie chart will get modified accordingly. A score 0 can be given if the clinician feels that the patient has a better oral health than that shown by the cariogram. The score can be increased to 2 or 3 if the clinician suspects a higher risk presence than that judged by the cariogram. Thus a score of 1 show that the clinician's view is in harmony with that of the cariogram ¹⁰.

How to Use the Cariogram?

The cariogram software and the user manual can be downloaded for free of cost from the internet page - <http://www.db.od.mah.se/car/cariograminfo.html>.

The internet version software is a handy tool for the clinician and can be used with ease. With chair side examination kits for salivary tests, like the dentobuff and strip mutans test kit, constructing a cariogram will take no time. Figure 2 shows the PC version of the cariogram software with provision for scores to be entered in the boxes present on the right side column. All criterions are given separate scores after collecting the required details based on the ranking scale given for each criterion in the cariogram manual. The score values are to be entered in the respective boxes and a minimum of seven boxes are to be filled for the cariogram pie to be constructed. As the values are entered, the pie chart will be automatically displayed along with notes on risk stratification and suggestions on treatment approach ¹⁰.

Interpreting the Pie

Green sector is the 'to be watched' sector in the cariogram as it shows the vulnerability of the subject to dental caries. The greater the green sector, the better the oral health, the lesser is the risk ¹⁰. This green sector is nothing but what is remaining on the pie after deducting the share taken by the other four sectors. Hence after constructing the pie the clinician should concentrate on identifying modifiable variables in the other sectors so as to bring about a fall in these sectors thereby resulting in an indirect increase in the percentage of the green sector. Patients can effortlessly appreciate this vivid model with varying colors and therefore can be easily motivated to improve their green sectors.

Conclusion

Caries risk assessment forms the heart of the recently adopted philosophy of minimal intervention dentistry. Clinicians should recognize the importance of caries risk assessment and equip themselves with tools essential to identify the risk variables so as to provide clinically effective, economic and patient targeted therapy. Cariogram is a conceivably reliable and an undemanding tool that can be used in clinical practice as an endorsement to the clinician's expertise. Thus always remember to look at the cariogram only as an assistant or a helper but not as a master as stated by the maker of the cariogram, Dr. Douglas Bratthall.

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Forensic Odontology with Emphasis on Rugae Pattern, Lip Prints and Bite Marks

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Abstract

Forensic odontology is one field that has a wide scope for research and various studies have been done in this field. In case of death due to poisoning with heavy metal like arsenic, the same can be detected from the teeth after long time of death in some cases an offender can be detected from bite mark he might have left some material that can be used to identify the culprit.

Key Words: Forensic Odontology, Rugae pattern Bite marks, Lip Patterns.

Introduction

Forensic odontology or forensic dentistry is the application of dental knowledge to those criminal and civil laws that are enforced by police agencies in the criminal justice system. Keiser-Neilson defined forensic dentistry as "that branch of forensic dentistry that in the interest of justice deals with the proper handling and examination of dental evidence and the proper evaluation and presentation of dental findings" Dr. Oscar Amoedo was considered as the father of the forensic odontologist. The thesis done by him entitled 'L' Art Dentaire en Medicine Legale' to the faculty of medicine earned him a doctorate. This book is the first comprehensive text on forensic odontologist.⁽¹⁾

Medico-legal importance:

1. Definite identification of a body from dental data can be made, if accurate & dated records are available.
2. Teeth are useful in estimating the age of an individual.
3. Loss of tooth due to assault is grievous hurt.
4. Dentures, partial or complete are useful in identification.
5. Criminals can be identified through bite marks left either in human tissues or in food stuffs.⁽²⁾

Rugae Pattern

Evaluating the rugae pattern is a useful method of identifying edentate individuals. The rugae pattern on the deceased's maxilla or maxillary denture may be compared to old dentures that may be recovered from the decedent's residence, or plaster models that may be available with the treating dentist. Palatal rugae are ridges on the anterior part of the palatal mucosa on each side of the mid-palatine raphae, behind the incisive papilla. These asymmetric and irregular ridges are well protected by the lips, cheek, tongue, buccal pad of fat and teeth in incidents of fire and high-impact trauma.

It has also been found that palatal rugae can also resist decomposition to an extent. Rugae pattern, like teeth, are considered unique to an individual. They seldom

change shape with age and reappear after trauma or surgical procedures.

Classification of Palatal Rugae

The classification suggested by Lysell is quoted most often.

He measured rugae in a straight line, from their origin on the medial side to terminus on the lateral, and divided them into three types:

1. Primary rugae (>5 mm)
 2. Secondary rugae (3-5 mm)
 3. Fragmentary rugae (2<3 mm)
- (Rugae < 2 mm is not taken into consideration).

Thomas and Kotze have further categorized the various patterns of primary rugae as

- branched,
- unified,
- cross-linked,
- annular, and
- papillary.

Other authors, such as Kapali et al, have grouped the rugae according to shape as

- straight,
- curved,
- wavy, and
- circular.

Analysis of Rugae Pattern

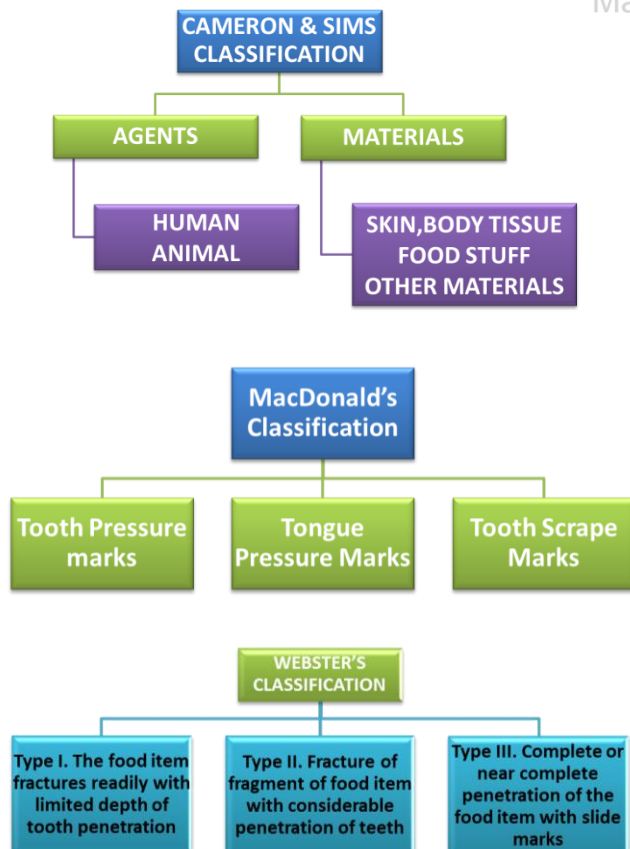
Various methods have been adopted to trace out the rugae patterns.

- Thomas and van Wyk have manually traced rugae patterns from post- and ante mortem dentures on to clear acetate (transparent plastic sheets) and then superimposed these tracings on photographs of plaster models.
- More recently, Limson and Julian have developed a computer software program which makes use of the principle commonly employed in fingerprint analysis. The method used digitized images of the palate on which characteristic points were plotted on the medial and lateral extremities of all rugae

- In fact, Thomas and Kotze state that, considering the complex nature of rugae patterns, a universally acceptable classification may not be feasible and, as long as the technique used to compare the rugae is accurate, one need not conform to a particular classification.
- Furthermore, a recent study by Ohtani and coworkers suggests that high accuracy rates in postmortem identification from palatal rugae can be obtained using straightforward visual comparison of post- and antemortem rugae patterns obtained from dentures, and neither a classification protocol nor computer aided method is mandated.
- These authors did, however, infer that more complex the rugae pattern, greater the tendency for non-identification.⁽²⁾⁽³⁾

Bite Marks

Bite marks have been defined by MacDonald as “a mark caused by the teeth either alone or in combination with other mouth parts”. Bite marks may be caused by humans or animals; they may be on tissue, food items or on objects. Biting is considered to be a primitive type of assault and results when teeth are employed as a weapon in an act of dominance or desperation. As a result, bite marks are usually associated with sex crimes, violent fights, and child abuse. Bite marks have also been recovered from scenes of theft. Hence, matching the bite mark to a suspect's dentition may enable the investigating officers to connect the suspect to the crime.



Bite Mark Appearance

Type of Injury: Compression of the skin surface due to tooth pressure during a bite initially causes indentations.

- Indentations, while ideal for bite mark analysis, seldom persist for more than a few minutes unless the victim is dead (note that indentations may also be seen on healing lacerated wounds).
- Owing to the elastic nature of skin, indentations soon disappear as the skin regains its original contour.
- This is followed by a brief period of edema over the bite area, which usually obscures the bite mark completely.
- Once the edema subsides, subcutaneous bleeding is apparent. These are referred to as contusions or bruises and are the most common presentation of bite marks.
- Depending on the skin color they appear as reddish or purplish or dark brown discoloration on the skin surface and are due to the blood escaping into subcutaneous tissue from ruptured minute vessels.
- When the intensity of the bite is great, there may be a break in the integrity of skin surface, resulting in lacerations. The most extreme form of bite mark injury is avulsion, where part of the tissue is bitten off.

Identifying the Injury as a Bite Mark: Sweet has suggested that a human bite mark may be identified by the following characteristics.

Gross Characteristics: A circular or elliptical mark found on the skin with a central area of ecchymosis. The circular/elliptical mark is caused by the upper and lower arches while the central area of ecchymosis is apparently due to sucking action. A typical bite mark is usually distinct from an injury caused by anything else.

Class Characteristics: The marks produced by different classes of teeth are usually distinct, allowing one to differentiate the type of tooth within a bite mark. Incisors produce rectangular marks; canines are triangular or rectangular, depending on the amount of attrition; premolars and molars are spherical or point-shaped.

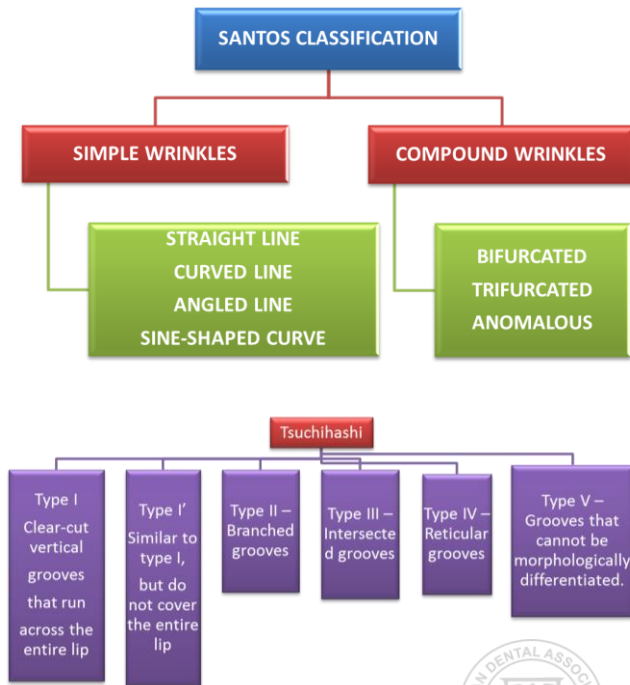
Individual Characteristics: Class characteristics may, in turn, have features such as fractures, rotations, spacing, etc. Such attributes are referred to as individual features and make the bite mark distinct.⁽²⁾⁽³⁾⁽⁴⁾

Lip Prints

The wrinkles and grooves visible on the lips have been named by Tsuchihashi as ‘sulci labiorum rubrorum’. The imprint produced by these grooves is termed ‘lip

print', the examination of which is referred to as 'cheiloscopy'. These grooves are heritable and are supposed to be individualistic.

Lip prints, therefore, can constitute material evidence left at a crime scene, similar to fingerprints.



A combination of these grooves may be found on any given set of lips.

To simplify recording, the lips are divided into quadrants similar to the dentition—a horizontal line dividing the upper and lower lip and a vertical line dividing right and left sides.

By noting the type of groove in each quadrant, the individual's lip print pattern may be recorded. This classification and method has enabled differentiation of lip print pattern between two individuals.

Lip prints can be recorded in a number of ways.

1. Photographing the suspect's lips.
2. On a non-porous flat surface such as a mirror they can be photographed, enlarged and overlay tracings made of the grooves.
3. Applying lipstick, lip rouge, or other suitable transfer mediums to the lips and then having the individual press his or her lips to a piece of paper or cellophane tape or similar surface.
4. By having the subject impress his or her lips (without lipstick or other recording medium) against a suitable surface and then processing these prints with either conventional finger print developing powder or with a magna brush and magnetic powder.⁽²⁾⁽⁵⁾⁽⁶⁾

Conclusion

Along with other traditional method, cheiloscopy can also serve as a very important tool in identification of a person. The uniqueness of lip print needed to be conformed and accepted. A standard and uniform procedure has to be developed for the collection, development and recording of lip prints and the ensuring comparison. Along with that rugae pattern assessment and bite marks are also widely used in forensics.

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Implant's Esthetic Flaws Erased

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Abstract

Metallic parts in dental implants often post an aesthetic problem to many a patient. An anatomically thin gingiva exposes the underlying metal parts of a conventional titanium implant. This results in a severe aesthetic compromise for related patients. Currently zirconium is an aesthetically superior material which is being used in fabricating implants which mimic natural teeth as closely as possible. This paper deals with various aspects of zirconium implants and its uses in oral rehabilitation procedures.

Key Words: Implants, Esthetics Flaws, Erased.

Introduction

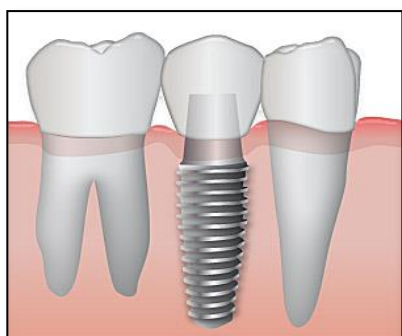


Fig. 1: animated image of metallic implant placed in 2nd premolar region

Since implant introduction over 40 years ago, dental implants have been used to support fixed or removable dentures and have become an established treatment modality. Pure titanium is generally used for dental implants because of its biocompatibility and suitability for tooling. Implant placement and restoration to replace single or multiple teeth in the esthetic zone is an especially challenging area for the clinician, particularly in sites with multiple missing teeth and with deficiencies in soft tissue or bone. Many important factors affect the success of implant among them esthetic factors play a important role. A thin gingival biotype dictates placement of the implant in a slightly more palatal position to reduce the chance of recession and prevent a titanium "shadow" from showing through the thin gingival tissue.

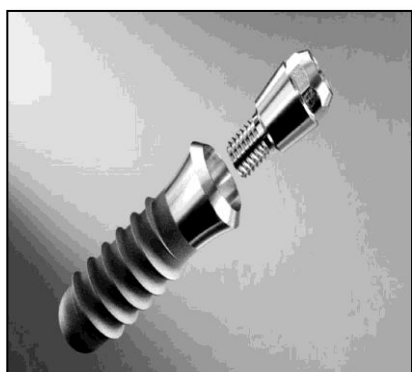


Fig. 2: Image of an Titanium Implant Model

An adequate volume of soft tissue provides a good emergence profile of the implant restoration and serves to mask the underlying metal implant.

Why Zirconia Implants?

Increasing the volume of gingiva is rather a tough task with poor prognosis. Thus placing a zirconium implants with teeth like color will overcome all the esthetic failure. With good osseointegration potential and esthetic advantages. Zirconia will be a boon for esthetic zones.

New in Market-Zirconia Implants

1. CERAROOT (SPAIN)
2. SIGMA (SWITZERLAND)
3. WHITE SKY (GERMANY)
4. Z- SYSTEMS (GERMANY)
5. ZIT-Z (GERMANY)



Fig. 3: Ceraroot Zirconia Implants.



Fig. 4: Z-System Zirconia Implants



Fig. 5: White Sky Zirconia Implants

Case Reports

Case Report-1

A female patient named Manimegalai 25-year-old came with a chief complaint of a missing right central incisor that had been fractured in a traffic accident. The periapical radiography showed no apical lucency in the area of the missing tooth. A two-piece zirconia implant was placed into the maxillary anterior region. After a 6-month osseointegration period, a 15 degree angled zirconia abutment was chosen, prepared, and cemented onto the implant. After using a provisional crown for 2 weeks, a definitive zirconia crown was made and cemented.



Fig. 6: Missing Right Central Incisor, Clinical Picture.

Fig. 7&8: Radiograph before and after Placement of Zirconia Implant.



Fig. 9&10: Placement of Zirconia Abutment & Crown

Fig. 11: Post Treatment Radiograph

Discussion

As the patient met with road traffic accident, the buccal side bony margins were thin and there is more chance of titanium shadow. To overcome this, zirconium implant with abutment were placed and esthetically restored successfully.

Case Report-2



Fig 12: Pre-Treatment Picture.

Fig13&14: Post Treatment After Implant, Abutment and Crown Placement

A female patient named Abida Begum 43-year-old came with a chief complaint of missing left lateral incisor. A two-piece zirconia implant was placed into the missing tooth region. The implant was uncovered, and the abutment was connected 6 months following implant insertion. An aesthetic and functional result was achieved with the zirconia crown.

Discussion

When there is a marginal tissue loss in the extracted site, zirconium implants provide better marginal tissue adaptation and esthetic result over titanium implants.

Advantages of Zirconia

- 1) Titanium is a metal, and suffers corrosion. Corrosion, the gradual degradation of materials by electrochemical attack is a concern particularly when a metallic implant is placed in the hostile electrolytic environment provided by the human body. The clinical importance of degradation of metal implants is evidenced by particulate corrosion and wear products in tissue surrounding the implant, which may ultimately result in a cascade of events leading to periprosthetic bone loss. Furthermore, many authors have reported increased concentrations of local and systemic trace metal in association with metal implants. Zirconia is a ceramic and does not suffer any corrosion. (Gahlert M et al 2007)
- 2) Zirconia can be used in patients with metal allergies who may have problems with titanium. In addition to excellent cosmetic results, zirconia implants allow a degree of Osseo integration and soft tissue response that is superior to that of titanium dental implants. {Oliva et al 2007} The mean fracture strength and stress distribution of zirconia implants ranged within the limits of clinical acceptance comparable to titanium implants. {Kohal et al 2002}
- 3) ZIRCONIA are considered to be inert in the body and exhibit minimal ion release compared with metallic implants. Yttrium-stabilized tetragonal zirconia polycrystals appear to offer advantages over titanium oxide for titanium implants because of their higher fracture resilience and higher flexural strength. {Sennerby L et al 2005}

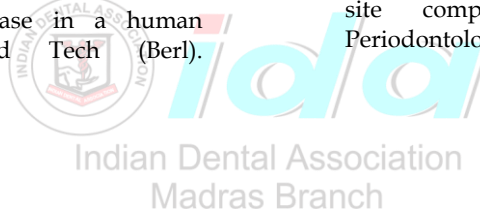
- 4) **LAST BUT NOT LEAST:** The principal disadvantage of titanium is its dark grayish color, which often is visible through the peri-implant mucosa, therefore impairing esthetic outcomes in the presence of a thin mucosal biotype. Unfavorable soft tissue conditions or recession of the gingiva may lead to compromised esthetics. Thus Zirconia seems to be a suitable dental implant material in esthetic zones because of its toothlike color, mechanical properties, and biocompatibility {Depprich R et al 2008}

Conclusion

Thus to prevent titanium shadow in thin bone support and marginal tissue compatibility zirconium implants have a edge in esthetics over titanium implants.

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Magnetic Attachment Retained Overdenture

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Abstract

Lack of adequate retention of mandibular denture is one of the common problems associated with complete denture therapy. Retention of natural teeth and use of attachments can increase the patient compliance by providing good retention to the complete denture. Magnetic attachments for overdenture abutments are good solutions for providing the patient with a retentive and stable complete denture. This article describes the use of magnetic attachments for root supported mandibular overdenture.

Key Words: Overdenture, Magnetic Attachment, Complete Denture.

Introduction

Good retention and stability are prime requisites for a successful complete denture therapy. The presence of the palatal vault and good peripheral seal makes it favorable for fabricating a good retentive complete denture in maxillary arch. Whereas, the anatomy of the denture bearing area of the mandibular arch, extensive resorption, reduced denture stability due to tongue movements makes the mandibular denture less retentive than the maxillary denture.¹

Various methods like extended lingual flange, retention of natural teeth, implants and denture adhesives have been reported in the literature to enhance the retention and stability of the mandibular denture.^{2,3} The existing natural teeth apart from adding to the retention also helps in maintaining the alveolar bone. These natural teeth which are preserved are referred to as overdenture abutments. The abutment teeth can be modified to receive retentive/non retentive copings, attachments for increasing the retention of the mandibular complete denture. The attachments can be intra or extra radicular in nature. Ball attachments, locator attachments, bar frameworks and magnetic attachments have been reported in literature for improving the retention.^{4,5,6} This clinical report describes the use of magnetic attachments for tooth supported over denture.

Case Report

A male patient of age 62 reported with the complaint of difficulty in chewing due to lack of teeth. On examination, patient was completely edentulous in maxilla and partially edentulous in mandible. Teeth no 35 and 43 were present and were in healthy periodontal status (Fig-1). After discussing various options of replacement, patient agreed for root anchored magnet retained overdenture. The two remaining teeth were endodontically treated and decoronated. Post space preparation was done and the dome shaped keeper with post (Magfit RK) (Fig-2) were luted to the post space in the prepared natural

teeth using dual cure resin cement (Fig-3). Primary impression, secondary impression, jaw relation recording and wax try-in procedures were done similar to a routine complete denture fabrication. At the time of insertion of the denture, the magnetic assembly with the magnet inside was kept on top of the keeper and space created in the tissue surface of the denture for the magnetic attachment. Auto polymerizing resin was used to pick up the magnetic attachment intra orally. During the pickup of the magnetic attachment, care was taken to seat the denture in the correct position and occlusion maintained by having the mouth closed in centric relation as the resin was polymerizing. The resin was allowed to completely harden and the excess removed and polished around the magnetic attachment (Fig-4). Finished denture was reinserted to check for adequacy in retention by asking the patient to move the tongue in lateral and protrusive movements (Fig-5).

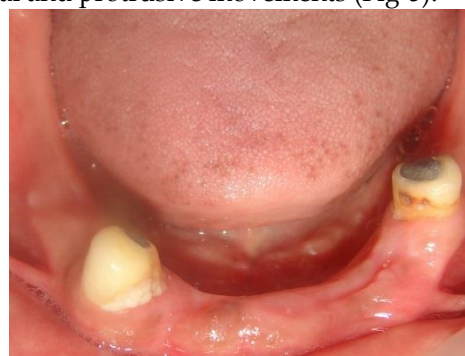


Figure 1: Pre-operative view of remaining teeth



Figure 2: Magfit dome shaped magnetic attachment for root



Figure 3: Keeper with post luted to natural roots



Figure 4: Magnetic attachment fixed to denture



Figure 5: Test for retention of mandibular denture

Discussion

Geriatric patients requiring complete dentures often face the discomfort of less retentive mandibular complete dentures due to extensive resorption of the mandibular ridge. Age, lack of dexterity, medical conditions to undergo an extensive surgery and financial implications are multiple factors that deter replacement of teeth with implants. Replacement of teeth with complete denture still remains the standard of care for completely edentulous patients. Retention of few remaining teeth for fabricating an overdenture can reduce the financial burden at the same time can take care of retention, stability and support of the complete denture. Various attachments for radicular retainers have been used worldwide. Most of them like ball, locators and bar & clips are based on mechanical retention. Lack of parallelism of remaining natural teeth makes it difficult to insert prefabricated

attachments inside the post space for retention purpose. Such situations would require the need for making a post space impression and fabrication of root anchored attachments in the laboratory by the casting process. This can be a cumbersome procedure and also would necessitate lot of inter-occlusal space for the attachment assembly. These resilient attachments do not prevent excessive lateral forces on to the natural teeth due to its design feature and are at times difficult to insert and remove for elderly patients with reduced manual dexterity. The magnetic attachment is a retentive attachment for removable prostheses which assists retention using magnetic force. The magnetic assembly contains the magnet and is set in the denture base. The keeper with the post is magnetically attracted to the magnetic assembly.⁷ The attraction between the two components provide the desired retention to the complete denture. The attractive force is primarily vertical preventing dislodgement in the vertical direction. Excessive lateral forces dissociate the magnetic coupling reducing the lateral loading to the tooth root. Since it is based on surface attraction, the attachment is often less in height when compared to other attachment designs therefore requiring minimal inter-occlusal space for restoration.⁸ The magnetic force helps in self-assembly of the attachment aiding in easy insertion of the denture.

Conclusion

Magnetic attachments provide long lasting retention for complete dentures. Preservation of few remaining natural teeth is of paramount importance in providing the patient with a predictable long term treatment outcome. The use of magnetized keeper with post is a simple procedure that can be done chairside minimizing extensive lab work and also reduces the cost to the patient. Good maintenance by the patient to preserve the natural teeth is important for ensuring long term survival of the natural teeth.

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