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Associations between Diabetes and Periodontal Disease

The prevalence of diabetes mellitus (DM) and periodontal disease (PD) is high, and the association of these two as risk factors influencing each other has been recognized and is extensively documented.

Epidemiological studies have clearly identified that diabetes is a major risk factor for periodontitis, increasing the risk approximately three-fold compared to non-diabetic individuals, particularly if glycaemic control is poor. In recent years, the precise relationship between periodontitis and diabetes has been the subject of much interest, given that both conditions are highly prevalent, and also because it has become increasingly clear that there are interactions between the two diseases that have important clinical implications for dental professionals, physicians and, most importantly, patients.

Dental surgeons have long been aware of the importance of a diagnosis of diabetes in their patients, including xerostomia and candidal infections as well as periodontitis.

Considering the high prevalence of both these diseases in India, a substantial volume of data needs to be constructed by way of concerted research between the medical and dental fraternities, to enable management of these conditions in the population of India. A database of indexed publications addressing this subject is of high priority.

Edited by: **Dr. K. Nandakumar,** Hon. Editor • Published By: **Dr. Suresh Kumar G.,** Hon Secretary • **For IDA, Kerala State Branch**
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President's Message

Dr Mohamad Sameer P T

Dear friend,

Warm greetings from your president and my team of office bearers!!!

It has reached the peak of summer and I trust the heat hasn't gotten to you. The activities of our state branch have been progressing very well and all local branches are proving their capabilities well enough. Each and every program of our branch has been well attended and well organized. Allow me to congratulate all those who have done their best work in organizing all programs and given their best to the association.

We are also insisting that the government frame an oral health policy for its citizens and include the IDA in discussions on the matter. IDA took an active part in the discussion regarding the antibiotic policy and we are ready to take part in all and any further discussions with the government on oral health matters -a stance which has been conveyed to the concerned authorities.

At the same time the strength and health of an association is always measured by the number and presence of its members –an area where we need to improve. It is imperative that we increase our membership base and soon we will be unveiling innovative programs to increase the membership of our association. I call upon each and every one of you to bring at least one new dentist to our fold.

Thanking you and expecting your co-operation in the coming days,.

Jai IDA, Jai Hind

Dr. Mohammad Sameer P. T.
President, IDA Kerala State

Secretary's Report

Dr. Suresh Kumar G

Dear Doctor,

Greetings to you from IDA Kerala State Office.

As a State Branch, IDA Kerala State has been an example to other States as far as organizational activity is concerned. Our Flagship schemes such a HOPE and HOPE Medi are perfect examples to this. But in hind sight a question that we ought to ask is whether we are putting enough focus on governmental policies which definitely have a direct effect on us.

The years ahead will not be easy. The challenges in front of us will be more complex; they demand not only commitment but also the will to move forward. Are we prepared to bear the torch further? it is a call for our commitment to carry the torch and surge ahead. What was achieved in the past is more than history; they have been revelations to the others but much still needs to be done.

We are satisfied at the progress that the association has made in finding a solution to the long standing issue of Pollution Control board clearance for Dental clinics and other pending issues, soon we hope to have a system in place for AERB registration process as well for which talks are underway with the regulator.

The callous attitude with which the Government has moved on to initiate the process of New Dental colleges is a major cause of concern. The Association is deeply worried on the declining standards of Dental Education, rather the Government's focus should be on ensuring quality education and not to add fuel to fire to the already dismal state of unemployment and work conditions that await fresh graduates.

As a profession we should strive to regulate ourselves efficiently and prevent interferences from other bodies due to the failures of existing mechanisms. The recent Supreme court judgements with regard to functioning of MCI and appointment of a committee headed by a former Chief Justice to oversee its functioning is a pointer to such instances. Let us act before it is too late and also send a firm message to those at the helm of affairs of the profession that their actions or inactions are being reflected on each and every Dental Surgeon, accountability of their actions is the norm to be followed.

Thank you again for your support and trust in the State office and the Leadership Team. We look forward to working with more involvement of Members at the Local Branch level; together we can continue to advance the profession.

Dr. Suresh Kumar G.
Hon. Secretary, IDA Kerala State

Editorial

Dr. K. Nandakumar

Gold or gold covering

Medical and dental entrance examination has been brought to the active consideration of the public now and as usual it is the Supreme Court that has ignited the issue by insisting on the conduct of NEET this year itself. The central and state governments which should ensure the standards of health care in the country have vehemently argued for a postponement of the exam. It is curious to observe that the government is trying to protect the interests of the managements rather than the health of the citizens of this country. If health was the prime concern, the government would have simply complied with the Supreme Court's verdict. One argument is the sad plight of the student about which the government should have been aware years ago. The question is – should we go for NEET?

The state of medical education in India has become synonymous with rhetoric and wishful thinking. The councils do not take any concrete step in improving the standards of medical education. Commercialization of medical education can be considered as one of independent India's biggest mistakes. The poor quality training offered in the innumerable number of medical and dental colleges have made the fresh graduates totally employable. In a study conducted in Madhya Pradesh, it was found that there is only a marginal difference in the practices of "qualified" doctors and quacks. It has become a fashion to say that the political will has to change but it will never change. Becoming a doctor is not a fashionable proposition and making value addition in the marriage market. It is a commitment to the society and that is why doctors take an oath once they begin their practice.

To improve the quality of the doctor, the first thing to do is to admit students through NEET and by merit. Parents and students are afraid of the term 'merit' but they want to become doctors to show it as a price tag. Second thing to do is to conduct the medical examinations strictly. Private college managements want full pass in all the examinations because that can attract the next year's admissions. Failing in an examination may cost six months in the student's life. Passing without quality may cost the lives of patients in the subsequent years. Deemed universities are in big demand because failure is not a word found in their dictionaries.

An ornament maker can make beautiful designs in whatever metal he is provided with. But value is there only for the gold ornaments. In our country, gold covering ornaments are also used. It will last only for a few months. We want doctors with gold quality; not gold covered quality.

Dr. K. Nandakumar
Editor, KDJ

Neuromuscular dentistry – The physiologic approach to treat temporo mandibular joint disorders (TMD) and obstructive sleep apnoea (OSA)

* Rajesh Raveendranathan

"The main thing is to keep the main thing the main thing."

– Anonymous.

The main thing in any dental treatment is to sustain the perfect occlusion. It could be centric or habitual. But what about the masticatory muscles? Are they happy at these occlusions? And the Temporo-Mandibular Joints (TMJ)? Are they compromised? If so do we need a new occlusion where the stomatognathic triad (Fig 1), which comprises the teeth, the muscles and the TMJ, are in harmony?

Yes, we do. This position is called the Myocentric occlusion.

What is Myocentric Occlusion?

Myocentric occlusion is the occlusal relationship between the mandible and the maxilla that minimizes the need for muscle accommodation and posturing, and allows normal decompression of neural and vascular intra capsular tissue and associated connective tissue. It provides the optimal condylar position that we strive to achieve in a gnathic system that may have become pathologic due to previous condylar positional discrepancies leading to TMD (Temporo-mandibular dysfunctions).

This can be explained only with the help of an actual knowledge in the sciences of Neuromuscular Dentistry (NMD) as 90% of all TMD is myogenous in origin. The science of NMD is well chronicled in hundreds of scientific articles and textbooks.

What are Temporo Mandibular Joint Disorders (TMD)?

TMD is a condition in the TMJ complex wherein the articular disc within the joint space is deranged, Internal Disc Derangement (IDD) or the joint space itself is obliterated due to various other extraneous reasons (like ankylosis). But only IDD can be treated with NMD. Hence, they can be broadly classified as

1. IDD with Reduction
2. IDD without Reduction

Let us take an example of "A Click" – the most common symptom of TMD. It is actually IDD with reduction wherein the condyle is able to recapture the disc with a click, which is actually a break in velocity. We know, the disc is formed as an extension of the superior head of the lateral pterygoid muscle (Fig 2). A simple high point during a person's path of closure would lead to the ANS/CNS developing a sensory engram that would basically inform the muscles of mastication to alter the current path; so that the person would get maximum intercuspation to allow for normal chewing. This would lead to a shift in mandibular position with muscle hypertrophy in the contra-lateral side due to over use of that side. Muscle hypertrophy ends up as muscle length shortening. So, when the lateral pterygoid shortens, the disc is pulled anteriorly and gets out of position. Further hypertrophy ends up in further shortening leading to the inability of the condyle to recapture the disc, resulting in restricted mouth opening. This is how TMD attacks a person. Hence, TMD sufferers first manifest with clicking and headaches; and in the longer run end up with restricted mouth opening and MPDS (Myofacial Pain Dysfunction syndrome).

What are Signs and Symptoms of TMD?

Extra-Oral Signs:

- Head aches, Migraine
- Clenching/Bruxism
- Neckaches, Shoulder aches
- Facial asymmetry
- Short face syndrome
- Deep Mentalis Crease
- Forward Head Posture
- Vertigo
- Tinitus
- Ear Congestion

* Neuromuscular TMJ/Sleep Medicine specialist; www.tmjindia.com

Intra-Oral Signs:

- Crowding
- Excessive Wear
- Lingual Inclination of Lower Teeth
- Bicuspid Drop-off
- Depressed Curve of Spee
- Narrow arches
- High Palatal Vault
- Midline Discrepancy
- Tongue thrust

The most common cases are those that involve deep bites. Class II Div 2 has always been the villain due to their tendency to relapse. But once they are neuromuscularly treated, the myocentric occlusion is retained till other external forces act upon the joint.

What is Neuromuscular Dentistry (NMD)?

Neuromuscular Dentistry (NMD) is the science of dentistry that embodies adopted accepted scientific principles of patho-physiology, anatomy, form and function of the stomatognathic triad. NMD objectively evaluates the complex relationship between teeth, temperomandibular joints (TMJ) and the masticatory muscles in order to achieve an occlusion that is based on the optimal relationship between the mandible and the skull – Neuromuscular Occlusion (Myocentric) (Fig.3). This is achieved by relaxing the muscles controlling the jaw position to establish a true physiological rest position upon which treatment considerations are based.

In summary, NMD is the science of occlusion encompassing not only the teeth but the objective evaluation of the status and function of the jaw muscles and joints – before, during and after treatment – to achieve the optimal result.

Is this science supported?

Occlusion is the foundation of dentistry. It is of key importance in the success of every major dental procedure. Occlusion is affected by a triad of factors- the teeth, the muscles and the TMJ. Traditional dentistry has focused on the

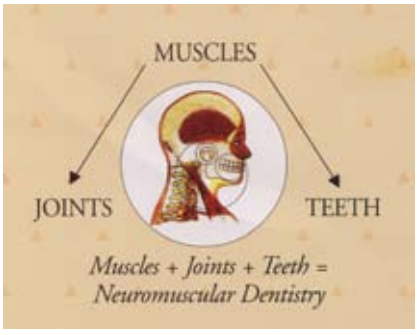

Fig 1 NMD

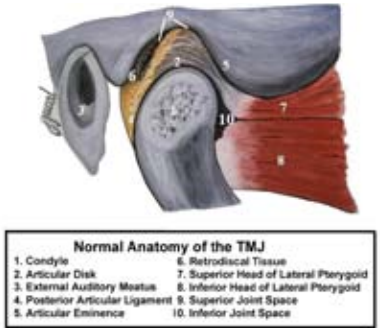

Fig 2 TMJ Anatomy

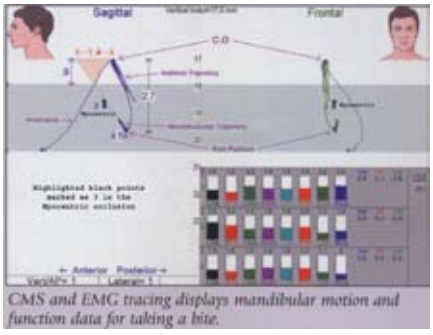

Fig 3 Myocentric

Fig 4 TENS

Fig 5 Jaw Tracker

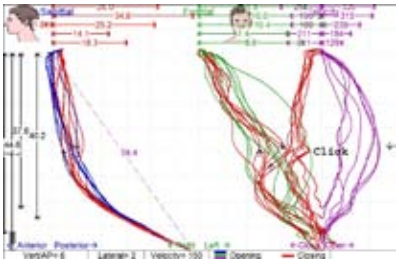

Fig 6 Click

Fig 7 EMG

Fig 8 Orthotic

Fig 9 2nd Phase Crowns

teeth – what might be called "one dimensional" dentistry. NMD is a term that has been applied to the additional consideration of the "second and third dimensions" – muscles and TMJ.

It is common to hear dentists say that they have done the procedures "by the book"; but that may be because muscles and TMJ only get a cursory look in our dental education curriculum. But with NMD, treatment will be optimized, minimized and lets us achieve ideal outcomes. For that muscle relaxation and recording their activities is a must.

Dr. Bernard Jankelson, the father of NMD, always reiterated Galilei's saying "If it is measured it is a fact; if it is not measured, it is always an opinion"! And thus began the inception of technology into our occlusion theories. With this, the physiological approach to treating TMD got measured and hence got proven. The science of NMD is now well chronicled in hundreds of scientific articles and textbooks.

What is TENS?

NMD begins with the true relaxation of the muscles through the use of the J5 ULF (Ultra Low Frequency) TENS. TENS in NMD delivers ultra low frequency electrical muscle stimulation that stimulates the 5th and 7th cranial nerves via neural pathways and induces involuntary contraction of the muscles controlled by them (Fig. 4).

Muscles of the face and neck are often propriocepted to control head and mandibular position in a way that accommodates occlusion, even though that particular occlusion may be less than ideal. NMD helps in establishing the true resting state and the occlusion at that state. TENS helps to achieve to overcome this proprioception.

Once the relaxed state is achieved the myocentric occlusion needs to be found. A mandibular tracking device eases our job of Jaw tracking.

What is Jaw Tracking?

The state of the teeth and TMJ very often cause the muscles to accommodate and hence compensate for other repair mechanisms. Evaluation of the hard tissue alone does not provide insight to the true status of the occlusal system. This is why NMD uses objective and scientific documentation methods like jaw tracking and electromyography for a complete analysis of the masticator system.

Jaw tracking (Fig 5) is used to precisely identify the relationship of the mandible to the skull and to study mandibular movement dynamically. Magnetic sensors track the path of the mandible in three dimensions by sensing magnetic field changes.

The data thus produced has three important roles.

First is to permit the study of mandibular action by recording and replaying the traces representative of the mandibular path of opening and closing. It reveals startling problems. One example is a sudden slowdown of mandibular velocity, invisible to the eye but often an alert to a clicking joint (Fig 6).

Fig 10 2nd Phase Ortho

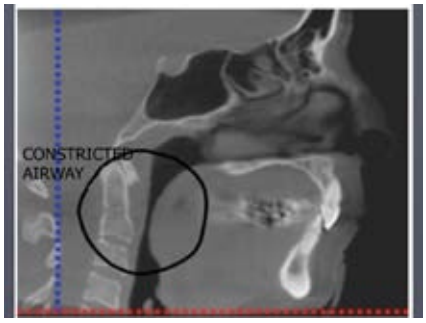

Fig 11 OSA

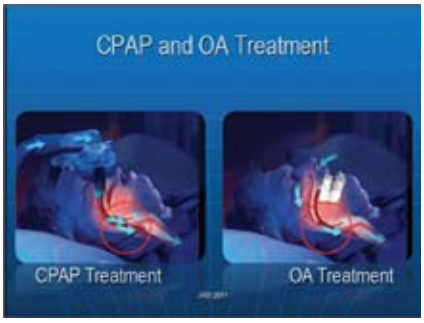

Fig 12 OSA OA

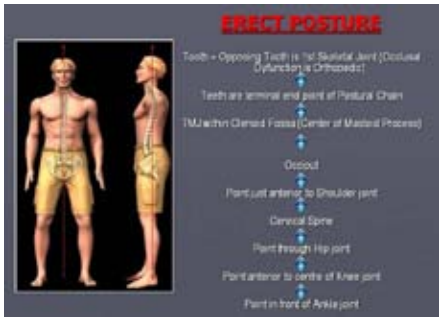

Fig 13 Postural Chain

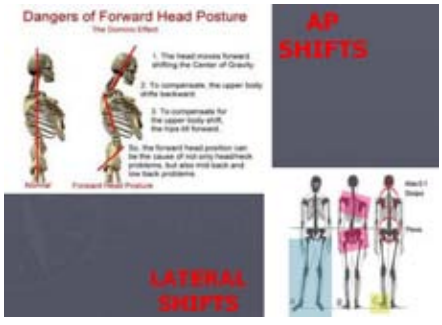

Fig 14 Postural Defects

Second, the jaw tracking device records the relationship of the mandible to the skull with great precision, information useful to the diagnostic process, and in taking a meuromuscular bite registration.

The third application of jaw tracking is to record and verify that patients' closure to centric occlusion is on a myocentric trajectory which leads us to the myocentric occlusion.

But for all this to be achieved we need to confirm the status of the muscles controlling the jaw. For this Electromyography is of utmost importance.

What is Surface Electromyography (EMG)?

EMG is the only way that NMD can be confirmed. Palpation is subjective at best, has little consistency and provides no objective documentation. The information availed by EMG can be invaluable as an aid in occlusal diagnosis. EMG also helps in showing precise timing and activation patterns of various muscles groups (Fig 7). This information is adjunctive to the occlusal diagnosis.

What are Orthotics?

Orthotics are anatomical splints, that are placed on the lower teeth, and are designed in such a way that they encompass the TENS-induced freeway space with maximum intercuspation and functional occlusion with the maxillary teeth. They help the masticatory muscles to reprogram themselves to guide the mandible to the new myocentric occlusion, hence maintain isotonicity of the muscles. They are normally worn for a period of 8-10 months depending on the patient's physiology.

Orthotics can be acrylic or resin based (Fig 8).

What about relapse?

The normal neuromuscular treatment protocol would involve a 2 phased therapy. The first phase would be the wearing of the myocentric occlusion anatomic orthotic to reprogram the muscles of mastication so that there is no more accommodation or compensation in any of the 3 components of the stomatognathic triad. They are worn for 6-8 months till the EMG shows isotonic readings.

If this position is not maintained (as the patient would remove the orthotic), the patient's ANS/CNS would force the mandible to the old habitual occlusion to enable chewing and maximum intercuspation; thus deprogramming the reprogrammed muscles causing a relapse.

This is why the 2nd phase is very important. The new mandibular position has to be maintained by getting the teeth to that myocentric occlusion. This can be done by either building up the teeth with composites/ceramic (fig 9) or by physiological orthodontic extrusion and bimaxillary expansion (fig 10).

This position will be then maintained till other extraneous factors act upon it like breathing disorders, stress and sleep apnoea.

What is Obstructive Sleep Apnoea (OSA)?

As the term suggests, it's a breathing blockage attack caused due to an obstruction in the airway during our sleep. 80% of all sleep deaths are caused due to untreated OSA. Snoring, sudden sleep-time awakenings, exertional dyspnoea, restless leg syndrome, excessive daytime sleepiness and general fatigue are some of the signs and symptoms. And 95% of all these are caused due to a simple posterior displacement of the mandible and hence the tongue (Fig 11). During sleep, this position is further worsened, as the muscles controlling the mandible go to rest and the tongue now blocks the airway. This causes hypercapnea (higher levels of carbon di oxide) at one stage which triggers a mechanism the ANS to activate a neural feedback to basically instruct the genioglossus muscle (tongue) to move forward and hence the mandible. This in turn awakens the patient as this forced forward positioning of the mandible causes clenching/grinding. Hence, night grinding is most commonly caused due to airway compensation than psychological stress. This is why, more often than not, bruxism splints wear away if psychological stress is not the cause of the grinding. Airway non-occlusion is of utmost importance, including an ENT clearance with regard to tonsils, adenoids or sinusitis.

This is how oral sleep appliances (Fig 12) come to the fore. A suspected patient is referred to a polysomnograph test which would show us various parameters like AHI, awakening events, oxygen desaturation events (hypercapnoea) and snoring. Based on the results, the patients undergo the same TENS and jaw tracking to find the most optimum (forward) position of the mandible to record the bite for the manufacture of the sleep appliance; so that the mandible is held in that same position at night. This is why the daytime orthotic will not help an OSA patient as there is nothing to hold the mandible in that slightly forward position so that the tongue does not fall back and cause an airway obstruction.

60% of all TMD sufferers have OSA and if the TENS relaxed sleep appliance is not delivered (unlike the 70% of maximum protrusion with George gauge bite registration technique), the muscles become sorer and OSA patients end up with TMD.

How is occlusion related to Posture?

Other than cranial sutures, the occlusion of teeth is the most superior anatomic articulation and it also has the most profound influence on other body functions and relationships. Tooth + opposing tooth is the 1st skeletal joint in our erect posture. Hence, all occlusal dyfunction is orthopaedic. Teeth are the terminal end point of the Postural Chain followed by the TMJ within the Glenoid Fossa (Fig 13). As the cranium sits on the cervical vertebrae, any rotation of the C1 – Atlas or C2 – Axis, would result in headaches in occipital area, eyeflashes or pain behind the eyes.

Any change in head posture would result in different teeth tapping together. So, a change in position of C1, C2 would change the position of the mandible; and vice-versa. This is why TMD could be ascending or descending (Fig 14).

Closure

This clearly shows how we need to broaden our thinking to beyond a tooth-mechanic and start analyzing the tooth-whole body connection. As said earlier, TMD can be ascending or descending. Just correcting the occlusion might not be a good enough fix. We need a team. The ENT, neurologist, surgeon, NUCCA chiropractor and a physical therapist need to work in tandem with the NMD specialist to help provide the patient with the best results.

Science and clinical experience have shown that a stable occlusal foundation in which muscles, teeth and TMJ work together plays a crucial role in the positive outcome of all dental procedures. For optimal diagnosis and therapy, the clinician must be able to measure physiologic phenomena that indicate the state of occlusal function and its effect on both masticatory muscles and TMJ. There are lots of companies in the market that are available to us in getting this done.

All in all, NMD assists us in providing optimal diagnosis and treatment planning in all major dental specialties – especially Orthodontics and Prosthodontics. Failure in achieving the myocentric occlusion is what leads to the failure of treatments and finally TMD. This is because the muscles and not joint anatomy and teeth inter cuspation determine the comfortable position of the mandible.

The long-standing history of Centric Relation is confusing since it has been changed numerous times over the decades. The Neuromuscular approach to dentistry is nothing more than adding to the knowledge base of the past using advanced technologies of the 21st century in a clinical setting.

Come On.... Let us all search for the elusive MYOCENTRIC!!!

And stop considering yourself as just a "Tooth Doctor"!!!

References:

1. Jankelson. B, 'Neuromuscular aspects of occlusion effects of occlusal position on the physiology and dysfunction of the mandibular musculature'. Dental Clinics of North America. Vol 23, No.2, April 1979.
2. Dickerson, W. Chan.C., Mazzocco,M, The scientific approach to Neuromuscular occlusion, Signature, Vol 7, no 2, pp.14-17,2000
3. Jankelson, R.R, Neuromuscular dental diagnosis and treatment, Ishayaku EuroAmerica, St.Louis, Mo.2005
4. Jankelson, R.R.,Adib,F.Literature review of scientific studies supporting the efficacy of SEMG, Low frequency TENS, and Mandibular tracking for diagnosis and treatment of TMD. Myotronics.1995
5. Cooper, B. Recognition of cranio-mandibular disorders. Otol. Clinics of N.America. vol 25. No.4. 1992
6. Lynn, J., Mozzocco, M.W., Miloser,S.J. and Zullo,T. Diagnosis and treatment of cranio cervical pain and headache based on neuromuscular parameters. Amer.J.Pain management. Vol.2. No.3. pp. 143-151. 1992.
7. Jankelson,B, Spaks,S, Crane,P. Neural conduction of Myomonitor stimulus: a quantitative analysis. J.Prosth. Dent. 334:3, pp 245-253, 1975.
8. Williamson, E, Marshall,D, Myomonitor rest position in the presence and absence of stress. Facial orthop. And TM artrography, ed: Williamson,3:2 1986
9. Ebel, OS, Jonas,IE, Kappert,HF, Transcutaneous electrical nerve stimulation(TENS): ist short-term and long-term effects on the masticatory muscles. J.Orofac.Orthop.61:2, pp100-111, 2000
10. Cooper,BC, The role of bio electronic intrumentation in the documentation and management of temperomandibular disorders. J.Oral Surg. OralMed. Oral Pathol. 83:1, pp 91-100, 1997
11. Lynn,J. Computerized mandibular motion analysis: a physiologic perspective. Computers in clinical dentistry, Quintessence books, pp 79-93, 1991
12. Mazzocco,MW, Hickman,DM, "Space" The final frontier: use of neuromuscular measurements in clinical treatment, Anthology Intl Coll. of Craniomandib. Orthopedics, Vol.VI, pp 3-14, 2003

Resorbable plate and screws in pediatric facial fracture

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Abstract

The use of resorbable plates and screws for fixation of pediatric facial fractures is both well tolerated and effective. It enables realignment and stable positioning of rapidly healing fracture segments while obviating any future issues secondary to long-term metal retention. Owing to their improved polylactic acid / polyglycolic acid ratio resorbable plate-screw systems which contain varying compositions of polylactic acid and polyglycolic acid copolymers are ideal fixation materials used favorably in maxillofacial, craniofacial and orthopedic reconstructive surgery in that they make effective fixation and have further advantages such as biocompatibility, adequate biomechanical resistance against distraction and compression forces in the early postoperative period, longer dwelling time and elimination from the body through physiological routes without causing any foreign body reaction or significant sequelae. Here we report a pediatric case with mandibular and maxillary fracture being treated with resorbable plates.

Key words: resorbable plate, pediatric fracture, parasymphysis fracture

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Introduction

Injuries to the face is far uncommon than other injuries in children. In addition, pediatric facial fractures are usually minor such as bruises, hematoma, lacerations or dental trauma. Although trauma is the leading cause of morbidity and mortality in children, and injury remains the most common cause of death in children. Facial traumas with severe injuries are real challenges to the surgeon, and there is subsequent functional and esthetic impact to the growing child and the economical and emotional burden to the patient and family can be overwhelming[1].

The pediatric facial trauma patient provides several different considerations that are not present in the adult. First, the pediatric patient has the tremendous advantage of an accelerated ability to heal in a very short time with few complications, aided by the well-vascularized tissues of the face. Second, through the assistance of growth and an inherent ability to adapt, recovery of damaged orofacial tissues and function is much better than in the adult. The unique characteristics and anatomy of the developing immature face, the different facial injury patterns from certain trauma risk exposures that occur in the pediatric patient, and the potential growth implications from traumatized facial structures that make long-term follow-up of these patients important. These factors, combined with the relatively limited experience of most clinicians with significant facial injuries in children due to their low incidence, may make certain treatment decisions different than what one might do in the adult[2].

Various bone fixation materials have been used in maxillofacial and orthopedic surgery. In addition to conventional techniques such as fixation with suture materials and wires, metal-plating systems have been widely used. Recently, "resorbable plate- screw systems" have attracted attention as an efficient fixation system, and started to be used more commonly for various indications[3]. Resorbable plating systems were first used approximately two decades ago as hemostatic vascular clips or surgical suture material[4]. They are polymers consisting of varying compositions of polylactic acid and polyglycolic acid co-polymers[5]. In the early period of their evolution, many problems were encountered such as foreign body reactions, and persistence in the body for longer periods than desired as they contained high molecular weight polylactic acids[6]. Through the rapid development of polymer technology and regulation of polylactic acid/polyglycolic acid ratios, almost ideal fixation materials have been obtained at present. Current materials are completely biocompatible, and have adequate biomechanical resistance and can be eliminated from the body without causing any foreign body reaction[7]. Resorbable plate-screw systems can be completely excreted through physiological routes. Since the material is composed of essentially alpha- hydroxy acid polymers, breakdown occurs through hydrolization and end products are carbon dioxide and water[8]. The degradation of polylactic acid polymers is quite slow owing to their hydrophobic semicrystalline structure. Conversely, polyglycolic acid polymers have a rapid degradation process due

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to their highly amorphous structure and increased hydrolytic activities[9].

Case report

An eight-year-old female patient with an alleged history of tree falling to her face was seen in the emergency room. She did not have history of loss of consciousness, vomiting or seizures. There was bleeding from the nose and from the oral cavity. Child was conscious and alert. She had a depressed nose with increased alar base width, periorbital edema of the left eye with subconjuctival ecchymosis and bilateral diffuse edema over the face extending from the lower eyelid to the lower border of the mandible. She also had laceration in the palatal region, ecchymosis in the left zygomatic buttress and derangement of occlusal plane in the 31, 32 regions with sublingual hematoma.

Radiological examination revealed fracture of left parasymphysis, fracture line was noted on the zygomatic buttress in the left side with mid maxillary split, bilateral pterygoid plate fracture, left lateral wall of orbit fracture-undisplaced, hemosinus and nasal bone fracture. Nasal pack was placed immediately to arrest bleeding and to stabilize the fractured nasal bone and the patient was admitted under oral and maxillofacial surgery for further management.

Open reduction and internal rigid fixation with resorbable system were planned. Pre-anesthetic evaluation was done and surgery was planned under GA. Nasotracheal intubation was done and throat pack placed. Intra oral and extra oral preparation was done using betadine. Local infiltration was given in the upper and lower vestibular region. Intra oral vestibular incision was placed extending from the 14 to 26. Flap raised and fracture site was exposed in the left side. The plate was placed into a water bath at 55°C for 10 seconds, allowing the plate to become malleable. Following reduction of the displaced fracture 2mm bioresorbable plates were adapted in the zygomatic buttress and in the pyriform aperture and was stabilized using a minimum of 2, 2mm resorbable screws with length of 4 to 6mm on the either side of fractures (Fig.2). Vestibular degloving incision was placed from 73 to 83 region. Fracture was reduced and stabilized using 2mm resorbable plates and a minimum of 2, 2mm resorbable screws with length of 4 to 6mm on the proximal and distal segments (Fig. 1). Mid palatal laceration was closed using 3-0 vicryl. Intra oral incisions were closed in layers using 3-0 vicryl. Throat pack was removed. Extubation was uneventful. Patient was placed on semi solid diet and was placed under antibiotic coverage for a period of 5 days along with anti-inflammatory and analgesics. No infection, local-systemic allergic reaction or inadequate fixation was observed in the patient post operatively. On discharge patients were given oral antibiotics for 7 days and chlorhexidine mouth rinse for 7 days.

Discussion

Metal plate-screw systems are fixation materials that have been used for a long time commonly in plastic and orthopedic surgery. Metal plate screw systems enable adequate fixation in bone healing process. Yet, their effects such as limiting bone growth especially in pediatric age group have prompted investigators to look for alternative fixation materials in the reconstruction of trauma and craniofacial anomalies[10]. Ideal fixation materials should have adequate biomechanical resistance against distraction and compression forces in the early postoperative course as well as making bone healing possible without causing foreign body reaction in the later period[4]. Metal plate screws can sometimes lead to destruction and osteoporosis in the surrounding bone tissue. Metal plate screws used in regions where dermis and subcutaneous tissue are relatively thin, may become conspicuous and felt by inspection and palpation. Most of the patients present with subjective complaints such as, a sense of cold and pain

Fig. 1 Bioresorbable plate on the reduced parasymphysis fracture segment.

Fig. 2 Bioresorbable plate on the reduced mid maxillary line

on their face. These cosmetic problems and discomforting complaints necessitate a second operation for the removal of plate screw systems[11]. In addition, metal plate systems may be displaced or cause artifacts on radiograms, being influenced by the magnetic field produced during MRI[4].

Titanium plates for rigid fixation of mandibular fractures allow the patient to have mandibular function and to achieve a normal diet earlier than those patients treated with closed reduction and a period of intermaxillary fixation. This avoids hypomobility secondary to prolonged intermaxillary fixation. Also, rigid fixation is believed to result in faster bone repair caused by compression of the fracture segments and lack of mobility between the fracture segments. The disadvantages of titanium plates include the possibilities of hardware removal. Resorbable plates do not have to be removed. The plates used in this patient will resorb over a period ranging from 2 to 4 months[12].

Titanium plates do not allow full visualization of the fractures on postoperative radiographs. Resorbable plates are radiolucent, thus full visibility of the fracture site is available to the clinician. When resorbable plates are used to stabilize bone graft reconstruction of larger defects, the radiolucent property may enable the surgeon to see the progress of the bone graft easily[13].

PLA and PGA and their copolymers are typically produced by ring opening polymerization of corresponding cyclic monomers. PLA is a slow-degrading hydrophobic polymer, whereas PGA is more hydrophilic and degrades faster. It is possible to copolymerize the 2 monomers to extend the range of each polymer's properties. Copolymers of lactate with glycolide or L-lactide with D, L-lactide are especially interesting for use in craniomaxillofacial implants because they possess attractive combinations of strength and resorption profiles[13].

The main attraction of a biodegradable device, to both surgeons and patients, is that it provides the proper strength when necessary and then harmlessly degrades over time, until the load can be safely transferred to the healed bone. Subsequently, there is no need for an additional removal operation, as there could be if a metallic device were used. Therefore, biodegradable devices reduce the total treatment and rehabilitation time of the patient. This may also reduce costs related to this type of trauma[13].

There are specific technical aspects unique to the resorbable plates. For screw placement, a tapping step is needed for placement of the resorbable screw. While this may appear to be a disadvantage because of an additional step and a small (1 to 3 minutes) increase in operative time, the formation of threads allows placement of the fixation screw with minimal pressure and stable alignment of the bone segments[13].

The amount of dissection necessary to place these resorbable plates is similar to titanium plates. The use of the warming bath to allow for softening of the plate is not a disadvantage because once malleable, the resorbable plate is easily adapted by pressure to the bony surface. No bending pliers are necessary, although they are available for final bending. In our experience, once the surgeon learns this technique, the adaptation of these resorbable plates seemed less cumbersome than titanium plates[13].

► Conclusion

Resorbable plates have evolved to the point where their physical properties are sufficient to withstand the postoperative loads required for fracture repair. Bioresorbable plates can be used as an alternative to titanium plates but with caution in severely displaced fractures. They are a good means to stabilize fractures in patients where growth retardation and hardware removal may be a consideration.

► References

1. Mukherjee CG, Mukherjee U. Maxillofacial trauma in children. Int J Clin Pediatr Dent 2012; 5 (3): 231 - 236
2. Eppley BL. Use of resorbable plates and screws in pediatric facial fractures. J Oral Maxillofac Surg 2005; 63: 385 - 91.
3. Francel TJ, Bireley BC, Ringelman PR, et al: The fate of plates and screws after facial fracture reconstruction. Plast Reconstr Surg. 1992; 90 (4): 568 - 73
4. Eppley BL, Sadove AM and Havlik RJ: Resorbable plate fixation in pediatric craniofacial surgery. Plast Reconstr Surg. 1997; 100(1): 1-13
5. Gosain AK, Song L, Corrao MA, et al: Biomechanical Evaluation of Titanium, Biodegradable Plate and Screw, and Cyanoacrylate Glue Fixation Systems in Craniofacial Surgery. Plast Reconstr Surg. 1998; 101(3): 582-591
6. Bergsma EJ, Rozema FR, Bos RR, et al: Foreign body reactions to resorbable poly (L-lactide) bone plates and screws used for the fixation of unstable zygomatic fractures. J Oral Maxillofac Surg. 1993; 51(6): 666-70
7. Eppley BL and Sadove AM: A comparison of resorbable and metallic fixation in healing of calvarial bone grafts. Plast Reconstr Surg. 1995; 96(2): 316-22
8. Eppley BL, Reilly M: Degradation characteristics of PLLA-PGA bone fixation devices. J Craniofac Surg. 1997; 8(2): 116-20
9. Bos RR, Boering G, Rozema FR, et al: Resorbable poly (L-lactide) plates and screws for fixation of zygomatic fractures. J Oral Maxillofac Surg. 1987; 45(9): 751-753
10. Fearon JA, Munro IR and Bruce DA: Observations on the use of rigid fixation for craniofacial deformities in infants and young children. Plast Reconstr Surg. 1995 95(4): 634-8.
11. Kurpad SN, Goldstein JA and Cohen AR: Bioresorbable fixation for congenital craniofacial surgery: a 2-year follow-up. Pediatric Neurosurgery 2000; 33 (6): 306-310
12. Gabriella MA, Gabriella MF, Marcantonio E, et al: Fixation of mandibular fractures with 2.0-mm miniplates: Review of 191 cases. J Oral Maxillofac Surg 2003; 61: 430
13. Laughlin RM, Block MS, Wilk R, Malloy RB, Kent JN. Resorbable plates for fixation of mandibular fractures: a prospective study. J Oral Maxillofac Surg 2007; 65:89-96.

CASE REPORT

Esthetic management of peg laterals

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Abstract

A pleasing smile is very important for an individual in a society. The dental anomalies which affect the esthetics will have a negative psychological impact in adults. It is very important to replicate tooth anatomy for proper esthetics and function. These case reports describe the conservative esthetic approach of single unilateral peg shaped lateral incisor. The first case report illustrates the management with direct composite using putty matrix technique. The second case report shows the restoration of peg shaped lateral incisor with direct composite.

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Introduction

Peg lateral incisors are defined as underdeveloped, tapered incisors, and are the commonest form of microdontia[1]. It is the tooth with reduced mesio distal diameter and the proximal surfaces reduced markedly in the incisal region. As the upper lateral incisor plays an important role in the appearance of smile, the esthetic management requires a great deal of attention. The late disturbances in the differentiation process results in aberrations in tooth morphology which leads to size variations[2]. A variety of treatment options has been described which include procedures such as ceramic laminate veneers, all-ceramic crowns, metal-ceramic restorations, as well as direct composite resin restoration, which is minimally invasive.[3,4] The porcelain laminate veneers have many advantageous properties such as color, form and surface individual characterization through internal and external staining. But they are relatively expensive and more prone to fracture. A conservative veneer technique is the application of the resin composite without tooth reduction. Resin composite veneers can be altered and repolished. Resin composite veneers are more cost effective. These case reports illustrate the systematic use of resin composites with and without putty matrix technique for restoring the aesthetic appearance of peg-shaped lateral incisor.

Case report -1

A 25 year-old female patient was reported to the Department of Conservative Dentistry and Endodontics, Kannur Dental College, with the chief complaint of spacing in the upper right front tooth (fig 1). There was no history of trauma or any genetic anomalies. On clinical examination, tooth #12 revealed peg-shaped clinical crowns, tooth #13 was rotated, and tooth size discrepancy was also observed between central incisor and lateral incisor. The peg shaped lateral incisor was planned to restore with resin composite using putty matrix technique.

A diagnostic impression was made with alginate (Algitex) and a study model was fabricated with die stone (fig 2). Mock waxup was performed with green inlay wax (GC) (fig 3). A high-viscosity putty index (Hiflex) was made from mock wax-up which help in contouring the morphology of lateral incisor for better aesthetic results. Using #15 blade putty index was splitted so that minimal interferences were there while seating in the mouth. Putty matrix was checked for adaptation and necessary adjustments were made (Fig 4). After shade selection (A2 3M) all of the facial and lingual surface of lateral incisor was etched using 37% phosphoric acid gel for 15 seconds. The gel was then rinsed off with water and dried with sponge. Dentine bonding agent was applied following manufacturer instructions and light curing was done for 20 seconds. Using the putty index (fig 5) thin layer of lingual composite was placed and light polymerised for 20 seconds. Thus an intact lingual wall can be formed which act as a three dimensional framework to support the additional labial layers of composite. Composite restorative material was added layer by layer to mould the entire restoration using putty index intermittently. After the establishment of primary anatomy, occlusion was evaluated to rule out any premature contacts. Finishing was done using medium grit diamond abrasive point followed by medium grit polishing discs (Shofu). The entire tooth was then polished with fine pumice to remove any irregularities (fig 6). Full ceramic crown was placed on the rotated upper right canine after the root canal treatment.(fig 7).

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Case report -2

A 29 year-old male patient was reported to the Department of Conservative Dentistry and Endodontics, Kannur Dental College with the chief complaint of small sized upper front teeth with spacing (fig 8). On clinical examination, tooth #12 revealed peg-shaped clinical crown. Shade selection (A3.5 3M) was done and all of the facial and lingual surface of lateral incisor was etched using 37% phosphoric acid gel for 15 seconds after roughening of the tooth surface. The gel was then rinsed off with water and lightly blown dried with air. Dentine bonding agent was applied and light curing was done for 20 seconds. Composite restorative material is placed incrementally and light curing was done. Finishing was done using medium grit diamond abrasive point followed by medium grit polishing discs (Shofu) (fig 9).

Discussion

Peg-shaped lateral incisors tend to be hereditary and often cause multiple spaces in the dental arch that result in the alteration of the occlusal pattern. Backman and Wahlin found that the occurrence of peg-shaped maxillary lateral incisors is more frequently than other developmental malformations of the teeth[5].

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Composite restorations can be considered as cost effective treatment alternative where esthetics is a major concern. It is the most conservative approach for correcting tooth shape because it can be achieved without removal of tooth structure[6,7]. Resin composite veneers are easily reshaped and polished, especially in the emergence angle of the crown. Treatment is usually completed in one appointment. In addition, direct resin composite bonding treatment is less expensive compared with ceramic veneers[8]. In comparison to all-ceramic restorations, resin composite does not have the tendency for brittle fracture and it doesn't cause abrasive wear of the opposing dentition. The reversible nature of treatment procedure is another advantage, which allows for other treatment modalities in future[9]. A significant advantage of resin composite restorations over other restorative materials is that without the risk of modifying aesthetics, repair can be done.

Putty matrix technique allows the fabrication of mock up pattern with great ease and short clinical time. A mock-up review of the final restoration is very important in having a communication between the doctor and the patient. This technique has several advantages that sophisticated software or digital imaging is not required. Minimum chair time is needed for setting of material and trimming. Thus the results can be anticipated before hand. The chair-side benefits of this matrix are a creation of precise contact and contour. This minimizes later adjustments for occlusion, incisal edge and thickness determination. Also, Facial and lingual anatomy can very well be replicated using putty matrix as a guide. Lastly, the composite finishing and polishing enabled a highly polished surface and resulted in a satisfied patient.

► Conclusion

Direct composite resin restoration is a cost effective conservative treatment option to restore peg-shaped maxillary lateral incisors to normal contours. The natural look and pleasing smile can be simulated with this esthetic bonding procedure. The use of putty matrix technique eases the contouring and shaping of the restoration precisely. The key to success is to plan the restoration carefully so as to attain a flawless restoration that is in harmony with that of the adjacent teeth.

► References

1. Academy of Prosthodontics. Glossary of prosthodontics terms. 7th ed. J Prosthet Dent 1999;81:48-110.
2. Schmitz JH, Coffano R, Bruschi A. Restorative and orthodontic treatment of maxillary peg incisors: a clinical report. J Prosthet Dent 2001;85:330-4
3. Bello A, Jarvis RH. A review of esthetic alternatives for the restoration of anterior teeth. J Prosthet Dent 1997;78:437-40.
4. Izgi AD, Ayna E. Direct restorative treatment of peg-shaped maxillary lateral incisors with resin composite: A clinical report. J Prosthet Dent 2005;93:526-9.
5. Meskin LH, Gorlin RJ. Agenesis and peg-shaped permanent maxillary lateral incisors. J Dent Res 1963;42:1476–9
6. Bello A, Jarvis RH. A review of esthetic alternatives for the restoration of anterior teeth. J Prosthet Dent 1997;78:437–40.
7. Ayca DI, Emrah A. Direct restorative treatment of peg-shaped maxillary lateral incisors with resin composite, a clinical report. J Prosthet Dent 2005;93:526–9.
8. Schmitz J.H., Coffano R., Bruschi A. Restorative and orthodontic treatment of maxillary peg incisors: a clinical report. J Prosthet Dent 2001; 85(4):330-4.
9. Schmidseder J. Aesthetic Dentistry. New York: Thieme; 2000. p. 125-31, 206-7.
10. Hugo B. Esthetics with resin composite: basics and techniques. New Malden, Surrey: Quintessence Publishing; 2009, pp. 47–56.

An alternative approach for construction of complete denture in severely resorbed mandibular ridge; using Neutral Zone concept

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Abstract

Prosthetic rehabilitation of patients with severely resorbed mandibular ridges is a commonly encountered and challenging treatment for a Prosthodontist. The retention and stability of complete dentures are primarily determined by the amount of residual alveolar bone."Neutral zone" or "denture space determination" technique can be applied to overcome this problem since it enables in the construction of a denture that is shaped by muscle function and its harmony with surrounding oral structures. This article describes a technique for managing severely resorbed mandibular alveolar ridge by determining the neutral zone with low fusing impression compound material.

Key words: Neutral zone; Severely resorbed mandibular ridge; Low fusing compound; Retention; Stability.

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► Introduction

Complete dentures are prosthesis which are fabricated in perfect harmony with surrounding oral structures to provide optimum retention, stability and comfort. Management of severely resorbed mandibular ridges are often a clinical challenge for the Prosthodontists. Usually following dental extraction, alveolar bone resorbs towards the basal bone, especially in patients suffering from diabetes mellitus, osteoporosis, osteosclerosis and osteomalacia[1,2]. This usually results in mandibular ridges with flat or concave foundation what we call "the difficult lower jaw"[3], that lead to reduced retention and stability of lower complete dentures.

Dental implants can be used for stabilization of lower dentures but it is not feasible in all cases due to medical, surgical or economical constraints. For complex cases neutral zone technique is always a valuable alternative, but yet not often practiced[4].

In the edentulous arches the neutral zone or potential denture space refers to a space between the tongue, lips and cheeks. During functional activities of the oral cavity, the pressure of the tongue is neutralized by the pressure exerted by the lips and cheeks within this neutral zone. Dawson stated that a complete denture fabricated within this zone is more likely to be stable[5,6,7,8].

Sir Wilfred Fish, in 1948 concluded that the three surfaces of the denture i) the impression surface, ii) the occlusal surface and iii) the polished surfaces play an important role in denture retention and stability. Neutral zone is usually determined by the polished surfaces which are in contact with the lips, cheeks and tongue[9].

This case report describes an alternative approach for fabrication of complete denture in severely resorbed mandibular ridges, using neutral zone concept with low fusing compound material.

► Case report

A sixty year old female patient reported to the Department of Prosthodontics, Government Dental College Thiruvananthapuram, for prosthetic rehabilitation of edentulous maxillary and mandibular ridges (Fig 1). Medical history revealed that the patient was a known diabetic and was under medication for past 15 years. Dental history revealed that she has been a denture wearer for last 10 years and wanted to have a new denture for better retention and function. On clinical examination patient's maxillary ridge was moderately resorbed while the mandibular ridge was severely atrophied (Fig 2).

Stock trays were used for making maxillary and mandibular primary impressions using impression compound. Autopolymerizing poly methylmethacrylate acrylic resin material was then used for the fabrication of custom trays. Border moulding was then done followed by final impression with zinc oxide eugenol impression paste (Fig 3). Mandibular permanent denture base was then made and occlusal rims

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were then made of modeling wax, followed by jaw relation and mounting on articulator.

Two vertical pillars made of autopolymerizing acrylic resin were then placed in first molar region at established vertical dimension of occlusion and the remaining modeling wax was removed from the lower occlusal rim. Retentive loops made of thin orthodontic wire were then attached at the anterior and posterior region of lower permanent denture base using autopolymerizing acrylic resin (Fig 4). It was also ensured that vertical pillars and retentive loops do not interfere with muscle movements during function.

Fig. 1 Pre operative frontal view.

Fig. 2 Severely atrophied mandibular ridge.

Fig. 3 Final impression.

Fig. 4 Vertical pillars and retentive loops attached to the mandibular permanent denture base.

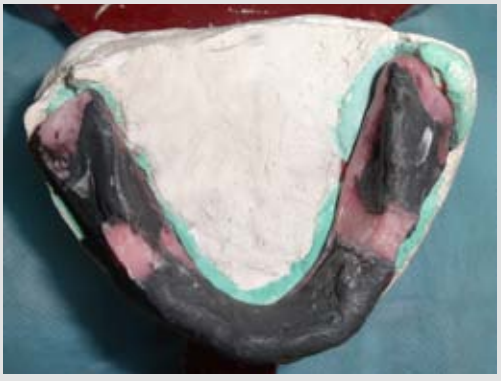

Fig. 5 The impression of the denture space placed over the mandibular master cast.

Fig. 6 Beading and boxing done for making the matrices.

Fig. 7 Matrices made using Type IV dental stone.

Fig. 8 Modelling wax poured into the denture space with the matrices in place.

Fig. 9 Mandibular teeth arranged with in the neutral zone.

Fig. 10 Finished denture – Intra oral view.

Fig. 11 Post operative frontal view.

Tissue conditioners, Impression compound, Waxes, Impression plaster and Elastomeric impression materials are the usually advocated materials for recording neutral zone. Here impression compound and green stick compound were softened and mixed together at a ratio of 1:1. It was then placed on the lower permanent denture base and was placed in the patients mouth. The patient was then instructed to perform all the muscle functions which included sucking, swallowing movements and also instructed to produce exaggerated 'EEE….' and 'OOO….' sounds. The stability of permanent denture base was properly ensured while doing all these functional movements.

The impression of the denture space was then placed over the master casts (Fig 5) and matrices were made using Type IV dental stone after proper beading and boxing (Fig 6,7). Once the dental stone was set the matrices were removed from the cast. Admixed compound material was then removed from the mandibular permanent denture base and modeling wax was poured in to this space using dental stone matrices (Fig 8).

Neutral zone limits the labial and buccal positions of anterior and posterior mandibular teeth, respectively. The mandibular teeth were arranged first and it was ensured that the teeth were positioned within the neutral zone and to the proper height of occlusal plane (Fig 9). The maxillary teeth were then arranged in accordance to the lower teeth, following basic esthetic principles. Proper wax up was then done ensuring contact of entire polished surfaces with tongue, lips and cheeks. Trial denture was checked in patients mouth for aesthetics, occlusion and function. Finally the trial denture was flasked and finished in conventional manner.

Dentures with improved retention, stability and esthetics were then provided for the patient (Fig 10,11) as they have been constructed in harmony with surrounding oral structures.

► Discussion

Prosthodontists can overcome the challenge of providing stable mandibular dentures in patients with severely resorbed mandibular ridges by fabricating dentures with their contours harmonizing neutral zone. This technique aims at fabricating a denture with perfect muscle balance by placing the teeth and denture contours within the predetermined neural zone[10]. This denture provides optimum retention, stability and comfort for the patient since it is fabricated in perfect harmony with the surrounding oral structures[5,7]. So a denture fabricated in neutral zone will enable equilibrium between oral and perioral musculature[9] and thereby improving the speech and reducing the cheek bite[11].

► Summary

An alternative approach with neutral zone technique using low fusing compound is a more practical and economical treatment option in general dental practice especially in patients with severely resorbed mandibular ridges. It is always difficult to fabricate a denture with no displacement and absolute equilibrium, but meticulous attention and care in each and every steps of denture fabrication allowed a successful treatment at the end.

► References

1. McCord JF, Smith P, Grey N.Treatment of Edentulous Patients. Ed Churchill Livingstone. Edinburgh.2004. 32-3.
2. Zarb GA, Finer Y. Identification of Shape and Location of Arch Form:The Occlusion Rim and Recording of Trial denture Base In Zarb-Bolender (Ed).
3. Brill N, Tryde G, Cantor R. The dynamic nature of the lower denture space. J Prosthetic Dentistry 1965;15:401-417.
4. Gahan MJ, Walmsley AD.The neutral zone impression revisited. Br Dent J 2005;198 (5):269-72.
5. Indrawati L et al, The Neutral Zone Concept Revisited -Overcoming Instability and Lack of Retention in Complete Lower Denture Construction. Malaysian Dental Journal (2009) 30(1) 49-52
6. Beresin VE, The Neutral Zone In Complete Dentures.The Journal Of Prosthetic Dentistry Feb 2006,95:93 -101.
7. Gahan MJ and Walmsley AD, The neutral zone impression revisited. British Dental Journal March 2005,198: 5, 24- 29.
8. Agarwal S, A Simplified Approach for Recording Neutral Zone. J Indian Prosthodont Soc (Apr-June 2010)10(2):102-104
9. Murphy W M. The neutral zone and the polished surfaces of full dentures. Dent Practit 1996; 16:244-248.
10. Raja HZ, Neutral Zone Dentures Versus Conventional Dentures In Diverse Edentulous Periods. Biomedica Jul. -Dec. 2009, 25, 36 - 45.
11. Fahmy FM, Kharats DU. A study of importance of neutral zone in complete dentures. J Prosthet Dent 1990; 64: 459-462.

CASE REPORT

Middle mesial canal in mandibular molar

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Abstract

Mandibular molars demonstrate considerable variations with respect to number of roots and root canals. The possibility of additional root canals should be considered even in teeth with a low frequency of abnormal root canal anatomy. This paper discusses the endodontic management of the rare anatomical complexity, middle mesial canals in mandibular molar and also serves to remind the clinicians that such anatomical variations should be taken into account during the endodontic treatment of the mandibular molars.

Key words: Middle mesial canal; Mandibular molar; Missed canals; Root canal anatomy.

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► Introduction

The main objective of root canal treatment is the thorough mechanical and chemical cleansing of the entire pulp space followed by complete obturation with inert filling material.[1] Successful root canal therapy requires a thorough knowledge of tooth anatomy and root canal morphology which may be quite variable within the norm.[2] Missed canals are a major reason for failure of root canal treatment. The permanent mandibular molar is typically presented with two well-defined roots, a mesiodistally flattened mesial root and a mostly straight and more rounded distal root. With regard to the number of roots, the most relevant variable is the presence of a third distolingual root, called "radix entomolaris". The supernumerary root located mesiobuccally is called "radix paramolaris". In the distal root, the majority has one canal which is considerably larger and more oval in cross section than mesial root canals. Two canals were observed in 15–17% of the cases and three canals have been observed in 1.7% of the distal root. Mandibular molar usually has two canals in the mesial root: mesiobuccal and mesiolingual. Vertucci and Williams first reported the presence of a middle mesial canal in mandibular molar[3]. Since then there have been multiple case reports of aberrant canal morphology in the mesial root.[4–10] In a recent study by Adham et al[11] the incidence of middle mesial canals in mandibular molars was found to be 46.2%. The purpose of this paper is to discuss the diagnosis and endodontic management of mandibular second molar with middle mesial canal.

► Case report

A 20-year-old male presented to our department with chief complaint of food impaction in the right molar tooth for 3 months. He gave a history of mild pain during chewing. Clinical examination revealed a large carious pulp exposure in 47 and the tooth was tender on percussion. Radiographic examination showed deep carious lesion involving the pulp and periapical changes in 47 (Fig 1). Diagnosis of chronic apical periodontitis was made and endodontic therapy was initiated.

After caries removal access was opened and inspection of the pulp chamber floor showed MB, ML and Distal canal orifices. Working length was estimated by using electronic apex locator and confirmed with radiograph. After preparation of the main canals,while exploring the groove between the MB and ML canal orifices, a "catch" was obtained. On careful examination using a 2.5X magnifying loupe, middle mesial canal orifice was identified and the presence of additional canal was confirmed by radiograph (Fig 2). Crown down preparation was done with Mtwo rotary instruments under copious irrigation with 5.25% sodium hypochlorite. Canals were dried with paper points and an interappointment calcium hydroxide dressing was given.

At the second appointment,the tooth was obturated using gutta percha and AH-Plus sealer (Fig3 and Fig 4). Post treatment radiograph revealed all the four root canals obturated to the accepted lengths.(Fig5)

► Discussion

The basis of successful endodontic therapy still remains the meticulous observation of the norms related to endodontics namely, the diagnostic phase, the phase of biomechanical preparation and disinfection and the phase of obturation. The final objective of endodontic therapy is to fill the entire root canal system and all of its complex anatomic pathways completely and densely with an inert, dimensionally stable and biologically compatible material. Root canal anatomy

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and morphology has been studied by various investigators and has yielded interesting results. Variations in mandibular molar include radix endomolaris, radix paramolaris, c shaped canals, additional distal canal and middle mesial canal. The presence of a third canal (middle mesial) in the mesial root of the mandibular molars has been reported to have an incidence of 0.95–46.2%. The probability of finding middle mesial canal in younger patients is significantly high.[12] The diameter of those third canals is smaller than that of the other two 13 and is age related because of apposition of dentine.[6]

Pomeranz et al[7] classified middle mesial canals into three categories:

(1) fin, when at any stage of debridement the instrument could pass freely between mesiobuccal or mesiolingual canal and the middle mesial canal

(2) confluent, when the prepared canal originated as a separate orifice but apically joined the mesiobuccal or mesiolingual canal, and

(3) independent, when the prepared canal has a separate orifice and foramen.

Persistent endodontic infection can be attributed to difficulties in removing a bacterial biofilm from root canal ramifications, including isthmuses. The incidence of canal isthumuses in mandibular molar is high especially in apical 5 mm.[14–16] Negotiation of MM canals will improve access for irrigating solutions into isthmus which will reduce the bacterial biofilm and bacterial load,thus improving the outcome of nonsurgical root canal treatment.

The detection of additional root canals requires a thorough clinical and radiographic examination. Diagnostic tools such as radiographs taken in different angulations, careful examination of the pulpal floor with a sharp explorer, troughing of grooves with ultrasonic tips and better visualization using magnifying loupes and dental operating microscope all aids in the detection of additional root canals. In most of the cases, middle mesial canal is hidden by a dentinal projection in the mesial aspect of pulp chamber walls, and this dentinal growth is usually located between the two main canals (mesiobuccal-mesiolingual). After removing this overhanging dentine the fissure connecting the two mesial canals should be probed with an endodontic explorer and the orifice is usually located at the wall floor junction (law of Krasner and Rankow). For better visualisation a magnifying loupe or an operating microscope

Fig. 1 Pre operative radiograph.

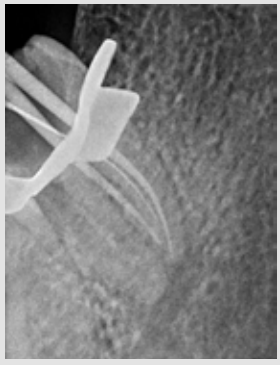

Fig. 2 Radiographic confirmation of middle mesial canal.

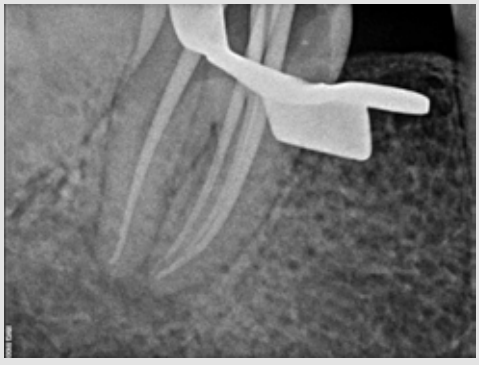

Fig. 3 Mastercone radiograph.

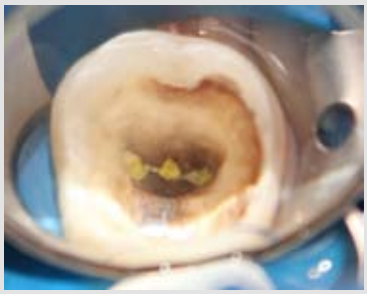

Fig. 4 Postobturation photograph.

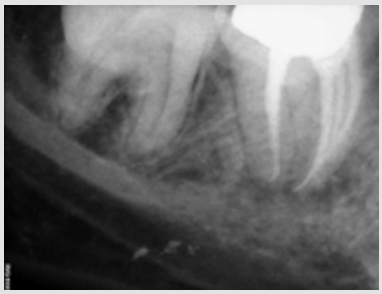

Fig. 5 Postobturation radiograph

can be used. CBCT imaging is the gold standard for the confirmatory diagnosis of complicated root canal anatomy which will aid in further treatment planning.

Conclusion

Successful endodontic therapy is based on the foundation of thorough debridement of canal systems followed by their complete obturation. If any root canal is left untreated during endodontic therapy, failure can be expected. Magnification, illumination, and familiarity with variations in the canal system will enable dentists to render successful endodontic care. The clinician should be aware of the possibility of variations in root canal anatomy and should explore for the presence of additional canals rather than leave it to chance.

References

1. Vertucci FJ. Root canal anatomy of the human permanent teeth. Oral Surg Oral Med Oral Pathol. 1984;58(5):589–99.
2. Ingle JI, Bakland LK. Endodontics. Hamilton: Decker; 2002.
3. Vertucci FJ, Williams RG. Root canal anatomy of the mandibular first molar. JNJ Dent Assoc 1974;48:27–8.
4. Weine FS. Case report: three canals in the mesial root of a mandibular first molar (?). J Endod 1981;8:517–20.
5. Bond JL, Hartwell GR, Donnelly JC, et al. Clinical management of middle mesial root canals in mandibular molars. J Endod 1988;14:312–4.
6. Fabra-Campos H. Unusual root anatomy of mandibular first molars. J Endod 1985; 11:568–72.
7. Pomeranz HH, Eidelman DL, Goldberg MG. Treatment considerations of the middle mesial canal of mandibular first and second molars. J Endod 1981;7:565–8.
8. Min KS. Clinical management of a mandibular first molar with multiple mesial canals: a case report. J Contemp Dent Pract 2004;3:142–9.
9. Ricucci D. Three independent canals in the mesial root of a mandibular first molar. Endod Dent Traumatol 1997;13:47–9.
10. Goel NK, Gill KS, Taneja JR. Study of root canals configuration in mandibular first permanent molar. J Indian Soc Pedod Prev Dent 1991;8:12–4.
11. Azim AACSSASD. Prevalence of Middle Mesial Canals in Mandibular Molars after Guided Troughing under High Magnification: An In Vivo Investigation. J Endod. 41(2):164–8.
12. Nosrat A, Deschenes RJ, Tordik P a, Hicks ML, Fouad AF. Middle Mesial Canals in Mandibular Molars: Incidence and Related Factors. J Endod [Internet]. 2015;41(1):28–32.
13. Martinez-Berna A. Badanelli P 91985) Mandibular first molar with six root canals. Journal of Endodontics 8, 348-52.
14. Isthmuses of the mesial root of mandibular first molar - An spiral computed tomographic study. 1984;(vertucci):48–52.
15. Gu L, Wei X, Ling J, Huang X. A microcomputed tomographic study of canal isthmuses in the mesial root of mandibular first molars in a Chinese population. J Endod [Internet]. 2009 Mar [cited 2016 Jan 4];35(3):353–6.
16. Mehrvarzfar P, Akhlagi NM, Khodaei F, Shojaee G, Shirazi S. Evaluation of isthmus prevalence, location, and types in mesial roots of mandibular molars in the Iranian Population. Dent Res J (Isfahan) [Internet]. 2014 Mar [cited 2016 Jan 4];11(2):251–6.

Rehabilitation of a missing left premolar with reduced intra arch space by a single piece mini diameter implant supported prosthesis

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Abstract

Major advances have occurred over the last 3 decades in the clinical use of oral and maxillofacial implants. Statistics on the use of dental implants bear this out about 100,000 to 300,000 dental implants are placed per year, which approximates the numbers of artificial hip and knee joints placed per year. Implants are currently used to replace missing teeth, rebuild the craniofacial skeleton, provide anchorage during orthodontic treatments, and even to help form new bone in the process of distraction osteogenesis. Despite the impressive clinical accomplishments with oral and maxillofacial implants and the undisputed fact that implants have improved the lives of millions of patients the use of dental implants is limited especially when there is inadequate mesiodistal or buccolingual bone width. This case report describes a simple technique of replacing a missing premolar with reduced intra arch space using single piece implant supported prosthesis.

Key words: Mini Implant; Reduced IntraArch Space; Single Piece Implant; Flapless procedure.

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► Introduction

The advent of endosseous dental implants has enabled clinicians to restore edentulous arches more effectively. It is a fact that implants supported prosthesis is the most likely replacement of a natural tooth. Treatment with dental implants can provide edentulous patients with a more stable alternative to complete dentures and partially edentulous patients with a more conservative form of tooth replacement than conventional fixed partial dentures[1].

Most of the Commercially available dental implants generally range in diameter from 3 mm to 7 mm. Conventionally when dental implants are placed in partially edentulous patients. It has been recommended to maintain 2 mm to 3 mm of space between the surface of the implant and the adjacent dentition to avoid ischaemia resulting from impinging or damaging the periodontal ligaments of the adjacent teeth[1]. Due to this reason the width of an edentulous space that will receive a dental implant should be at least 6.5 mm wide. Some patients have been excluded from the benefits of implant therapy because of the inadequate mesiodistal and buccolingual edentulous space.

Due to prolonged edentulousness the bone volume gets significantly reduced in width, length, and height[2]. In this condition placement of a standard sized implant is not possible, and the clinician has to consider ridge agumentation procedures which is often time consuming and expensive. Small diameter implants play a major role when these conditions are encountered.

Smaller-diameter implants, which are called mini-dental implants (MDIs), are generally 1.8 to 3.30 mm in diameter[3]. The main application of mini-dental implants (MDIs) was previously to support provisional restorations during the healing time in preparation for conventional standard implants[4]. Today, these implants are used in cases of an inadequate interdental space[5]. The advantages of mini-dental implants (MDIs) include fewer surgical interventions and it enables clinician for immediate implant loading[3]. This article presents a case report to demonstrate the minimally invasive surgical placement of narrow-diameter implants for the treatment of missing left premolar in an esthetic manner.

► Case report

A 19-year-old female patient presented to the department of prosthodontics with a chief complaint of missing teeth in the upper back region of the jaw. On intraoral examination the patient was found to have a missing 24 (Fig. 1). Past dental history revealed extraction of 24 due to caries one and half year back. Diagnostic models were made and articulated using a facebow transfer. Preoperative IOPA and OPG were made for radiographic analysis (Fig. 2). Study model analysis and radiographic evaluation revealed the available mesiodistal space of 5 mm (Fig. 3). As a distance of 1.5 mm between

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implant and natural tooth is considered ideal, a minimum of 6.5 mm space should be present to place an implant of 3.3 mm diameter. Due to reduced intra-arch space a single piece IMTEC implant of diameter 2.4 x 13 mm was planned to replace the missing premolar (Fig. 4).

Local anesthetic was administered. A flapless procedure was followed for implant placement (Fig. 5). Initial osteotomy was done using a pilot drill of 1.5mm diameter. Sequential osteotomy was done using the surgical kit provided by the manufacturer. After preparing the implant recipient site adequately a single piece IMTEC implant of diameter 2.4 x 13 mm was placed (Figs 6 and 7). The implant was immediately restored using light cure composite resin (Fig. 9). Patient was recalled after 3 months. Composite core build up was done on the ball abutment. Core build up was prepared such

Fig. 1 Pre-operative frontal view depicting missing 24.

Fig. 2 Pre-operative IOPA.

Fig. 3 Analysis of available space on diagnostic model.

Fig. 4 Single piece IMTEC implant of diameter 2.4 x 13 mm.

Fig. 5 Flapless procedure employed for initial osteotomy.

Fig. 6 Implant placement in the prepared osteotomy site.

Fig. 7 Implant placement in the prepared osteotomy site.

Fig. 8 Post-operative IOPA.

Fig. 9 Provisionalisation using light cured composite resin.

Fig. 10 Composite core build up done on the ball abutment.

Fig. 11 Intraoral Post-operative frontal view.

Fig. 12 Intraoral Post-operative occlusal view.

Fig. 13 Extraoral post-operative view.

that there is adequate clearance proximally and occlusally (Fig. 10). Impression was made using addition silicone. A monolith all ceramic crown was fabricated. Monolith crown was cemented using light cure resin cement (Figs 11 and 12). Upon completion of the case a natural appearing soft tissue emergence profile was obtained at the maxillary left premolar site, which was in absolute balance and harmony with the adjacent teeth. The patient was recalled after one month, six months, and one year. In the review appointments the patient expressed her satisfaction over the functional and aesthetic aspects of the prosthesis.

► Discussion

Use of mini diameter implants is gaining popularity over time as it requires minimal invasive procedure and economical in treating atrophic ridges. Although ridge augmentation procedures may enable us to place standard sized implants, this procedure has a disadvantage of being more invasive, time consuming, costly and tedious for both clinician and patient[2]. According to Bansal et al[2] the advantage of using small diameter implant, as we insert a smaller metallic body into the bone the blood supply to the surrounding tissues is better when compared to larger diameter implants.

According to Muhammad et al[3] the treatment outcome of immediately loaded single piece mini diameter implant with a diameter of 2.5mm has shown a one year survival rate of 100%. According to a similar study conducted by Jung et al[6] a five year survival rate for mini diameter implants was found to be 97%. This survival rate is comparable to the survival rates of standard sized implants.

The management of compromised intra-arch spaces presents a challenge for the current dental implant practice especially in cases where the edentulous space is less than 5 mm from tooth to tooth. The study by Zinsli B et al[7] suggested that when mini implants are used there could be problems resulting from poor emergence profile also this could result in an unaesthetic perception when the patient smiles so extreme care should be taken during case selection. These type of clinical situations present a challenge and require implants with a diameter of 3.0 mm wide or less. The use of smaller diameter implants provides the patient with a prosthesis that does not require preparation or reduction of the adjacent natural dentition. Proper placement procedures and restorative techniques can lead to very esthetic results, allowing for natural tissue contours and emergence profile formation that are similar to natural tooth.

Studies have suggested that the pull-out strength of endosseous implants may be based on the length rather than the diameter of the implant, and histologic analysis has shown that mini implants undergo osseointegration

Comparable to that of larger-diameter implants[8,9,10]. These findings have led some clinicians to advocate the use of mini implants to support and/or retain definitive prostheses.

► Conclusion

Inspite of the impressive clinical accomplishments with oral and maxillofacial implants the use of dental implants is limited when there is inadequate mesiodistal or buccolingual bone width. This case report describes a simple technique of replacing a missing premolar with reduced intra arch space using single piece implant supported prosthesis.

► References

1. Siddiqui AA, Sosovicka M, Goetz M. Use of mini implants for replacement and immediate loading of 2 single-tooth restorations: a clinical case report. J Oral Implantol. 2006;32(2):82-6
2. Bansal R, Sharma N, Singh BP. Role of small diameter implants in prosthetic treatment. J IndProsthodont Society. 2006; 6(3):145-147
3. Muhammad A, Suleiman D. Clinical evaluation of the use of mini implants to replace congenitally absent maxillary lateral incisor: A short term study. Int Dent Res. 2012; 2(1):27-32
4. Ahn MR, An KM, Choi JH, Sohn DS. Immediate loading with mini dental implants in the fully edentulous mandible. Implant Dent. 2004 Dec;13(4):367-72.
5. Shatkin TE, Shatkin S, Oppenheimer AJ, Oppenheimer BD. A simplified approach to implant dentistry with mini dental implants. Alpha Omegan. 2003 Oct;96(3):7-15.
6. Jung RE, Pjetursson BE, Glauser R, ZembicA, Zwahlen M, Lang NP. A systematic review of the 5-year survival and complication rates of implantsupported single crowns. Clin Oral Implants Res. 2008 Feb;19(2):119-30.
7. Zinsli B, Sayessert, Mericskee, Mericskee-stern-r. Clinical evaluation of small diameter implants A Prospective study. Int J Oral Maxillofac implants, 2004;19:92-9
8. Rossein KD. Retaining and stabilizing dentures with narrow-bodied implants.DentToday.2005;24:100, 102-106.
9. English CE, Bohle GC UL Diagnostic,procedural, and clinical issues with Sendax Mini Dental Implants. CompendContinEduc Dent. 2003;24(suppl 1): 3-25.
10. Gibney JW. Minimally invasive implant surgery. / Oral Implantol. 2001;27: 73-76.

Periodontal health awareness and attitude towards oral health care among pregnant women in Thiruvananthapuram, Kerala.

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Abstract

The purpose of this study was to assess the periodontal health awareness and attitude towards oral health care among pregnant women in Kerala which stands first in literacy rate in India.

A cross sectional questionnaire based KAP survey was undertaken on two hundred and five pregnant females who visited the outpatient clinics of three maternity care centres in Trivandrum district of Kerala. Study subjects were surveyed regarding periodontal health and its relationship with adverse pregnancy outcomes, oral health care during pregnancy using self administered structured questionnaire. The data was compiled and subjected to descriptive analysis and cross tabulations were done with chi square test by educational status to examine the association between different variables. Statistical significance was determined at $p < 0.05$.

Awareness among pregnant women was found to be statistically significant ($p < 0.05$) with respect to educational status. Attitude towards paying more attention towards oral health care depicted no statistically significant difference ($p > 0.05$). Negative attitudes were displayed irrespective of their educational status.

Therefore from the present survey, its pointed that inspite of the high literacy rate, knowledge and awareness regarding periodontal health are limited and attitudes are more towards negative.

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Introduction

Periodontal disease is an infectious inflammatory disease that results in progressive destruction of the supporting tissues of the teeth.[1] According to the National Oral Health Survey conducted in India in 2002, the prevalence of periodontal disease in the adult population of India is estimated to be about 90%.[2] A lot of research in the recent years have investigated the potential associations between periodontal disease and various chronic systemic diseases.[3] Studies have inferred that periodontitis could be considered as an independent risk factor for coronary artery disease, diabetes mellitus and adverse pregnancy outcomes.[4,5]

Pregnancy is a period during which the body stead past through changes in the hormonal levels.[6] It is also a condition that may have an effect on periodontal status especially in those with poor oral hygiene. This could pave way to an altered immune as well as inflammatory response to dental plaque resulting in an increased susceptibility of pregnant women to periodontal disease.[7]

The relationship between pregnancy and periodontal health status have also been well documented. Several cross sectional and longitudinal studies have reported a prevalence rate of 35-100% for pregnancy gingivitis.[7] Periodontal disease during pregnancy affects not only maternal health but also foetal growth. It could lead to an increased risk for adverse pregnancy outcomes like pre term birth, low birth weight infants and pre-eclampsia.[8] However, evidence does not support a causal relationship between periodontal disease and adverse pregnancy outcomes.[9]

The rate of premature births in India is rising and is presently around 21%.10 Among the states in India, Kerala is in the forefront with respect to female literacy as well as health care services and utilization. The Infant Mortality Rate (IMR) in Kerala is 12 per 1000 live births as compared to India which is at 44 per 1000 live births.[11] However, the proportion of low birth weight infants is comparatively high in the state of Kerala. A study was recently done to explore the association between maternal periodontal disease and pre term delivery in the state of Kerala, India. The authors concluded that periodontal disease is a possible risk factor for pre term delivery in this population.[12]

Accepting the diversity in opinions regarding the aforementioned association, undisputable fact remains that good oral hygiene plays a pivotal role in maintaining periodontal health.[13] Brushing, flossing

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and periodic professional prophylaxis including scaling and root planning are certainly of great value in maintaining oral health during pregnancy.[14] Enlightening pregnant women regarding the possible impact of periodontal health on pregnancy outcomes, may redirect their attention to periodontal health maintenance options.[15] Maternal oral flora and oral health are one of the greatest predictors of neonate's oral flora and oral health which is procured through adulthood.[16] This insight can entail pregnancy an ideal opportunity to improve

Table I. Distribution of general demographic and pregnancy characteristics of the respondents

Variable	n = 205	Percentage
Age		
≤26 years	117	57
>26 years	88	43
Educational status		
Uneducated	1	.5
Primary school	1	.5
High school	14	6.8
Predegree	38	18.5
Graduate	102	49.8
PG & above	49	23.9
Occupational status		
Housewife	118	57.6
Clerical	7	3.4
Professional	46	22.4
Others	34	16.6
Location		
Trivandrum	200	97.6
Others	5	2.4
Stage of pregnancy		
First trimester	51	24.9
Second trimester	54	26.3
Third trimester	100	48.8

Table II. Distribution of responses to knowledge related questions of the respondents

Questions	Total (n)
1) Are you aware of what gum disease is?	
a. Yes*	114
b. No	91
2) Gum disease is caused by	
a. Plaque*	32
b. Dental caries	173
3) What do bleeding gums indicate?	
a. Unhealthy gums*	183
b. Healthy gums	22
4) Which is most preferred time for brushing	
a. Morning*	145
b. Before going to bed	60
5) Have you ever heard of dental floss?	
a. Yes*	61
b. No	144
6) Is the health of gums and pregnancy related?	
a. Yes*	93
b. No	112
7) Can gum disease cause low birth weight infants	
a. Yes*	25
b. No	180
8) Do pregnant women require additional care for their gums	
a. Yes*	67
b. No	138
9) Can dental treatment be carried out during pregnancy?	
a. Yes*	37
b. No	168
10) Which trimester is the safest for the dental treatment?	
a. First	25
b. Second*	52
c. Third	128

(*- correct/ "Yes" responses for which score 1 was assigned)

Table III. Distribution of responses (with score 1) to knowledge related questions by educational status of the respondents

Characteristic	n=205	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Educational status											
Uneducated	1	1	0	1	1	0	0	0	0	0	0
Primary school	1	0	0	1	1	0	0	0	0	0	1
High school	14	2	1	9	11	3	4	0	2	2	3
Predegree	38	20	5	32	29	10	11	5	11	4	14
Graduate	102	55	13	93	70	24	44	13	32	18	25
PG & above	49	36	13	47	33	24	34	7	22	13	9
p value		.0008*	.04*	.004*	.17	.01*	.0001*	.24	.01*	.06	.16

(K1 to K10 - knowledge related questions; entries includes of only those responses for which score 1 was assigned; *statistically significant

women's periodontal health practices. American academy of Periodontology released recommendations that women should be advised to have periodic dental examinations during pregnancy to keep periodontal health status under check.[9,17]

As proposed in a study, people who do not know the importance of periodontal health will not feel the need to accomplish it.[13] This throws light on the fact that knowledge can influence attitudes towards changing a practice or periodontal health behaviour.

Studies on pregnant women with reference to their knowledge attitude and practices concerning periodontal health has been reported.[18,19] In India, probably the first questionnaire study in this regard was conducted in 2013.[20] Consequently, studies have been conducted among suburban population and urban population of pregnant women.[21] All these studies had shown that the awareness regarding periodontal health and its effect on the pregnancy and birth outcomes were relatively deficient.

In light of the above findings, a Knowledge, Attitudes, Practices (KAP) survey was conducted in the Thiruvananthapuram district of Kerala state, India, to assess Periodontal health awareness and attitude towards oral health care among pregnant women.

► Methods

The present study was undertaken in the outpatient prenatal clinics of three maternity care centres located in Thiruvananthapuram district of Kerala state, India.

The study design was a cross sectional questionnaire based survey. The main study was scheduled for a period of 4 weeks during the month of February 2015. A convenience sample of 205 pregnant women at different stages of pregnancy attending the outpatient clinics of the centres in the forenoon session were assessed. Two hundred and twenty pregnant women were approached, out of which 15 declined to participate for reasons of time and priority constraints.

Survey was conducted using pre tested self administered questionnaire prepared by the authors. The revised final questionnaire included a total of 23 questions divided in 4 sections. Section one with socio demographic variables (6 questions), section two with 10 knowledge related questions for assessing respondent's knowledge regarding periodontal health; its possible association with adverse pregnancy outcomes, section three with 3 attitude related questions for the assessment of respondent's attitude towards oral health care and section four with 4 practice related questions respectively. Self administered questionnaires were distributed to the participants who gave written informed consent. It took about 5 to 10 minutes on an average to complete a questionnaire.

Table IV. The percentage distribution of periodontal health awareness of the respondents

Periodontal health awareness	n = 205	Percentage
Low awareness	104	50.8
Average awareness	81	39.5
High awareness	20	9.8

Table V. Distribution of responses to attitude related questions of the respondents

Questions	Total (n)
1) Do you want to receive information about health of your gums and well being of your baby a. Yes* b. No	 181 24
2) Do you think that you should pay more attention to oral health care during pregnancy a. Yes* b. No	 12 193
3) Do you think that you should regularly visit your dentist during pregnancy a. Yes* b. No	 18 187

(*Responses for which a 'positive attitude' was assigned)

For knowledge questions, each question with (correct/"Yes") responses were given a score of '1' while for ("No" and incorrect) responses, score '0' was given. Thus, the maximum achievable score was 10. Individuals with scores of 7 and above were graded as having high awareness, those with scores from 4 to 6, as having average awareness while those with scores 3 or less, as having low awareness. For attitude questions, each question answered as "Yes" was accepted as having positive attitude while, negative attitude was assigned for questions answered as "No".

► Ethics

Permission to conduct the study was obtained from the Directors of the health centres. The study received ethical clearance from the Institutional Ethics Committee, Sri Sankara Dental College, Thiruvananthapuram.

Table VI. Distribution of positive responses to attitude related questions by educational status of the respondents

Characteristic	N=205	A1	A2	A3
Educational status				
Uneducated	1	1	0	0
Primary school	1	1	1	1
High school	14	12	1	2
Predegree	38	36	1	2
Graduate	102	89	7	9
PG & above	49	42	2	5
p value		.3365	.3897	.7608

(A1 to A3 - Attitude related questions; entries includes of only positive responses for which a 'positive attitude' was assigned)

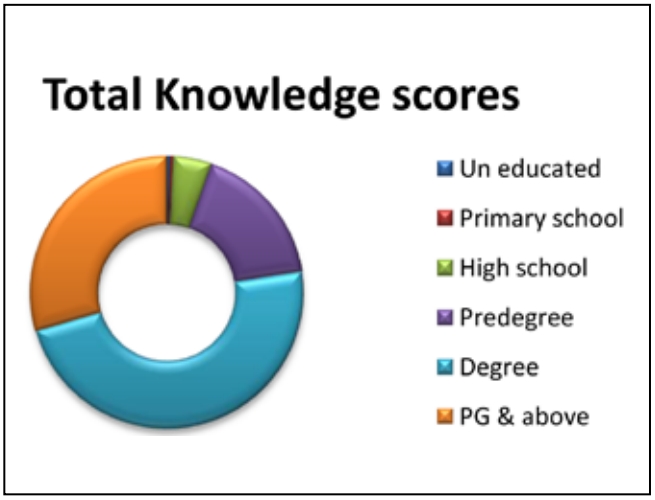
Table VII. Distribution of responses to practice related questions of the respondents

Questions	Total (n)
1) Type of tooth brushing a. Horizontal b. Vertical c. Scrub	 86 85 34
2) Frequency of tooth brushing a. Once b. Twice c. Thrice	 52 151 2
3) Have you ever used dental floss a. Yes b. No	 11 94
4) When was the last time you saw a dentist? a. < 1 year b. > 1 year before c. Never visited	 67 58 80

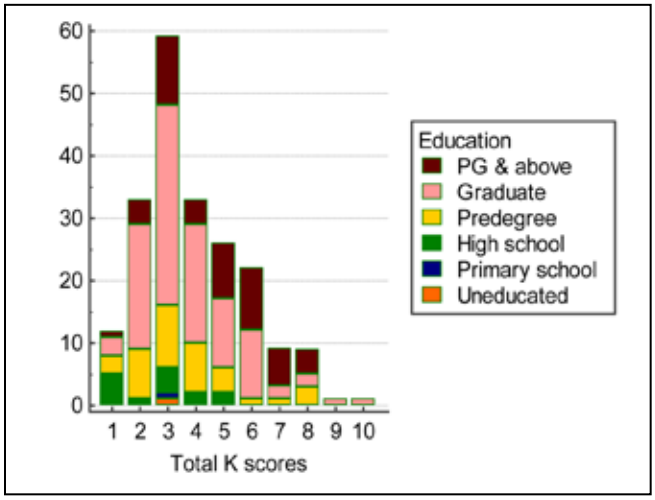
► Statistical analysis

Data obtained from this questionnaire were compiled and subjected to statistical analysis using Med Calc statistical software version 15.11. The data were subjected to descriptive analysis (frequency distribution) and cross tabulations with the chi square test by educational status to examine the association between different variables. Statistical significance was determined at $p<0.05$.

Fig. 1 Distribution of total knowledge scores of the respondents



Graph I Distribution of total knowledge scores by educational status of the respondents



(Total K scores-Total knowledge scores; p=.0413*; *statistically significant)

Results

A total of 205 pregnant women with a mean age of 26.36 ± 3.93 years (19-39 years) were evaluated in this study. Based on the educational status, the sample was grouped into 6 different levels: uneducated, primary school, high school, graduates and postgraduate degree/above. The patients in this study sample, hailed from higher educational strata with 49.8% of them being graduates. 97.6% of the respondents were from Trivandrum district. Stage of pregnancy of 48.8% women in the sample were in 3rd trimester (Table 1).

Periodontal health awareness

A majority of the respondents (84.4%) were aware of gum disease, and 89.3% of them believed that bleeding gums indicated its unhealthy state. 87.2% of the respondents had never heard about dental floss. Regarding knowledge about the possible association between periodontal health during pregnancy, and adverse outcomes, 54.6 percent of the respondents were unaware of the relationship and 87.8 percent of them believed that gum problems could not affect outcomes of pregnancy (Table 2).

The correct/ "yes" responses to knowledge related questions were cross tabulated with the different educational levels (Table 3). Subjects with a higher level of education, especially the degree group, obtained higher scores for knowledge and awareness regarding the association between oral health and pregnancy (p = 0.0001) and also that bleeding gums indicated unhealthy status of gums (p = 0.004).

Total knowledge scores were generally low with a mean score of 3.97±1.87 (range 1 to 10). Degree of knowledge was higher among graduates coming upto 48%. (Fig. 1).

About 50.8 percent of the study participants had low awareness and 39.5 percent with average awareness and only 9.8 percent with high awareness (Table 4). Total knowledge scores were higher for graduates (p value < 0.05) (Fig. 2).

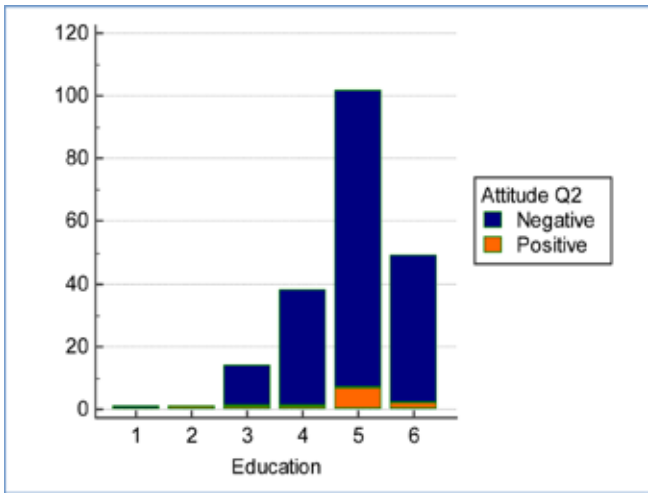
Attitude towards maintenance of oral health

Most of the respondents (88.3%) had a positive attitude towards acquiring more information about health of their gums & well being of their baby. When asked about the need of regular visits to a dentist during pregnancy, 91.2% of the respondents came up with a negative response. Also 94.1% of the subjects were defiant from accepting the need for paying more attention to their periodontal health during pregnancy (Table 5). An alarming finding is that attitude was highly negative among respondents with a graduate level of education when asked about paying more attention to oral health care (p=.0038) (Fig. 3). There was no statistically significant difference found between attitudes when cross tabulation was done between different educational groups (Table 6).

Oral hygiene practices

The oral hygiene practices of the sample were assessed for their frequency, method, tooth brushing aids and use of dental floss. All the respondents brushed at least once a day and 73.7% of them brushed twice daily. About 1% of them brushed even thrice daily. Also, 94.6% of the sample had never used dental floss. A significant finding in the study was that majority of the study subjects (39%) had never been to a dentist in their lifetime (Table 7).

Graph II Distribution of responses to attitude towards paying more attention to oral health care during pregnancy by educational status of the respondents



(Attitude Q2- Attitude related question # 2; p=.0038*; *statistically significant)

Discussion

Deterioration of periodontal health is usually unnoticed and most probably recognized only when it reaches an advanced stage. But it's easily amenable to prevention. Preventive aspect is particularly important in Kerala because of the comparatively higher proportion of pre term deliveries. Therefore concerned knowledge and awareness is important especially in pregnant women where oral health can have an impact on pregnancy outcomes.[13] Plausible relationship between oral health knowledge and oral health behaviour has also been previously described.[22]

This is probably the first questionnaire study in Kerala assessing the periodontal health awareness among pregnant women with regard to their knowledge, attitudes and practices relating to oral hygiene and also the potential association between oral hygiene and pregnancy outcomes. A similar assessment among pregnant women was done with a sample in which most of the respondents were uneducated or had just a primary level of education.[20] Our study sample was selected from an urban population from the Trivandrum district of Kerala, which stands first in literacy rate in India.[23]

The present study showed a low awareness among 50.8% of the study subjects. The results were in accordance with a previous study which concluded that knowledge and awareness of pregnant women in this regard was generally poor.[21,24] Another similar kind of study conducted on an urban population including higher educational strata, pointed out that pregnant women had limited periodontal health knowledge.[21] A similar study demonstrated knowledge scores increasing with higher education which is consistent with this study.[18]

As far as attitude was concerned, this positive trend did not seem to hold good. A previous study concluded that beliefs of pregnant women varied with their educational levels.[25] Also another study found attitude scores improving with higher education.[18] On the contrary, this study showed that attitudes of the study subjects pointed more towards negative irrespective of their educational status. Although most of the patients had a positive attitude towards receiving oral care information, they prioritized their pregnancy over their oral health needs.

Most of the studies from different countries have reported varying degrees of knowledge about the use of the dental floss or other interdental aids.[26] The relative lack of use of dental floss in this study (94.6%) showed a possible relationship between lack of awareness and this oral health behaviour. It was quite surprising that 39% of them had never visited a dentist in their lifetime. The lack of visits to a dental office in this study population could be attributed to various factors like deficient knowledge, priority constraints as well as perceptions among pregnant women in the locality.[26,27]

This study is not without limitations. The present study design, being questionnaire based, relied on self reported data, which can often be subjected to recall bias and social desirability.[28] The patients' oral health status was neither assessed clinically nor their self perceived oral health was recorded. The cross sectional nature of the study even restricted follow up of these patients for any adverse pregnancy outcomes. The study also didn't investigate the barriers of dental attendance as done in previous studies.[24] Eventhough the study population belongs to the capital city, they could not be a representative population of Kerala as a whole, which emphasizes the need for future studies in connection.

Conclusion

The survey showed that inspite of the high literacy rate, the KAP model used in this study observed substantial gaps in the overall oral health literacy of the pregnant women. Another observation was that even patients with high knowledge scores had a negative attitude towards seeking dental care during pregnancy. Attitude being a significant determinant of knowledge and practice, steps to improve the attitude of pregnant women to dental services must be stressed on.

Awareness programmes through social media and visual media at maternity care centres, awareness campaigns taken up by governments, without taking much time of the respondent etc may be of great value in instilling a positive attitude. Periodontists should work hand in hand with health care providers and anganvadi workers to reach the entire stream of a state or country. Incorporation of periodontal care with

obstetric management by a prenatal care team approach may be a fruitful move. Prudent referrals along with assuring safety of dental care by the obstetric providers may also have a positive impact on moulding the attitude of pregnant women.

References

1. Mealey BL. Periodontal implications: Medically compromised patients. Ann Periodontol 1996:1:256-321.
2. Bali. National Oral health survey 2001-2003. Dental Council of India 2004.
3. Iacopino AM. What is the role of inflammation in the relationship between periodontal disease and general health?. J Can Dent Assoc. 2008;74(8):695.
4. Vettore MV, Lamarca GA, Leão A, Thomaz FB, Sheiham A, Leal MC. Periodontal infection and adverse pregnancy outcomes: A systematic review of epidemiological studies. Cad Saude Publica. 2006;22(10):2041–2053.
5. Loe H, Silness J. Periodontal Disease In Pregnancy. I. Prevalence And Severity. Acta Odontol Scand. 1963 Dec;21:533-551.
6. Amar S, Chung KM. Influence on hormonal variations on the periodontium in women. Periodontol 2000 1994;6:79-84.
7. Jared H, Boggess KA. Periodontal diseases and adverse pregnancy outcomes: a review of the evidence and implications for clinical practice. J Dent Hyg. 2008; Suppl. 3S–20S.
8. MacDougall AC, Cobban SJ, Compton SM. Is periodontal disease related to adverse pregnancy outcomes? A scoping review. Can J Dent Hygiene 2011;45,no.1:53-60.
9. Polyzos NI, Polyzos IP, Zavos A, Valachis A, Mauri D, Papanikolaou EG. Obstetric outcomes after treatment of periodontal disease during pregnancy: Systematic review and meta-analysis. BMJ 2010 29:341:c7017.
10. Blencowe H, Cousens S, Oestergaard M, Chou D, Moller AB, Narwal R, Adler A, Garcia CV, Rohde S, Say L, Lawn JE. National, regional and worldwide estimates of preterm birth. The Lancet, June 2012. 9;379(9832):2162-72. Estimates from 2010.
11. "Maternal & Child Mortality and Total Fertility Rates Sample Registration System (SRS)" (pdf). Office of Registrar General, India 7 July 2011. http://www.censusindia.gov.in.
12. Baskaradoss JK, Geevarghese A, Kutty VR. Maternal periodontal status and preterm delivery: a hospital based case-control study. J Periodontal Res. 2011 Oct;46(5):542-549.
13. Deinzer R, Micheelis W, Granrath N, Hoffmann T More to learn about: periodontitis-related knowledge and its relationship with periodontal heaith behaviour. J Clin Periodontol 2009:36:756-764.
14. Machuca G, Khoshfeiz O, Lacalle JR, Amchuca C, Bullón P. The influence of general health and socio-cultural variables on the periodontal condition of pregnant women. J Periodontol 1999:70:779-785.
15. Mills LW, Moses DT. Oral health during pregnancy. Am J Matern Child Nurs 2002:27:275-280.
16. Kohler B, Bratthall D, Krasse B. Preventive Measures in Mothers Influence the Establishment of the bacterium Streptococcus mutans in their Infants. Arch Oral Biol 1983;28(3):225-231.
17. Task Force on Periodontal Treatment of Pregnant Women, American Academy of Periodontology. American Academy of Periodontal statement regarding periodontal management of the pregnant patient: Academy report. J Periodontol 2004;75:495.
18. Moghadam FA, Ardakani AH, Meybodi FR, Arezoo, Khabazian A. Evaluation of Periodontal Health Knowledge, Attitude and Oral Hygiene Practice of Pregnant Women in Yazd in 2011. J Periodontol Implant Dent 2013;5(2):71–74.
19. George A, Johnson M, Blinkhorn A, Ajwani S, Bhole S, Yeo AE, Ellis S. The oral health status, practices and knowledge of pregnant women in south-western Sydney. Australian Dental Journal 2013; 58: 26–33.
20. Avula H, Mishra A, Arora N, Avula J. KAP Assessment of Oral Health and Adverse Pregnancy Outcomes Among Pregnant Women in Hyderabad, India. Oral Health Prev Dent 2013:11:261-270.
21. Singh S, Dagrus K, Kariya PB, Singh S, Darmina J, Hase P. Oral Periodontal Health Knowledge and Awareness among Pregnant Females in Bangalore, India. Int J Dent Med Res 2015;1(6):7-10.
22. Hugoson A, Lundgren D, Asklow B, Borgklint G. Effect of three different dental health preventive programmes on young adult individuals: A randomized, blinded, parallel group, controlled evaluation of oral hygiene behaviour on plaque and gingivitis. J Clin Periodontol 2007:34:407-415.
23. Kerala Population Sex Ratio in Kerala Literacy rate data; www.census2011.co.in.
24. Alwaeli HA, Al-Jundi SH. Periodontal disease awareness among pregnant women and its relationship with socio demographic variables. Int J Dent Hyg. 2005 May;3(2):74-82.
25. Boggess KA, Urlaub DM, Moos MK, Polinkovsky M, El- Khorazaty J, Lorenz C. Knowledge and beliefs regarding oral health among pregnant women. J Am Dent Assoc2011:142:1275-1282.
26. Al Habashneh R, Guthmiller JM, Levy S, Johnson GK, Squier C, Dawson DV, Fang Q. Factors related to utilization of dental services during pregnancy. J Clin Periodontol. 2005 Jul;32(7):815-821.
27. Boggess KA, Urlaub DM, Massey KE, Moos MK, Matheson MB, Lorenz C. Oral hygiene practices and dental service utilization among pregnant women. J Am Dent Assoc 2010: 141:553-561.
28. Sjostrom O, Holst D. Validity of a questionnaire survey: response patterns in different subgroups and the effect of social desirability. Acta Odontol Scand 2002;60:136 –140.

HAPTICS – An Expanding Horizon

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Abstract

Haptics is any form of interaction involving touch and it deals with virtual reality. Any surgical procedure in dentistry is guided by the tactile sensation that the dentist perceives through his instrument. Traditionally, the feel of tactile sensation is developed and trained using cadaver bones or artificial materials. However, the physiologic diversity cannot be duplicated with the limited bone types provided. In addition, considering the frequent replacement of bones after use, the cost for training will be extremely high. In contrast, a haptics - based training simulator can be much more cost effective and a particular surgical procedure can be virtually practiced many times, without replacing any physical materials. This article explains the various concepts involved in haptics and its possible applications in dentistry with a special reference to Prosthodontics and Implantology.

Keywords: Haptics, Virtual Realty, Dental haptics

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► Introduction

Haptics-based training approaches have already been used in many fields such as mechanical designing, physical rehabilitation and surgeries like endoscopic surgery, bone dissection, periodontal treatment etc[1]. The conventional techniques have their own importance in training. But students / clinicians may not experience the challenges until the actual clinical training starts. Before taking up surgeries on real patients, dentist needs to have a feel of soft tissues and bone texture, which is not possible in a conventional training set up. A system, which simulates real dental procedures haptically, will be a better option to increase students' knowledge / experience level and to perform mock surgeries before they actually practice them on actual patients. Hence, introduction of haptic technology can bring about better outcomes with less error. It is a technology of tactile feedback that is based on user's sense of touch either by applying vibrations / forces or motions to the user.[2]

Virtual reality and computer haptics

Virtual reality is a high-end user-computer interface that involves real-time simulation and interactions through multiple sensorial channels. These sensorial modalities are vision, audition, touch, smell, and taste. Virtual reality characterizes itself as three I's, i.e., immersion, interaction and imagination[3]. Virtual reality is not a new concept, but dates back to the 1960s, when the first virtual reality work station was born to simulate motorcycle riding. Now, virtual reality has demonstrated its value in the game industry, mass media, engineering design, fine art, education etc. Nevertheless, most of these applications primarily provide visual experiences, either through computer screens or stereoscopic devices. The pursuit for more physically realistic perception, such as object rigidity, mass, surface texture, penetration resistance, etc., leads to a sub-specialized topic called "computer haptics".

Analogous to the concept of computer graphics, which deals with generating and rendering of virtual images, computer haptics is concerned with generating and rendering haptic stimuli to the humans in an interactive manner[4]. A significant progress of research in computer haptics has been witnessed in the 1990s with the popularization of computers, multimedia technologies, and cost-effective digital equipments. By incorporating a haptic component, a bidirectional information and energy flow is built between the human user and the virtual environments (VE), through which simulated objects in virtual environment can be felt and manipulated. In this way, a more realistic, life-like experience is imparted to the user. Examples of haptic devices include consumer peripheral devices equipped with low-end motors and sensors to convey simple force feedback (e.g., force reflecting joysticks), and more sophisticated devices designed for complicated force rendering in industrial, medical or scientific applications (e.g. Phantom[5, 6], Haptic Master[7], CyberGrasp).

► Applications of haptics in dentistry

Haptics in Prosthodontics and Restorative dentistry

Three dimensional haptic technology of virtual reality has introduced dental

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simulators that provide an efficient means to quickly teach preclinical dental students about dental procedures, while increasing their hand-skills considerably. Repetitive procedures such as proper hand and instrument usage and placement are primary targets which have to be learned on dental simulators[8]. Tooth preparation, cavity filling and repair of fractured teeth are some of the applications provided by haptic systems.

'Haptic Based First Touch Enabled Virtual Articulator (SensAble Dental Technologies)' has developed the newest version of its Intellifit™ TE (Touch-Enabled) Digital Restoration System that offers dental labs even more choice, performance and flexibility in digitally designing and fabricating a wide range of dental restorations. The system supports both fixed and removable restorations including full ceramic monolithic crowns, fixed partial dentures and veneers. It produces height precision through its unique touch-enabled technology.[9]

Intellifit's unique 3D 'Virtual Touch' interface and integrated touch-enabled articulator allow lab technicians to actually feel how the teeth will occlude in the patient's mouth. Articulators are essential for checking the occlusion of dental restorations. Lab technicians use their sense of touch to assess whether a restoration will allow the patient to function with the correct amount of contact during excursive movements. Intellifit's virtual articulator mimics the feel and function of a physical articulator, yet allows dynamic settings to meet patient specifications and freedom of movement in three dimensions. Touch-enabled, virtual articulator allows technicians to test occlusion of restoration before it is produced and enabling them to actually feel the fit. Haptic based virtual reality system's touch enabled virtual articulators allow lab technicians to actually feel how the teeth, including the new restorations produced will fit together in the patient's mouth.

Virtual Articulator working on haptic system provides best quality of communication between the dentist and dental technician to simulate real patient specific data. This system analyses both static and dynamic occlusions / articulations along with gnathologic conditions. It is more of a three dimensional navigator.

While seating a crown or a fixed partial denture, the prosthesis may not seat completely because of many reasons. It may not be because of distorted casting always. Sometimes it may be because of interference in the path of insertion because of contact with the adjacent teeth. An experienced dentist utilizes tactile perception to identify the actual cause. Principles of haptics can be utilized to train dentists in this regard as well.

Haptics in Implantology

During a dental implant procedure basically tooth root is replaced by an artificial structure in order to support restorations that resemble a tooth. The technique requires a planning, often based on a three dimensional CT scan, to identify the vital structures and to choose the appropriate orientation for the implants. The main difficulty during the surgery is in producing precise osteotomy. Drilling into jawbone usually occurs in several separate steps while taking care to avoid the vital structures. A pilot hole is expanded by using progressively wider drills (typically from three to seven successive drilling steps, depending on implant width and length). By simulator based virtual reality, the aim is to provide a better alternative to training on cadaver. It is done after the training on artificial jawbones. The simulator includes a comprehensive virtual environment which includes the obstructions and obstacles previously mentioned with a more realistic haptic feedback than drilling on artificial jaw bones. Using the simulator, the dentist can do the rehearsal as much time as necessary. As the simulation is based on real patient data, the dentist also has access to a large variety of pathologic cases. Such training also enhances the surgical skills of the dentist particularly in producing precise osteotomy. The density of bones may be non-homogeneous. The surface of the jawbone is often harder. Thus, when the surface is about to be pierced the dentist must be careful that he does not apply an excessive force that would quickly drive in the surgical bur too deeply. Sometimes the heterogeneous nature of the bones could also redirect the drill tool from its desired direction. Skill should be developed to make a precise osteotomy even while being interfered by these anatomic variations. At each step, the dentist must be able to evaluate the quality of the osteotomy and when necessary he has to take a slightly different direction. Dentist has to take care of the elevation of temperature at the osteotomy site which can lead to a possible implant rejection.

Haptics in Endodontics

Steps in endodontic therapy especially access opening and biomechanical preparation are difficult to master. Incorporation of haptic technology into Endodontics has promised to make endodontic practice easier and faster[10]. In an experimental study 20 novices were involved practicing the access opening task with the haptic virtual reality system. Process (speed, force utilization, and bimanual coordination) and outcome variables were compared before and after the training. The study showed that novices could learn to perform access opening tasks faster and with more consistency. Better bimanual dexterity and better force utilization too were observed. The variables examined showed great promise as objective indicators of proficiency and skill acquisition with haptic virtual reality aid showed improvement.

Haptics in Orthodontics

The placement of micro-implants is a common but relatively new surgical procedure in clinical dentistry. Micro-implants are tiny screws made of commercially pure titanium (99%) or titanium alloy (90%) with diameters ranging from 1.2 mm to 2.0 mm and a length ranging from 4.0 mm to 12.0 mm. Micro-implants embedded in the jaw bone serve as anchor points to move teeth during orthodontic therapy. As one of several anchorage systems, micro-implants have attracted much attention in recent years, largely due to their minimal invasiveness, easy removal, reasonable cost, and great versatility[11]. Typically, the micro-implant surgery includes two steps. Firstly, a pre-drilling procedure is performed to make a pilot hole in the jawbone. Secondly, a micro-implant is screwed into the jawbone through the pilot hole. Both the pilot drilling procedure and the screw insertion procedure have to be conducted within an extremely limited space, without damaging the underlying roots of surrounding teeth. During the surgery, several types of inhomogeneous oral tissues might be drilled through, resulting in different haptic sensations. The involved oral tissues include an exterior layer of hard cortical bone, an interior layer of spongy cancellous bone, and neighboring tooth roots. As the tooth roots are hidden from sight, dentists have to determine if the roots have been touched by the dental drill or the micro-implant based on their tactile sensations. Experienced dentists develop a tactile sensation to identify the root contact, so that they can stop drilling/screwing before irreversible damage occurs. They also develop an intuition to determine how much torque should be applied to achieve optimal tightness between the screw and the jawbone to gain adequate primary stability. But for novice dentists, this is extremely difficult without considerable training process. As there are limited realistic training simulators or equivalences available, the potential risks mentioned above have put off many practicing orthodontists from performing this effective surgery. Currently, computer-based implant dentistry focuses on planning and navigation. Simplant & SurgiGuide is one of the most famous commercial systems in this area. Simplant displays the CT images in axial, frontal and 3D reconstruction views and allows clinician to plan the insertion site and direction with a virtual implant. The digital plan can be exported and transferred to a customized stereolithographic SurgiGuide, which can be installed on the patient's jaw to guide the drilling procedure. Although more precise results can be achieved with this method, dentists still have to be cautious about the unexpected root contact as errors are reported in the SurgiGuide manufacturing and the installation processes. This makes the haptic sensation still very important as it is the only source that can be trusted during the on-site surgery. With the haptic based simulator, novice dentists could develop the surgical and navigational skills necessary for micro-implant placement. More specifically, they can learn to: (i) identify the most optimal direction for drilling and insertion from accurate 3D models of the external and internal "hidden" oral anatomy; (ii) gain confidence to avoid damaging the surrounding tooth roots by the tactile sensations felt during virtual bone drilling and screwing of micro-implants; and (iii) stop in time when further screwing might cause the 'stripping' of the implants.

Haptics in Periodontology

Identifying the pathology and diagnosing / treating periodontal diseases requires skill which can be achieved by employing one of the two visuo-haptic systems: PerioSim and a periodontal simulator[12] which were developed by university of Illinois at Chicago. These systems simulate three dental instruments: A periodontal probe, a scaler and an explorer.

Diagnosing the periodontal disease mainly depends on probing and measuring the clinical attachment loss. Probing depth measurement by operators varies because of variation in angulation, pressure, force etc. Virtual periodontal probe could be used to learn the correct probing technique, which will help in determining the health and severity of diseases of periodontal tissues. Main etiological factors of periodontal disease are plaque and calculus, and thus the treatment of periodontal disease revolves around complete elimination of these etiological factors. Supragingival calculus which is easily visualized can be removed effectively using scalers. But the problem arises in completely removing the sub-gingival calculus, which mainly depends on tactile perception. This can be achieved using a haptic technology. A virtual periodontal scaler with two models of gingiva, transparent and opaque, could be used for this purpose. With the opaque model, the haptic device will provide the tactile sensation to evaluate virtual calculus present on the root surface. With the transparent gingiva, calculus can be concomitantly seen under the gum line. Further, virtual explorer can be used to evaluate whether the calculus has been completely removed, which could be performed with both a transparent and an opaque gingiva.

Haptics in Oral Surgery

Another useful application of haptics is in the field of oral surgery where it is used for pre-operative risk estimation in major surgeries[13]. Surgical interventions are made difficult by anxiety and risks to the patients. Some risk estimation methods use haptic technology to enable a preoperative simulation of critical steps within an intervention[14]. Moreover, they provide useful information for consideration of risks in preoperative planning and in surgery itself as well as in medical education and training. Analysis and estimation of surgical risks is not widely assessed so far[15]. Clinical staffs assess risks of surgical interventions prior to surgery and to talk with patients about potential complications. But the importance computer based

risk estimation has not been realized so far. Risk estimation is often done implicitly in surgical navigation and robotics in order to avoid severe damage of important tissues or of the patient itself[16].

► Conclusion

Dentistry nowadays is more technology driven than it was ever before. Principles and advancements in the field of engineering soon find a space in dentistry and medicine. A quality dentist always will have a history of solid pre-clinical training. Haptics started to find an important space there. Most of the Implantology training programs utilize either cadaver or dummy mandibles and unfortunately both of them fail to duplicate the anatomic diversity experienced in real surgery. Haptic based training will be more useful in Implantology and in many other specialities like Periodontics, Restorative Dentistry and Endodontics.

► Bibliography

1. Fei Z, Submitted AT, The FOR, Of D, Of D. HAPTICS-BASED MODELING AND SIMULATION OF MICRO-IMPLANTS SURGERY. 2012;
2. Buchanan JA. Use of simulation technology in dental education. J Dent Educ 2001;65:1225-31.
3. G. C. Burdea and P. Coiffet, Virtual Reality Technology, 2 ed.: John Wiley & Sons, Inc., 2003.
4. M. A. Srinivasan and C. Basdogan, "Haptics in virtual environments: taxonomy, research status, and challenges," Computers & Graphics, vol. 21, pp. 393-404, 1997
5. T. H. Massie and K. J. Salisbury, "PHANToM haptic interface: a device for probing virtual objects," Chicago, IL, USA, 1994, pp. 295-299
6. J. K. Salisbury and M. A. Srinivasan, "Phantom-based haptic interaction with virtual objects," IEEE Computer Graphics and Applications, vol. 17, pp. 6-10, 1997.
7. R. Q. Van Der Linde and P. Lammertse, "HapticMaster - A generic force controlled robot for human interaction," Industrial Robot, vol. 30, pp. 515-524, 2003.
8. Johnson L, Thomas G, Dow S, Stanford C. An initial evaluation of the Iowa dental surgical simulator. J Dent Educ. 2000; 64:847–53
9. http://www.businesswire.com/news/home/20110224005406/en/Sensable- Dental-Debuts-Industry%E2%80%99s-Touch–Enabled–Virtual–articulator#. U7mUGfmSw20
10. Marras I, Nikolaidis N, Mikrogeorgis G, LyroudiaK, Pitas I. A virtual system for cavity preparation in endodontics. J Dent Educ 2008;72:494-502
11. R. Reynders, et al., "Mini-implants in orthodontics: a systematic review of the literature," Am J Orthod Dentofacial Orthop, vol. 135, pp. 564 e1-19; discussion 564- 5, May 2009
12. Steinberg AD, Banerjee P, Drummond J, Zefran M. Progress inthe development of a haptic/virtual reality simulation program for scaling and root planning. J Dent Educ 2003;67:161-5.
13. Salb T, Weyrich T, Dillmann R. Preoperativeplanning and training simulation for risk reducing surgery. In International Training andEducation Conference (ITEC1999): The Hague, Netherlands [Accessed January 26,2011].
14. Haßfeld S, Burghart C, Bertovic I, RaczkowskyJ, Rembold U, Wörn H, Mühling. J.Intraoperative navigation techniques: accuracy tests and clinical report. In proceedings of Computer Assisted Radiology and Surgery(CAR 98): Elsevier Tokyo (1998).
15. Kikinis R, Gleason PL, Moriarty TM, et al.Computer-assisted Interactive three Dimensional planning for neurosurgical procedures. Neurosurgery 1996; 38:640-9.
16. Grimson E, Leventon M, Ettinger G, Chabrerie A, Ozlen F, Nakajima S, Atsumi H, Kikinis R,Black P. Clinical experience with a high precision image - guided neurosurgery system. In Medical Image Computing and Computer-Assisted Intervention (MICCAI). 1998:Springer-Verlag London, UK, LNCS Vol.1496: 63-73.

Management of gag reflex

* Rohit Raghavan, ** Ranjith Kumar P., ***Justin Baby

Abstract

Many times when we are about to take an impression, we are stopped when a patient goes through an episode of hyperactive gagging. Virtually all dentists will experience this phenomenon sometime in their careers. Patients who appeared during the examination to be able to tolerate dental procedures with ease were not always so easy to work on. When least expected during a routine impression, a patient will become extremely hyperactive and begin to gag. This generally ends up in aborting the appointment.

Keywords: gag reflex, gagging

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Introduction

Gagging has been defined as an ejectory constriction of the muscles of the pharyngeal sphincter. Active gag reflex compromises the quality of the treatment. Gag reflex can be described as the protective mechanism against the entry of the fluids or any substance in the upper respiratory tract. However, it can also be an acquired reflex, conditioned by various stimuli: visual, olfactory acoustic, psychic, chemical or toxic transmitted via the blood flow or the cerebrospinal liquid. Effective management of gagging depends on treatment of the cause and not merely symptoms. By thorough examination, taking of adequate medical history, and conversation with the patient, the dentist needs to determine if the patient's problem is related to iatrogenic factors, organic disturbances, anatomic or psychological factors. It is important to recognise whether, single or multiple factors are causing the problem.[1,7,8]

Gag reflex

Gag reflex is our body's natural defense mechanism that is intended to keep foreign objects out of our upper respiratory tract. When our body senses something other than air headed toward our larynx, pharynx or trachea, our muscles spasm and contract uncontrollably as our body tries to force the foreign objects away from our airway.

Neural involvement in Gagging:

When stimulation occurs of the soft palate or posterior third of the tongue, afferent impulses are transmitted to a centre in the medulla oblongata. From this centre, efferent impulses arise and are transmitted, resulting in the spasmodic and uncoordinated movements of gagging. The centre in medulla oblongata is very close to the vomiting, salivating and cardiac centre, explaining why gagging may be accompanied by additional reflex activity (Ex. Drooling, tearing).

Method to determine Gag patient

Place a slightly oversized metal tray into the patient's mouth at the examination and move the tray back toward the palate while applying pressure. The patient who would be able to tolerate impressions would have little to no response. Other patients would begin to increase their breathing rhythm and begin to hyperactively gag. This simple test allows us to know our patients' needs better and to treat them accordingly.

Causes of Gagging

1) Anatomical factors:[3]

- Abnormal anatomical situations and oro-pharyngeal sensitivity predisposes patient to gag.
- Over extension of dentures in soft palate.
- A long soft palate and a sudden drop at the junction of the hard and soft palates are associated with the problem.
- An atonic and relaxed soft palate elicits gagging by allowing the uvula to contact the tongue and the soft palate to touch the posterior pharyngeal wall.
- Gagging also has been attributed to undue sensitivity of the soft palate, uvula, fauces, posterior pharyngeal wall and the tongue.[4,6]

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2) Local factors causing gag reflex includes: -
- Nasal obstruction.
- Postnasal drip.
- Caterrah.
- Sinusitis.
- Nasal polyps.
- Congestion of the oral, nasal and pharyngeal mucosa.

3) Sex prediction:
- Gagging has been found more commonly in men than in women.

4) Medical conditions believed to contribute to gagging in dentistry includes.
- Chronic diseases of gastrointestinal tract which increase its irritability so that normally sub-threshold stimuli excite the reflex.
- Parasympathetic impulses from severe pain in sites other than the gastrointestinal tract may also causes gagging.
- It has been associated with chronic gastritis, patersens dysplasia, carcinoma of stomach, partial gastectomy peptic ulceration, cholecyastitis, carcinoma of the pancreas diaphraymetric herina, and uncontrolled diabetis.

5) Social causes of gagging includes:
- Heavy smoking which causes gagging result of hypersensitivity.
- Chronic catarrah.
- Coughing.
- Associated with excessive consumption of alcohol.

6) Fear some people who gag with dentures are also unable to tolerate other objects intraorally with fear acting as a common cause of gagging.

7) Dentures stimulate gagging of moving against the soft tissue or by reducing the tongue spaces and causing the tongue to be displaced posteriorly into pharynx.

8) Gagging can also result from a restricted airway. It is difficult for a patient with a very larger tongue or a small nasopharynx to tolerate bulky dentures.[2]

Management of Gagging

1) Sending additional signals to hypothalamus

2) Several authors have suggested hypnosis relaxation, relaxation plus controlled breathing and positive self statements and performances of incompatible responses such as reading all have been used with some success.

3) Medications such as sedative antihistamine, parasympathetic and topical anesthetics have been used with some success.

4) Applebly and Days finger massage technique and Singers Marble technique.

5) Reduction of palatal coverage of maxillary dentures.

6) Modification of edentulous maxillary custom tray to prevent gagging.

7) Psychotherapy has been recommended for chronic or hystorical gagging.

8) Analgesics.

9) Conditioning prosthesis.

10) Controlled breathing method.

11) Leg lift technique.

12) Accupressure technique.

1. The gag reflex is generally thought to be controlled by the hypothalamus of the brain. We also know that other reactions are controllable by the hypothalamus. Place a Q-tip with salt on the tip of the patient's tongue. We are now stimulating taste sensors. This taste will also be reflected in the same part of the brain as the reflex, so we are giving the hypothalamus a second signal. The next plan of action is to give the patient a lollipop made with tetracaine 1%. This is the same medical topical anesthetic utilized after tonsillectomies or for sore throats. We suggest a 1% concentration and have the patient suck the lollipop until it begins to coat both the hard and soft palates. The third method of defense would be to use extreme cold in the form of a chemical ice. We have the patient massage their hands with a chemical ice bag. We also know that extreme cold sensations are also signaled in the hypothalamus. These are three different methods to send additional signals to the hypothalamus to decrease the gag reflex

2. Several authors have advocated hypnosis. Relaxation, relaxation plus controlled breathing and positive self-statements and performance of incompatible responses, such as reading aloud, have been used with some success.

3. Medications, such as sedatives, antihistamines, para-sympatholytios and topical anasthetics have been used with some success.

4. Marble techniques: Appleby and Bay's finger massage of the soft palate and Singer's 'marble technique', seem to be

methods by which the gag reflex can be exhausted thereby allowing for graduated exposure to the dental prosthesis or procedure. The marble technique consists of seven steps which are as follows:[5]

The first visit: No oral examination of any kind was made at the first office visit. Five round, multicolored, glass marbles, approximately ½ inch in diameter were placed on a tray in front of the patient. The patient was told to put the marbles in his mouth, one at a time, at his leisure, until all five marbles were in his mouth. Since the fear of swallowing a foreign object can induce the gag reflex, the patient was assured that if he swallowed a marble, it could not harm him. Continual assurance that he would be able to wear dentures was given to the patient at each weekly visit. He was urged to keep the five marbles in his mouth continuously for one week, except when eating and sleeping. Patient with this problem can be treated with as few as two marbles.

The second visit: The patient was again given assurance that he would be able to wear denture, which further fortified his own motivation.

The third visit: Before the impression making was attempted, the hard palate, the soft palate, the cheeks, the lips, and the tongue were swabbed with 2 percent Pontocaine solution in order to produce topical anaesthesia. Preliminary modeling compound impressions were made, refined and completed without a wash. The base plates were not highly polished, but they were sand blasted to give them a dull finish. Highly polished base plates often given a slimy or slippery feeling.

Fourth visit: The base plate for the lower denture was inserted, and the patient was told to continue to keep three marbles in his mouth in addition to this base plate. A "training bead" (a small bead made of cold-curing acrylic resin) was placed on the lingual aspect of the lower base plate at the normal position of the lower central incisors. The training bead was used to help the patient maintain the proper tongue position. The patient should be reassured that he is making excellent progress.

Fifth visit: The upper base plate was inserted. If proved to be a little more difficult for the patient to tolerate than the lower one, but he was asked to keep both of them in his mouth continually except when eating. The use of marbles was continued.

The sixth visit: The patient will now able to endure the presence of both base plates. Occlusal rims were used to determine esthetic considerations and to verify the occlusion. The patient should continue to wear the upper and lower base plates while the dentures are being processed.

The seventh visit: The completed lower denture was inserted and used in conjunction with the upper base plate. A training bead was placed on the lower denture as a guide to tongue position. The patient should be instructed to keep the tip of the tongue always touching the bead, which would keep the lower denture from lifting. Next the upper denture is inserted. The 'marble technique' is useful in assuming so-called "hopeless" gaggers that it is possible for them to have dentures constructed and then to wear them. The change from the mental rejection to physical acceptance of the dentures can be greatly enhanced by the use of the marble technique.

5. Reduction of palatal coverage of maxillary denture: The maxillary denture can be reduced to a U-shaped border situated approximately 10 mm from the dental arch. Denture wearers with the above type of dentures, reported that reduction of the palatal coverage influences their sense of taste positively, and gagging tendency disappears.[9,11]

6. Modification of edentulous maxillary custom tray to prevent gagging: The maxillary custom tray can be modified to prevent gagging as follows:[10,12]

Severe maxillary cast from a preliminary impression in the usual manner. Block out all undercuts on the cast and form a tray with autopolymerizing acrylic resin that is 2-3 mm short of all vestibular extensions. No handle should be placed at this time. Place base plate wax on the superior surface of the tray at the posterior segment. The wax should have roughly the same outline as the posterior palatal seal, extending from one tuberosity to the other. Attach a disposable saliva ejector to the base plate wax in the midline of the tray.

Make sure the tip of the saliva ejector is embedded in the wax. Sover the wax with a thin layer of petroleum jelly. Mix a second batch of autopolymerizing tray acrylic resin. Form this material into a thin sheet and place it over the wax and tip of the saliva ejector. The material should extend past the wax and attach to the original tray. After the acrylic resin has cured, remove the wax spacer. Smooth any roughness on the tray and polish the tray at this time. Add a wax occlusion rime to the tray to approximate the position and contour of the teeth in the completed denture. Trim the posterior extent of the tray and border mold in the usual manner. Mix the impression material and load the tray.

As the impression tray is being seated in the mouth, the assistant attaches the low volume evacuation base to the end of the saliva ejector embedded in the tray. Border mold

the impression in the usual manner. Remove the tray from the mouth after the impression material extruding from the posterior border of the tray has been sucked into the vacuum chamber that was formed. The modified maxillary custom acrylic resin tray aids in removal of excess impression material as it extrudes from the posterior border of the maxillary custom tray before it can elicit a gag reflex in the patient.

7. Psychotherapy has been recommended for otherwise intractable "chronic or hysterical" gagging.

8. Analgesics: This causes a rapid, effective elimination of the gagging in already denture wearing patients. A cotton swab is used to apply a light coating of oral 'antiseptic / analgesic' to the soft palate and rear of the tongue to produce some decrease in sensation. Secondly, a tongue depressor was used to repeatedly probe the soft palate and rear of the tongue. When the gag reflex consistently failed to occur, the patient inserted the upper denture. He signals when gagging seems imminent and removed the denture to avoid further associations of proper placement with gagging and vomiting. Four series of four timed trials were conducted on the first 2 days of treatment. Fewer trials were conducted on days 3 and 4 because the patients tolerance of the maxillary denture is likely to increase.

9. Conditioning prosthesis: A conditioning denture can be used in problem patients which is used to train the patient to gradually control gagging and adapt to reduced taste sensations. This conditioning prosthesis consists of alveolar palatal prosthesis constructed in acrylic similar to an orthodontic appliance in which ball clasps are included to retain the prosthesis. Such an appliance is worn for 1 weeks of adaptation, with 1 week of respite between prosthesis. The helps the patient in accepting the permanent prosthesis to be inserted later. Such an appliance is worn for 1 weeks of adaptation, with 1 week of respite between prosthesis. The helps the patient in accepting the permanent prosthesis to be inserted later.

10. Controlled breathing method: This method advocated by the National Child Birth Trust for use by women in labour in similar to that advocated by Murphy.[6]

All patients were instructed in controlled rhythmic breathing and told to practice it for one or two weeks before prosthetic treatment commenced. The breathing was slow, deep and even, and the rhythm maintained by concentrating the mind upon a particular verse or tune with an even tempo. The concentration was particularly important so that if the patient experienced a retching episode the breathing would become deeper and slower. If no satisfactory denture was in existence, a very thin clear acrylic base plate was constructed. Care was taken to provide maximal palatal coverage to just short of the vibrating line, a satisfactory post dam and a very thin posterior border.

Impressions for construction of base plate were taken in the usual two stages: primary impressions using impression compound in stock trays and secondary impressions, usually of plaster, taken in shellac special trays. During impression taking, patient's rhythmic breathing was reinforced. Few problems were encountered at the primary impression stage, and this gave subjects a course of achievements.

At the secondary impression stage, care was taken to ensure that no plaster ran down on to the lower part of the soft palate by waiting until the plaster had ceased to 'run' before inserting the impression. At all times the operator made the subjects concentrate on his or her breathing and if retching or vomiting occurred, the operator should maintain a relaxed manner so that the subjects did not get agitated. When the base plate was inserted, the breathing technique was explained again and the patient told emphathetically that a routine should be adopted whereby a particular time each day was suggested for denture acclimisation.

The length of time the base plate was worn each day should be slowly increased. At first the base plate was to be kept in for only five minutes and under no circumstances removed, even if retching stimulus became very strong. The rhythmic breathing should be maintained for the whole base plate wearing period. Patients had to write down the length of the time the base plate was worn each day so that one day's time could be compared with preceding ones. Thus the patient could assess his own progress, and the operator could assess the degree of cooperation. After the base plate was inserted the patients were not seen for 2-3 weeks. It took three or four visits before both wearer and operator were confident enough for treatment to continue and denture construction to begin. The needle taken from the second impressions were duplicated so that the final denture was constructed on a model identical to that used for the base plate. Thus the base plate could be worn right upto the time the denture was fitted.

Pharmacological methods:

Local anaesthesia: Though some authors criticise it, administrating LA, especially near the posterior palatine foramen has shown to reduce gagging.[13]

Conscious sedation: Inhalation, oral or iv agents reduce anxiety and still maintain reflexes that protect the airway.

General anaesthesia: Sometimes the last resort. Has its own risks and cannot be used routinely.

Conclusion

Gag reflex is of psychogenic in origin. The hyperactive gag reflex produces lots of clinical difficulties for the patient as well as dentist. All the methods which are discussed should be used to manage patients. The rhythmic breathing is found to be most effective method of controlling the reflex.

References

1. Schote M.T.: Management of the gagging. J. Prosthet. Dent., 4; 578, 1959.
2. Krol A.J.: A new approach to the gagging problem. J. Prosthet. Dent., 13; 611, 1963.
3. Means C.R. Flennien J.E.: Gagging a problem in prosthetic dentistry. J. Prosthet. Dent., 23, 614, 1970.
4. Kovals J.J.: Clinical evaluation of the gagging denture patient. J. Prosthet. Dent., 25; 615, 1971.
5. Singer J.L.: The marble technique: method for treating the hopeless gagger for complete dentures. J. Prosthet. Dent., 29; 149, 1973.
6. Murphy W.M.: A clinical survey of gagging patients. J. Prosthet. Dent., 42; 145, 1979. 19
7. Conny D.J. and Tedeso L.A.: The gagging problem in prosthodontic treatment Part I, Describption and causes. J. Prosthet. Dent., 49; 601, 1983.
8. Conny D.J. and Tedesco L.A.: The gagging problem in prosthodontic treatment Part II, Patient management. J. Prosthet. Dent., 49; 757, 1983.
9. Farmer J.B., Connelly M.E.: Palateless dentures help for the gagging patient. J. Prosthet. Dent., 52; 691, 1984.
10. Gillian Hord, Reddick: Gagging: A chairside approach to control. J. Br. D. Assoc., Sept. 1986, 101(5); 172-176.
11. Floystrand et al: Effects on retention of reducing the palatal coverage of complete maxillary dentures. Acta Odont. Scandinavica, April 1986, 44(2) 77-83.
12. Gordon N. Gallison: A modified edentulous maxillary custom tray to help, prevent gagging. J. Prosthet. Dent. 62; 48-49, 1989. 20
13. D. S. Ramsay etal. Problematic gagging. Principles of treatment. J Am Dent Asso (1987).

Contemporary esthetic posts

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Abstract

The objective of post endodontic restoration is to restore the normal tooth structure, function and aesthetics. The need for careful post endodontic restoration is reflected in the fact that most teeth treated endodontically develop problems or are lost because of restorative difficulties, than because of failure of the root canal treatment itself. The purpose of a post is to retain a core that is needed because of extensive loss of coronal tooth structure. Until recent years, nearly all posts were made of metal. Now they are also available in ceramic, composite and fiber-reinforced materials. Every post material has some advantages that can be cited to justify its use. However, every material also has disadvantages. This article illustrates the various esthetic posts available and the benefits and disadvantages of these systems.

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► Introduction

The endondontic rehabilitation of a pulpless tooth poses additional challenges during the restorative procedure. Conservation of tooth structure is of paramount importance. Otherwise, the cumulative loss of tooth structure from caries, trauma and endodontic procedures combined with the loss of structural integrity contribute to the fracture of the tooth. The longevity of endodontically involved teeth has been greatly enhanced by continuing developments made in endodontic therapy and restorative procedures. It has been reported that a large number of endodontically treated teeth are restored to their original function with the use of intra radicular devices. These devices vary from a conventional custom cast post and core to one visit techniques, using commercially available prefabricated post systems.

► Objectives

The objective of post endodontic restoration is to restore the normal tooth structure, function and aesthetics. The primary purpose for a post is to retain a core that can be used to support the final restoration[1]. Posts do not reinforce endodontically treated teeth, and a post is not necessary when substantial tooth structure is present after a tooth has been prepared[2]. Post placement is indicated if both of the following clinical conditions exist:

- The remaining coronal tooth structure is inadequate for the retention of a restoration.
- When there is sufficient root length to accommodate the post while maintaining an adequate apical seal.

► Historical perspective

- In the 1700s Fauchard inserted wooden dowels in canals of teeth to aid in crown retention. In 1747 Pierre Fauchard fabricated gold and silver posts to be placed in root canal space.
- In the period between 1830-1870, wood replaced metal as the material of choice for posts. Over time the wood would expand in the moist environment to enhance retention of the dowel until, unfortunately, the root would often fracture vertically.
- Several of the 19th century versions of dowels also used wooden "pivots".
- Black (1869) used a porcelain-faced crown was secured by a screw passing into a gold-lined root canal.
- A device developed by Clark in the mid-1800s was extremely practical for its time because it included a tube that allowed drainage from the apical area or the canal by Prothero JH in 1921.
- The Richmond crown was introduced in 1878 and incorporated a threaded tube in the canal with a screw retained crown. It was later modified to eliminate the threaded tube and was redesigned as a 1-piece dowel and crown.
- One piece dowel crown restorations also presented problems when the crown or FPD required removal and replacement. These difficulties led to development of a post and core restoration as a separate entity with an artificial crown cement[3].
- Various methods of restoring pulpless teeth have been reported for past 200 years.
    - 1960 Carbon fiber post
    - 1989 Modifications of Carbon fiber posts
    - 1996 Meyeberg – Zirconium posts
    - 2000 Everstick & Millinium white post.

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Classification[4]

I. CUSTOM MADE CAST POST SYSTEMS.

II. PRE FABRICATED METALLIC POSTS.

Stainless steel.
Brass.
Titanium.

III. PREFABRICATED POSTS

A. FIBRE REINFORCED POST SYSTEMS.

1. Carbon fibre posts.
- Composipost.
- Endoost.
- Carbonite system.
- Mirafit carbon.

2. Silica fibre posts.

a. Glass posts.
- Snow posts.
- Fibre white.
- Glassix.
- Mirafit white.
- Luscent anchor.
- Fibrekor.

b. Quartz posts.
- Aesthetic post.
- Aesthetic plus posts.
- Style plus.
- Light post.

3. Polyethylene posts.
- Ribbond.
- Construct.

B. CERAMIC POSTS

FIBRE REINFORCED COMPOSITE POST SYSTEMS.

Charles J. Burstone made the early scientific contributions to the development of FRC posts[5]. The addition of fibres to a polymer matrix results in a significant improvement in the mechanical properties like:

- Strength
- Fracture toughness
- Stiffness
- Fatigue resistance.

PROS AND CONS [6,7]

The fibre reinforced posts have an elastic modulus similar to dentin. They are flexible and can absorb / dissipate stress. Their unique features are:

- Conservation of canal structure.
- Aesthetic.
- Can be removed without trauma
- One appointment technique.
- Lack of corrosion.
- Chemically compatible with current adhesives and composites.
- Biocompatible and corrosion resistant.
- Radiopaque.
- Anisotropic.
- Lesser incidence of root fractures and increased retention offer added advantages for both the patient and the dentist.
- They also need meticulous adherence to the adhesive protocols and are technique sensitive.

COMPOSIPOST[8].

They are also called Carbon fibre posts or C- posts.

- Introduced in 1990 by Duret and colleagues.
- Composition – 64% carbon fibres in 36% bisgma epoxy matrix
- 0.8 micron size.
- Can be bonded within the root canal.
- Available in black colour.
- Length – 22mm.
- Diameters – 1.4mm, 1.8mm & 2.1mm.
- The Composipost system (RTD, Meylan, France)claims to have homogenous mechanical and chemical bonding of all components, which serves to reinforce the tooth; and also has a Young's modulus approximating that of natural teeth; which results in decreased stress concentration and, therefore, an increased longevity of the restoration.

U.M COMPOSIPOST.

- Developed by Dr. Salam Sakkal.
- Narrow, tapered, radio opaque posts.
- Sized according to standard ISO #100, #120, #140 gauge files and reamers.
- Used in narrowest canals – trifurcated teeth & lower incisors.

SILICA FIBRE POSTS
Types- glass fibre and quartz fibre posts.

A) GLASS FIBRE POSTS

Glass fibres have a lower elastic modulus than carbon / graphite fibres.

SNOW POST – (Carbotech, France)

- It was developed by Professor Bois and colleagues at Lyon.
- Composition- 60% Silica Zirconium glass fibres in an epoxy resin matrix.
- The surface is treated with silane to enhance bonding with resin cements.
- It is cylindrical in shape with a 3o taper.

PARAPOST FIBRE WHITE: (Coltene / Whaledent)

- The ParaPost Fibre White is a filled resin, monodirectional fibre matrix.
- Colour – translucent white.
- Available in 4 diameters with colour coded matching drills.
- Seats passively in canal.
- Easy to remove if required.

B) QUARTZ POSTS

- Quartz is pure silica in crystallized form.
- It is an inert material with a low co-efficient of thermal expansion.
- More esthetic.
- Quartz fibre coated carbon fibre posts –Aestheti post.
- White quartz fibre posts – Aestheti Plus posts - RTD, France

THE AESTHETI POST SYSTEM (Bisco, Schaumburg, IL)

series of posts that can be used in a variety of situations.

DT WHITE POST[9]

- The traditional posts are two-stage White or translucent colors.
- 3 sizes.
- 2 tapers for each size.
- 2^0 taper for apical portion.
- Specific tapers – 6^0,8^0 &10^0 - for the coronal section. Introduced in 1999.

DT LIGHT POST[10,11]

- Made of quartz fibers.
- Curing light energy transmission.
- Neutral translucent shade.

CHAIRSIDE FABRICATED POSTS - POLYETHYLENE FIBRE MATERIALS – RIBBOND [12]

- This technique utilizes polyethylene woven ribbon (Ribbond) fibres used as a matrix along with a composite resin.
- Ribbond fibres introduced in 1992 to the market is a bondable reinforced fibres consisting of ultra high strength polyethylene fibres.
- These fibers far exceed the breaking point of fiberglass and are so tough that specially made scissors are required to cut them.
- Ribbond's fibers absorb less moisture than the dental resins.

► Technique

- Place the cut piece of Ribbond on a mixing slab or pad and wet it with a few drops of unfilled bonding resin.
- Ribbond should not be wetted with one step or 5th generation bonding systems.
- These systems contain components (such as acids to etch the dentin or solvents) that can compromise the adhesion between the resin and the fiber.
- Blot off the excess unfilled bonding agent with a gauze.
- It is easier to work with the Ribbond if it is not overly saturated with unfilled resin.
- Once Ribbond is wetted with unfilled bonding adhesive, it can be handled just like resin (with powder-free gloves or clean fingers).
- Ribbond bonds to any composite system.

CERAMIC POSTS

- In 1989, Kwiatkowski & Geller described the clinical application of glass-ceramic posts & cores (Dicor, DENTSPLY) [13].
- Glass infiltrated aluminium oxide ceramic posts & cores – Inceram, Vita Zahnfabrik.
- Introduced by Kern and Knode in 1991[13].
- In 1995, Pissis[14] proposed a "monobloc" technique for the fabrication of a post & core and a crown as a single component made out of glass ceramic materials (IPS-Empress, Ivoclar). Glass infiltrated alumina ceramic-Inceram [13].
- Dense sintered Alumina ceramic – procera, nobel Biocare. They are high toughness ceramics.

ADVANTAGES [6,7,13]

- The major advantage of an all-ceramic post & core is its dentine like shade.
- Dimensionally stable
- Compatible with oral tissues.
- They have good strength.
- Insoluble and impermeable to oral fluids.
- Resistant to most solvents.
- Radiopaque.

DISADVANTAGES

- Low fracture strength and fracture toughness.
- Brittle and tends to fracture.
- It is difficult to bond ceramic post.
- Removal of ceramic post without trauma is difficult.

ZIRCONIA POSTS

Found in ignesious rocks – schist, gneiss, syenite and granite. Zirconia post and core systems introduced by Meyberg et al. High flexural strength, high fracture toughness, chemical stability, biocompatibility and favourable optical properties are advantageous characteristics of zirconia as a restorative material[14]. However, when used for endodontic posts, zirconia has revealed some major limitations. zirconia posts are more prone to cause root fractures. The surface of zirconia posts does not bond to resin composite materials. It cannot be easily removable in case endodontic retreatment is needed. It is in fact practically impossible to grind off a luted zirconia post.

COSMOPOST (Ivoclar Vivadent).

CERAPOST (Gebr Brasseler, Lemgo, Germany)

- Prefabricated zirconia dowel system.
- Composition – 94. 9% ZrO_2, stabilized with 5.1 % Y_2O_3.
- Available in 2 diameters – 1.4mm, 1.7mm.

A new zirconia endodontic post system with retentive coronal portion was suggested by Cedomir Oblak et al.

► Discussion

Multiple Factors Which Influence Post/Dowel Selection[15]:

- Amount of coronal tooth structure
- Tooth anatomy
- Position of the tooth in the arch
- Root length
- Root width
- Canal configuration
- Functional requirements of the tooth
- Torquing force
- Stresses
- Development of hydrostatic pressure
- Post design
- Post material
- Material compatibility
- Bonding capability
- Core retention
- Retrievability
- Esthetics
- Crown material

► Conclusion

The restoration of endodontically treated teeth has been the focus of considerable controversy. Since a post does not strengthen an endodontically treated tooth and the preparation of a post space may increase the risk of root fracture and treatment failure, the decision whether to use a post in any clinical situation must be made judiciously. The evaluation of whether a post is needed is based on how much natural tooth substance remains to retain a core build up and support the final restoration after caries removal and endodontic treatment are completed. Selection of a post requires a thorough understanding of the anatomy, and biology of dentine and root supporting the restoration and the various post systems on the part of the practitioner

► References

1. Dorothy Mc Comb. Restoration of the endodontically treated teeth. Dispatch • February/March 2008.
2. George A. Freedman, Esthetic post and core treatment,. DCNA, Volume 45. N0. 1. January 2001.
3. Advances in post:A review.Ghai Kulwant, Gupta Gaurava,Mittal Divya. Annals of dental research.Vol 1(1).2011.
4. Dr. U. S. Krishna Nayak, Dr. Amarnath Shenoy, Dr. Shruti D. Nayak Recent advances in Post Systems - A Review - Part I, Part II and Part III..The IDA Times, Mumbai,July2013.
5. Freilich MA. Fibre reinforced composites: In clinical dentistry.
6. Christel. P. Mechanical properties and short term in vivo evaluation of Yttrium –oxide partially stabilized zirconia.Journal of biomedical materials research.1989,23:45-61
7. Grandini S,Goracci C,Tay FR, Ferrari M.Clinical evaluation of the use of fibre posts and direct resin restorations for endodontically treated teeth. Int.J Prosthodontics 2005;18:399-404.
8. Madhavi. S.Kotipalli, Vikas N. Vartak, Aruna. J. Bhandari. Recent Advances In endodontic Post Material. The Journal of Indian Prosthodontic Society. Oct 2009, 9: 4.
9. Boudrias P. Anatomical post design meets quartz fibre technology:rationale and case report. Compendium 2001;22:337-48.
10. Monticelli F. Grandini,Goracci C, Ferrari M.Clinical behaviour of translucent fibre posts:a 2 year prospective study.Int J of Prosthodontics2003;16:593-6.
11. Erkut s, Eminkahyagil N, Imirzalioglu P, Tunga U. A Technique for restoring an over flared root canal in an anterior tooth. JPD 2004;92:581-3.
12. M. Ganesh and Shobha Tandon. Versatility of Ribbond in Contemporary Dental Practice.Trends biomater artif organs 2006;20:1.
13. Hudis SI, Goldstein GR.Restoration of endodontically treated teeth:a review of literature. J prosth Dent 1986;55:33-7
14. Oblak C.Fracture resistance and reliabilityof new zirconia posts. JPD2004;91:342-8
15. Robbins WJ. Restoration of the endodontically treated tooth. Dent Clin N Am 2002;46: 367-384.

Sterilisation and disinfection in orthodontics

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Abstract

Sterilization is a process by which an article, surface or medium is freed of all micro-organisms either in vegetative or spore state. Control of infection that spreads through various instruments and armamentarium used in the field of orthodontics and dentistry in general is of utmost importance as a preventive measure for cross infection. Considering the fact that the rate at which newer strains evolve with time and older strains develop resistance it has become a constant challenge through time and in the years to come. The article reviews the various methods of sterilization by focusing on the guidelines for an effective and efficient orthodontic practice.

Key words: Orthodontic Pliers, Sterilization Methods

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► Introduction

On a daily basis, the practicing dentist and his personnel are at risk of being exposed to a wide range of patients with blood borne diseases such as HIV/AIDS, hepatitis B, hepatitis C, and airborne diseases such as Influenza and Tuberculosis. Infection can be directly transmitted by oral fluids, blood, contaminated instruments and surfaces or via the respiratory system. To accomplish infection control accurately and to reduce the risk of cross contamination, all patients have to be treated while practicing universal precautions, the latter including the imperative steps of disinfection and sterilization.[1-6]

Orthodontists have the second highest incidence of hepatitis B among dental professionals. Saliva is about half as infectious as blood, and the most likely modes of transmission in dental offices are through puncture wounds, skin abrasions, or lesions. Dental aerosols, splattering, and instrument contamination can also transmit the virus, which can survive for several weeks at room temperature

Orthodontists do not perform oral surgery, but come in direct contact with blood and oral fluids of healthy patients or infectious diseases patients when placing or removing fixed appliances. Some orthodontic instruments used regularly have hinges and cutting edges, and this makes disinfection prior to sterilization a sensitive procedure. Instruments have to be cleaned and dried prior to sterilization in order to minimize damage and corrosion when applicable, and to increase lifespan.

The standards of infection control and universal precautions remain generally unchanged, but technologic advancements, new products, new material and new data require constant evaluation and adjustments of the techniques accordingly. It is therefore our obligation to apply the most recent disinfection and sterilization practices to achieve the best results. The first general infection control instructions for dentistry were published by Center for Disease Control and Prevention (CDC) in 1986[3] and are being updated every year in this respect. The main principle is to consider each patient as being infected because many infectious diseases can be present in one individual without any signs and symptoms, especially at an early stage. The American Dentist Association recommends to all staff part of the dental team to apply the universal precautions prevent infection and cross-contamination. The universal precautions suggest standard application of infection control and sterilization techniques for each patient.

The microorganisms in the oral flora can be listed as:

- Streptococci
- Anaerobics (Bacteroides, Porphyromonas, Prevotella, Fusobacterium, Capnocytophaga, Peptostreptococcus, Salmonella, Leptotrichia, Eubacterium, Veillonella, Helicobacter, Spirochetes)
- Actinobacilli
- Gram negative bacteria
- Staphylococci

Steam autoclave sterilization

Steam sterilization (autoclave) uses saturated water vapor at 240° F, with 15 pounds of pressure for 15 to 40 minutes. The time can be reduced to three minutes by raising the pressure to 30 psi and the temperature to 270° F. More time is required for heavily wrapped loads of instruments. Sterilization can be verified with indicators and spore tests. It is a time-tested method that has little value for orthodontists because it severely

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rusts pliers and damages cutting edges. The corrosion may be reduced by dipping the instruments in a milk-like emulsion of oil in water prior to sterilization.

Dry heat sterilization

Dry heat provides a relatively low-cost sterilization procedure. Dry heat ovens require one hour at 320-340°F for sterilization. Wrapping or increasing the number of instruments increases the time required. It has two major drawbacks. It requires from 1 to 2 hours at 320° F for a complete cycle—far too long being practical for inventory considerations. A lesser problem is the tendency for the air to stratify and cause uneven temperatures that result in a lack of sterility.

Glass bead sterilization

Heat transfer media (salt or glass bead sterilizers) have been shown effective against most organisms and spores. There is some evidence that reliable, broad-spectrum sterilization occurs only with small instruments. Bulky instruments are not recommended because they may cool the medium below the reliable temperature for sterilization.

Glass bead sterilization uses small glass beads ranging from 1.2 to 1.5 mm in diameter. The suggested heating range is 424° to 450° F31 (217° to 232° C) for 3 to 5 seconds but not exceeding 482° F (250° C). A relationship exists between the size and working surface of an instrument and the temperatures attained in the bead sterilizer. The larger the instrument, the longer the heat-up time required. A narrow, deep well is preferable to a wide, shallow one; instruments should be placed deep and near the sides of the wall for best results.

Other methods of disinfecting orthodontic bands, including tap water rinse, soap scrub, 30-minute alcohol soak, and alcohol flame, are not adequate to prevent growth of Staphylococcus albus and Bacillus subtilis cultures with one exception—alcohol flame appears capable of preventing growth on bands inoculated with bacteria.

Chemical vapour sterilization

Unsaturated chemical vapour sterilization (Chemi-clave) is a suitable method for orthodontic instruments. Chemical vapour sterilizers use formaldehyde, alcohols, and water. The clean, dry, unwrapped instruments are set on a tray in the chamber, and the unit is set at 270° F at 20-40 psi for 20 minutes. When the chamber is opened, the toxic formaldehyde vapour must be vented to the outside. Because an unsaturated vapour is used, rusting is not a problem. It has a cycling time that is practical for an orthodontic office. Its chief drawback is a chemical odour that, although not harmful, requires adequate ventilation.

Ethylene oxide sterilization

Ethylene oxide is useful in as much as towels, and metal and plastic instruments may be sterilized simultaneously. It is the only major sterilization technique that does not require heat above room temperature. Hyperbaric gas (ethylene oxide) sterilization is recommended for instruments that are prone to corrosion or heat damage. However, the process is slow and costly, and the effluent gas is highly toxic. Standard treatment varies with temperature: 12 hours are required at room temperature, four hours at 56°C. It has the disadvantages of being toxic, allergenic, requiring a long exposure time, and is explosive if mixed with air. It is therefore combined with an inert gas such as carbon dioxide to render it nonexplosive. Another disadvantage is that materials retain varying amounts of ethylene oxide gas after removal from the sterilizer, and this must be allowed to dissipate before use.

Glutaraldehydes

Alkaline, acidic, and heat-potentiated are effective sterilants for instruments other than pliers, but only when used for 6 to 10 hours. Again, this is an impractical cycle time. Their best use is for plastics and other heat-sensitive items. After heat sterilization, each rack of sterilized instruments is then kept in a cool-down drawer, which is lined with plastic laminate to control moisture, until the instruments and pliers can be returned to storage. It is important that cutting instruments be rotated for periodic resharpening. Plier hinges can be lubricated as necessary. The most common inefficiencies in orthodontic sterilization procedures are overhandling of instruments and improper chairside clean-up. Contributing factors can include mislocation of the sterilization area, poor flow control of breakdown and sterilization, excess instrumentation, and poor storage organization. Many orthodontists practice overkill procedures that are not required by any regulations, such as bagging individual instruments, wearing masks for all procedures, spraying chairs after every patient, maintaining an in-house laundry, and buying several different products when one will do the job.

Disinfection and its methods

A number of methods have been used in orthodontic offices to disinfect instruments and environmental surfaces. A 70% alcohol solution has been the most widely used even though the least effective. A 1% solution of sodium hypochlorite (bleach) is very effective, but hard on the skin and has an unpleasant odor. The iodophors are the best choice. They are inexpensive, have residual effectiveness, and are easy to use and store. Their single drawback is the light brown residue left on surfaces, which disappears as the compound oxidizes. It does not stain as iodine does. These solutions can be made by diluting 1 ozpovidone-iodine preparation in 16 oz of 70% isopropyl alcohol. They are also available in dry form to be diluted with water.

Quaternary ammonium compounds (QAC)

A quaternary ammonium compound (QAC or "quat") reduces the surface tension between bacteria and an object, thus disrupting the bacterial cell wall. Concentration, degree of contamination, level and extent of contact, and presence of other compounds all play a role in QAC effectiveness. Cotton, air, gross soil, or unusually heavy bacteria can prevent contact of the disinfectant with the cell wall. Combining several disinfectants— for example, a QAC with a phenolic compound containing an anionic detergent— can cause them to neutralize each other. Quaternary ammonium compounds (QAC) are used routinely for hand instruments because the metal remains bright and shows no sign of corrosion. They have a pleasant odor and a short time cycle. Disadvantages of QAC include, their inactivation by soap, reduced effectiveness in the presence of organic matter, incompatibility with many chemicals found in dental offices, and limited effectiveness against gram-negative organisms, spores, and viruses.

Phenol

Phenol is not itself used as a disinfectant, but many disinfectants have been derived from it. At high concentrations, phenol is a rapid protoplasmic poison that penetrates the cell wall and precipitates the cell protein. The effectiveness of phenolic compounds depends on contact with the bacterial cell. These compounds are effective against vegetative bacteria, lipophilic viruses, and tuberculosis, but not against bacterial spores or hydrophilic viruses.

Alcohol

Alcohol is a moderate disinfectant that behaves similarly to a QAC. Absolute alcohol is less effective than a 70 percent aqueous solution. Isopropyl alcohol is more effective than ethyl alcohol, but neither is effective against spores. Alcohol is generally bacteriocidal against vegetative forms. However, the American Dental Association (ADA) does not recommend alcohols, QACs, or phenolic compounds for use in dentistry, because they are nonsporicidal and ineffective against hepatitis B virus.

Chlorine

Chlorine in aqueous solutions, even in minute amounts, is rapidly bacteriocidal. The exact mechanism of this activity is not known, but theories range from cell wall damage and enzyme system blockage to protoplasmic poisoning. Chlorine disinfectant should be prepared with distilled water and used on objects that have been cleaned of all gross soil, tissue, and contaminants. Chlorine is effective against a wide spectrum of bacteria, entero-viruses, and spores, but chlorine solutions are unstable and must be made daily. Chlorine can corrode metals and soften plastics; it has a persistent odor and is irritating to eyes and skin. These disadvantages usually rule out routine use of chlorine solutions.

Iodine

Iodine is a faster disinfectant than a QAC or chlorine. The free iodine forms salts with the bacterial protein, thus killing the cell. Iodine is effective against vegetative bacteria, spores, fungi, and certain viruses. Iodophors make effective surface disinfectants and are easily prepared by mixing iodine concentrate with softened or distilled water (hard water and some concentrations of alcohol will inactivate the iodine). Other sources of disinfection include, but are not limited to, ultraviolet light, mercuric salts, hot oil, flaming, phenolic compounds, boiling water, and, more recently, microwaves.

► Effects of sterilization & disinfection on orthodontic materials

Orthodontic wires

Smith and Von Fraunhofer studied the effect of clinical use and various sterilization/disinfection protocols on three types of nickel-titanium, and one type of β-titanium and stainless steel arch wire. The sterilization/disinfection procedures included,

- Disinfection • with an iodophor for 10 minutes
- Steam autoclave sterilization • sterilization temperature of 274° F (134.4° C) for 10 minutes.
- Cold sterilization • freshly prepared sporocidin solution for 6.75 hours as per the manufacturer's recommendations.
- Dry heat sterilization • sterilization temperature of 375° F (191° C) was maintained for 10 minutes.

The results indicated that load/deflection and tensile tests showed no clinically significant difference between as-received and used-then-disinfected/sterilized wires and they concluded that nickel-titanium arch wires could be recycled at least once. Sunil Kapila, Haugen and Watanabe determined the effects of in vivo recycling interposed by dry heat sterilization (together referred to as clinical recycling, CR) on the load-deflection characteristics of nickel-titanium alloy wires (Nitinol and NiTi). The results indicated that both dry heat sterilization (DHS) alone, as well as clinical recycling (CR), produced significant changes in the loading and unloading characteristics of Nitinol and NiTi wires. However, the changes in the load-deflection characteristics of these wires after DHS only were relatively small, and the clinical significance of these changes is open to question.

In contrast, the force levels during loading and unloading were substantially increased for both types of wires after CR.

They concluded that, clinical recycling appears to reduce the "pseudoplasticity" and "pseudoelasticity" of NiTi wires and increases the stiffness of both NiTi and Nitinol wires.

Mayhew and Kusy studied the effects of sterilization on the mechanical properties and the surface topography of 0.017 ×0.025-inch Nitinol and Titanal arch wires. Three approved heat sterilization methods were used namely,

- Dry heat • applied at 180° C (355° F) for 60 minutes
- Formaldehyde alcohol vapor • formaldehyde-alcohol vapor pressure of 20 to 25 psi for 30 minutes at 132° C (270° F)
- Steam autoclave • at 121° C (250° F) and 15 to 20 psi pressure for 20 minutes.

They concluded that neither the heat sterilization nor multiple cycling procedures had a deleterious effect on the elastic moduli, surface topography, or tensile properties of Nitinol or Titanal arch wires.

The bending moduli and the tensile strengths were approximately 10% greater for Nitinol than for Titanal.

Orthodontic pliers

Vendrell and Hayden compared the wear of orthodontic ligature-cutting pliers after multiple cycles of cutting stainless steel ligature wire and sterilizing with dry heat or steam autoclave. Fifty ligature-cutting pliers with stainless steel inserts were randomly divided into 2 equal groups to be sterilized in either dry heat or steam autoclave. Each plier was subjected to a series of ligature wire cuts followed by the assigned sterilization method. The amount of wear at the tip of each plier in both groups was measured with a stereomicroscope system and digital photomicrography. Orthodontic ligature-cutting pliers with stainless steel inserts showed no significant difference in mean wear whether sterilized with steam autoclave or dry heat. Steam autoclave sterilization can be used with no significant deleterious effects on pliers with stainless steel inserts.

Disinfection of orthodontic brackets

Chlorhexidine is an appropriate disinfectant to be used on metal or ceramic brackets. In a study that evaluated the effect of 0.01% chlorhexidine solution on metal and ceramic brackets, it was found that chlorhexidine does not have a significant effect on the metal brackets' adhesion ability. On the other hand, the attachment ability of ceramic brackets is significantly affected from this disinfecting solution, but the clinical effect does not reach levels below 6-8 Mpa.

Decontamination of orthodontic bands

Stainless steel bands of various sizes are frequently used on molars during fixed orthodontic treatment. Choosing the appropriate size requires often several trials. If trying of the bands is attempted inside the patient's mouth and determined that the size is not appropriate, the band should be decontaminated from saliva and blood, and autoclaved for future use. There is currently little information about the contamination level and the disinfection procedure's success of the bands that are to be reused. Fulford et al, (2003) suggested that bacterial multiplication is not observed on the bands that are exposed to enzymatic disinfectant prior to autoclave sterilization

Sterilization of orthodontic wires

Studies on the effect of sterilization on orthodontic wires have been going on since the 1980's. The results are in contradiction with one another. Some of the studies report mechanical alterations whereas the others defend the opposite. Observed the sterilization of 6 different arch wires by autoclaving them for 18 minutes in 134°C via surface analysis techniques. No significant change was observed on the alloys surface characteristics that would effect their utilization.

Disinfection of elastomeric ligatures

Polyurethane elastomers are frequently used in orthodontics as ligature and chain. The unused parts of elastomeric ligatures are generally sterilized via cold sterilization since they are not heat-resistant. Various studies showed that repeated disinfection of the same elastic can accelerate the destruction of the cross links available in the long chain molecules of polyurethane polyesters. Sterilization of elastomeric ligatures inside the autoclave at 121^0C does not lead to permanent deformations or to increased shrinkage whereas in the case of dry-heat, their manipulation becomes more difficult. Based on two different disinfectants, tensile strength and glass transformation temperature of elastomeric ligatures that are not disinfected are found significantly different than those that are exposed to phenol and glutaraldehyde.

► Conclusion

Dentists face with many kinds and a mouth of micro-organisms because of the profession that require intimate contact with their patients. These microorganisms may lead either a simple illness such as influenza or a serious one such as hepatitis infection or AIDS. For this reason, keeping in mind that every patient is potentially infectious, all the measures must be taken during dental practice. Sterilization and disinfection methods should be implemented meticulously

and their effectiveness carries crucial importance for the physician and the patient's health. Although orthodontists usually do not work on tissues and treat infectious diseases patients may still carry germs that infect other people. Thus today, the use of proper sterilization techniques is important because of professional, ethical and legal aspects. Although it is not possible to obtain a complete sterilization in orthodontic clinics, it may be approachable by using new techniques. In the orthodontic practice, providing full range sterilization requires serious effort. The presence of transmissible diseases like HIV/AIDS and Hepatitis B & C make it an absolute necessity to protect clinic staff and patients from cross contamination, by using effective disinfection and sterilization techniques. Sterilization of instruments used in orthodontics brings some special problems together, because of the hinge regions and cutting edges that are difficult to clean and sterilize. In addition, there is a need to avoid damage during cleaning operations, because the repair or renewal of the equipments are expensive. Orthodontic clinics running with a limited number of instruments and appliances, prefers fast methods for sterilization for effective working. To ensure this, in addition to planning the sterilization area in orthodontic clinics, new sterilization-disinfection techniques and solutions must be learned. As a result in the orthodontic practice, providing full range sterilization requires serious effort. The presence of transmissible diseases like HIV/AIDS and Hepatitis B & C make it an absolute necessity to protect clinic staff and patients from cross contamination, by using effective disinfection and sterilization techniques.

Reference

1. Rapisarda E, Bionaccorso A, effect of sterilisation on the cutting efficiency of rotary nickel titanium, endodontic files. Oral surgery, oral medicine, oral pathology, oral radiology and edodontology 1999;88(3):343-7
2. Staggers J, margeson D. The effects of sterilisation on the tensile strength of orthodontic wires. The angle orthodontist 1993:63(2):141
3. Kapila S. Haugen JW, load deflection characteristics of nickel titanium alloy wires after clinical recycling and dry heat sterilisation, AMJOD 1992:102(2):120-6
4. Ascencio F, langkamp HH, Agarwal S, Petrone JA, Piesco NP. Orthodontic marking pencil; a potential source of cross contamination. Journal Of Clinical Orthodontics: jco 1998:32(5):307-10
5. Crash RG. Trends in sterlisationand disinfection procedure in orthodontic office. American journal of orthodontics and Dentofacial orthopaedics 1990:98(4):292-9
6. Matlack R instrument sterilisation in orthodontic office the angle orthodontist 1979:49(3):205
7. Miller j, Harrower K, Costello M. A Novel Method of sterilizing orthodontic instruments. Australian orthodontic journal 1992:12(3):151-2.

Bilateral odontogenic keratocyst of the mandible without syndromic relation

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Abstract

Odontogenic keratocyst [OKC] is a lesion of aggressive behavior, accompanied with high recurrence rate. Multiple OKC is associated with basal cell nevus – bifid rib syndrome [Gorlin syndrome]. We illustrate a case report of bilateral OKC not associated with syndromic features.

Keywords: Keratocyst. Mandible. Odontogenic. Recurrence

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► Introduction

The term odontogenic keratocyst was first described in 1876, named by Phillipsen in 1956. Pindborg and Hansen suggested the histological criteria for describing the essential features. New classification [2005, due to tumour markers] of WHO consider OKC as Odontogenic tumour[KCOT].

Defined as "a benign uni- or multicystic, intraosseous tumour of odontogenic origin, with a characteristic lining of ortho/ parakeratinized stratified squamous epithelium and potential for aggressive, infiltrative behavior.

Predilection for mandibular molar ramus region, with incidence more in third decade[1]. Thought to originate from dental lamina. Diagnosis by histopathological examination Immunohistochemistric studies show high proliferation index. Associated syndrome is Nevoid basal cell carcinoma syndrome [NBCCS/GORLIN – GOLTZ] Two variants –orthokeratinised and parakeratinised. Parakeratinized variant has high recurrence rate. Because of these features a more aggressive treatment than simple enucleation is advised. Recommended treatment include Curettage with peripheral ostectomy, Curettage plus liquid nitrogen therapy, Curettage plus application of Carnoy's solution, localized enbloc resection and occasionally mandibular segmental resection.[2]

► Case report

A 26 year old female patient reported to the Department of Oral and Maxillofacial Surgery, Government Dental College, Kottayam. She gave a history of surgical removal of 38, from a private clinic and out of suspicion of the tissues from the extraction socket, the associated soft tissue was sent for histopathological examination by the surgeon who performed the extraction. The report was suggestive of OKC.

Extra oral examination with no obvious facial asymmetry, no swelling or lymphadenopathy. Intraorally 38 was extracted, socket shows signs of healing with no expansion of buccal and lingual cortical plates and no mobility of tooth was detected. Patient was advised for an OPG (fig 1) since the histological report was OKC and it revealed a bilateral radiolucent lesion in the mandible. Right side 2cm x 1.5 cm size radiolucent lesion with sclerotic border in relation to the root apices of 46. Mild apical root resorption of 46 and distal displacement of roots of 47. Inferior alveolar canal displaced to the lower border. Left side 3x2 cm size radiolucent lesion with sclerotic borders in relation to the root of 37 extending anteriorly to the distal root of 36 and posteriorly to the third molar region and the region of ascending ramus, displacing the neural structures. A CBCT was taken to delineate the borders (fig 2). PA Chest radiograph was advised and sent for a medical checkup and it ruled out bifid rib and no other skeletal abnormality was detected. (fig 3)

► Surgical procedure

Procedure planned to be carried out under local anesthesia. On the right side a crevicular incision placed extending from second molar to last premolar region with a releasing limb to get adequate exposure. The first molar on that side was extracted and the lesion was accessed through the socket and through the window created by the removal of adjacent bone. The lining was removed and the bony wall was trimmed off, protecting the nerve by application of lignocaine gel, the chemical cauterization

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was achieved by the usage of Carnoy's solution. Similar procedure repeated in the opposite side. Wound closed with 3-0 vicryl. Post operative period was uneventful with normal healing of wounds.

► Histopathological examination:

Showed 6-8 cell layer thick parakeratinized stratified squamous epithelium with superficial corrugated surface and palisaded layer of basal columnar cells. The cystic wall was made of thin layer of fibrous connective tissue. On the basis of histopathologic examination the lesion was diagnosed as KCOT (parakeratinized variant). Patient is on regular follow up to rule out any recurrence.

► Discussion

OKC accounts for 10-12 % of all jaw cysts. The OKCs originate from the epithelial remnants of tooth germ or the basal cell layer of the overlying surface epithelium. Usually occurs as a single lesion but multiple lesions may be present but often associated with nevoid basal cell syndrome (Gorlin –Goltz syndrome). Rarely presents as bilateral lesions without features of any syndrome. The peak incidence in both sexes occurs in third decade, frequency of occurrence is higher in male than female. The mandible is the most favored site than maxilla. 70 % of cases reporting in the posterior body region and 6.9% cases at the symphyseal region of the mandible.

OKC most often penetrate the bone rather than expand it and grow in an anterior to posterior direction. Despite this aggressive growth, they often remain asymptomatic and accidently detected by radiographs. In other cases pain, swelling, expansion, drainage and bone perforation are reported. They attain size larger than any other odontogenic cysts.

Histologically OKC constituted by a fibrous wall lined by epithelium with a thin layer of stratified squamous epithelium. This epithelium is constituted by a basal cell layer of 6-8 cell thick and a lining of flattened keratotic epithelial cells. The keratin lines the luminal surface of the epithelial cells in a slightly wavy of corrugated pattern. The luminal content exhibit different consistencies as a straw –colored fluid, thick pus like material or a cheesy, milk white mass. They may be classified into parakeratotic and orthokeratotic subtypes based on the histological characteristics of the lining and the type of keratin produced[5]. Orthokeratotic subtype produce keratin closely resembling normal keratin, while the parakeratotic sub type has a more disordered production of keratin. The parakeratotic type is more frequent and exhibits a more aggressive clinical presentation than the orthokeratinized counterpart.

Immunohistochemical studies have picturised a higher level of interleukin -1 alpha, which is basically an inflammatory multifunction cytokine, in OKC. This interleukin induces the secretion of keratocyte growth factors from interactive fibroblast and consider to be the reason for the expansion of OKCs. Presence of the anti –apoptotic protein Bcl -2 in the basal cells of OKC consistently, helps in the differentiation of the cystic lining of OKC from normal epithelium.[8]

Characteristic radiographic features of OKCs include corticated, often scalloped border, expansion toward the lingual side and growth along the length of the mandibular

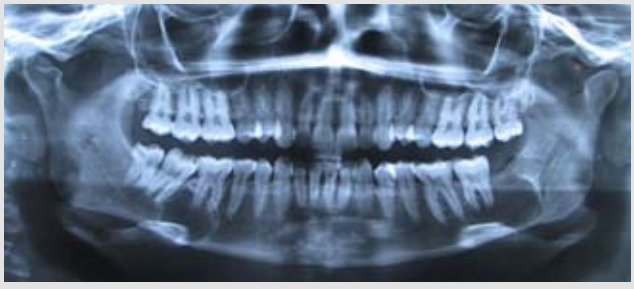
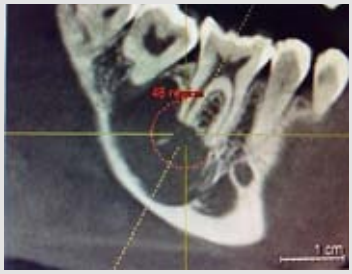
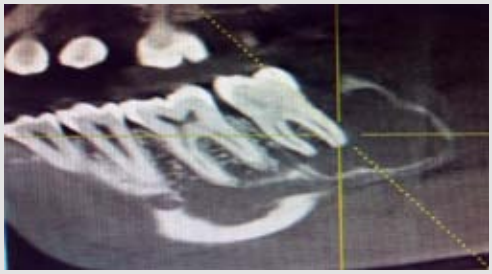


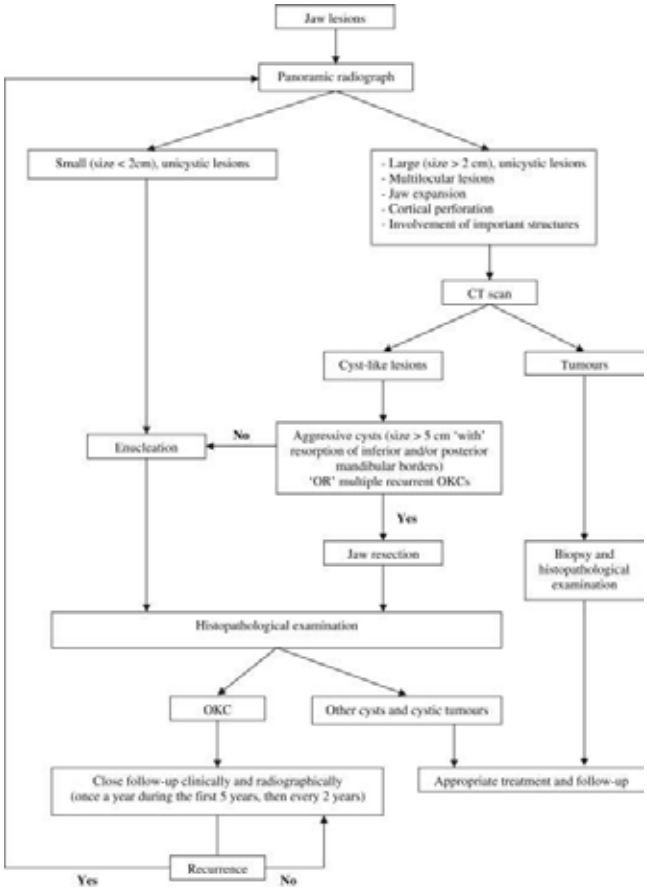
Fig 1 Pre op OPG.

Fig 2 Cone beam CT scan

Fig 3 Chest PA view







Algoritham by Pitak and Poramate for OKC and cystic lesion management [9]:

bone, displacement of developing teeth, resorption of roots, extrusion of erupted teeth, a radiolucent lumen, and occasionally a cloudy and milky appearance of lumen on the panoramic radiograph. CT provides additional information about the contents of the lesion[3]. The high attenuation is thought to be the result of a high protein concentration in the dense keratin filling the lumen. On MR images, an OKC typically has low to intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images[4]. Fluid containing a low concentration of protein results in intermediate signal intensity on T1-weighted images[5].

Transformation of OKC into squamous cell carcinoma and ameloblastoma has been reported in literature. Ameloblastomatous transformation of OKC is very rare but has been reported by Holmlund et al[6].

Blanas et al. illustrate the terms used in the management of the lesion:

Curettage is the method where the wall of the cyst cavity is surgically scraped with the removal of its contents.

Enucleation is the removal of a lesion intact.

As the lining of the cyst may be friable and thin, removal of the cyst in one piece is difficult. To combat this feature, a number of studies suggest that the general treatment of the primary KCOT should include enucleation of the cyst, followed by mechanical curettage using methylene blue as a marking agent, followed by a 3-minute application of Carnoy's solution (a tissue fixative)[7]. This treatment option has the advantage of preservation of the adjacent bone, soft tissue, and dental structures. This results in reduced morbidity and cost of treatment.

Radical enucleation involves removal of the entire cyst lining together with any associated overlying mucosa, followed by extensive cavity curettage with reduction of the surrounding bone to remove residual cystic epithelium. This treatment option is very similar to conventional enucleation without the use of adjunctive measures.

Marsupialization (also known as decompression) is the process of exteriorizing the internal cyst contents by resecting the superficial wall and suturing the cut edges of the remaining wall to adjacent mucosa. Marsupialization is proposed as a nondestructive and a more physiologically acceptable treatment method, as Carnoy's solution is not used and there is minimal surgical morbidity.

Resection refers to either segmental resection or marginal resection—mainly undertaken in the mandible. The difference between the two techniques is that segmental resection removes a whole section of bone with loss of continuity of the bone, whereas marginal resection maintains the continuity of the inferior or posterior borders of the mandible.

► Conclusion

OKCs are frequent benign tumors of jaw but bilateral occurrence is rare and moreover the incidence of the bilateral lesion without syndromic features found to be more rarer as described in this patient.

► References

1 Brown. R M. The odontogenic keratocyst, clinical aspects. Br dent journal 1970:128 (5)225-231.

2 Irwin GH, Bowerman JE, Mandibualr keatocysts; surgical management, Br j Oral Maxillofacial surg 1985: 23 (3): 204-209

3 Piatelli A, Fioroni M, Differentiation of odontogenic keratocysts fom other odontogenic cysts. Oral Oncology 1998: 34(5) 404-407

4 Youshira K, Higuchi Y, Increased attenuation in odontogenic keratocyst with computed tomography, a new finding: Dent maxillofacial radiol 23 (3) 1994.

5 Minami M, Kaneda T, Ozawa M, Cystic lesions of maxillomandibular region, MR imaging, AJR Am J Roentgenol 1996: 166 (4)

6 Holmund A, Anneroth G, Ameloblastomas orgination from odontogenic cysts. J Maxilofac surg 1991: 20(1):318-321

7 Voorsmit R A, Stoelinga P J, The management of keratocysts. J Maxilofac surg 1981: 9(4) 228-236

8 August M, Faquin WC, Kaban LB, Differentiation of odontogenic keratocysts from non keratinizing cystsby use of FNAC and cytokeratin 10. J Oral Maxillofacial surg 2000:58(9)935-940

9 Pitak-Arnnop, Poramate, Journal of Cranio-Maxillo-Facial Surgery. 2010. Volume 38, Issue 5. Pages 358-364.

A Comparative evaluation of casting accuracy by two different methods of die spacer application

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Abstract

Different techniques have been in use to improve the seating of castings and to eliminate the resistance of cementing materials that prevent cast restorations from being seated completely. Die spacer application is a simple, time saving technique that helps in achieving good crown adaptation. This study evaluates whether the die spacer should cover the axial margin completely or not.

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► Introduction

Marginal adaptation is a paramount factor in the success and longevity of a cast restoration. Tooth preparation; materials used and cement film thickness are the three main determinants of marginal adaptation[1].

Complications caused by incomplete seating of crown are creation of premature contacts; alteration of contact areas of adjacent teeth; 19-32% reduction in crown retention[2]. Different techniques have been in use to improve the seating of castings and to eliminate the resistance of cementing materials that prevent cast restorations from being seated completely. Internal relief of crowns has been found to be very effective in producing good crown adaptation. Campagni have classified methods for achieving internal relief as - carving of wax patterns; mechanical grinding; etching; electrochemical milling and die spacing[3]. The most commonly and effectively used method for internal relief is by using paint-on die spacers[4, 5]. The main advantage of this method is that it is simple, time saving and inexpensive. The standard procedure of die spacer application is that the axial walls of the die are coated 1 mm short of finish line as there should be a close adaptation of casting to the tooth to reduce dissolution of cementing medium at the margins. However, some are of the opinion that application of die spacer up to the margin of dies was found to decrease the elevation of the casting above the margin of the tooth preparation[6].

Even though it has been proved beyond doubt as far as the requirement of a die spacer is concerned, but question remains whether die spacer should cover the die completely or not, in order to get the least marginal discrepancy. Hence, this study was planned to compare the accuracy of the castings by using two methods of die spacer application- 1) axial coverage of the die spacer 1 mm short of finish line; 2) complete axial die spacer coverage.

► Materials And Methods

The evaluation of casting accuracy by using two different methods of die spacer application was assessed in this study.

A stainless steel in cylindrical form was machined to have a convergence angle of 10^0. A height of 12mm and a diameter of 10mm was given to the die. A finish line with a angle of 30^0 and 1mm width was produced. A axial groove was given for orientation of casting during seating.

Impressions of the master die were made using poly(vinyl siloxane) impression material and impressions were poured in die stone according to manufacturer's instructions. A total of 10 such dies were poured and were divided into group I and group II consisting of 5 dies in each group. The 5 dies in each group were numbered as A,B,C,D and E. The dies were coated with Tru-fit die spacer (Geo Taub products & fusion Co) available as gold and silver colored suspensions. Four layers of die spacer was applied in alternative layers of silver and gold since the recommended thickness of die spacer ranges from 20-40 µm. In group I, all 5 dies were coated 1mm short of finish line. A ring of 1mm was used to facilitate the same. In group II, all 5 dies were coated with die spacer upto finish line.

Wax patterns were prepared by dipping technique with type II inlay casting wax. A silicone putty mould was used to ensure uniformity of wax patterns. The margins of were finished

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under magnification and sealed. All 10 patterns were immediately sprued, invested and casted.

The castings were recovered and microblasted; and sprues were cut and fit of castings were verified on stone dies. The marginal fit was checked under magnification. Sharpness of margin can be considered to be the most dependent character of a dental casting. Deficiency in reproduction of a sharp margin of 30^0 on the test crowns in two groups was used as castability standard. The margins of test castings were examined by an indirect method using an impression. The casting was positioned centrally in a ring filled with elastomeric impression material. After setting, casting was removed and impression was placed into a matching tubular jig and was precisely cut into two segments using a blade. Impressions of all ten castings were precisely cut and labelled.

The quality of the edge of the castings was expressed in terms of deficiency (d) between the edge of the casting obtained and the theoretical sharp edge. The discrepancy of margin on each segment was examined by using a profile projector (Nikon). Using the profile, radius of the margin was measured for each specimen. The readings were tabulated. The deficiency (d) was calculated using formulae: deficiency (d) = 2.70 × R (radius).

Table I Measurement of Radius on Margin of Test Castings

Spacer Application	N	Radius(Mm)		
		Range	Mean	S.D.
Full Length	20	0.01-0.15	0.0140	0.0031
1.0 mm Short	20	0.0075-0.0135	0.0106	0.0016

Table II Experimental Values of Deficiencies of Castings

Spacer Application	Range (Mm)	Mean (Mm)	Co-Efficient of Variation (%)	Upper 95% Confidence Level
Full Length	27-41	36.25	13.1	45.8
1.0mm Short	20-36	28.60	15.6	37.8

From each casting four measurements were obtained, and so there were twenty measurements from group I and II and the minimum, average, standard deviation and upper 95% confidence value were calculated for each casting. These statistical analysis obtained from each test casting was used to compare the casting accuracy of castings obtained by two different method of die spacer applications.

Results

The quality of margins of castings obtained by complete and incomplete axial die spacer application was expressed in terms of deficiency. Experimental values of deficiencies like average, coefficient of variation and 95% confidence level were found in both groups for comparison between the two different methods of die spacer application. Students 't' test was used to find the significance of difference between the two methods of die spacer applications.

Level of radius ranged between 0.01 to 0.015 mm in full length die spacer application with a mean of 0.014 mm. In die spacer application 1.0 mm short of finish line the range of radius was between 0.0075 mm to 0. 0135 mm with a mean of 0.0106 mm. Lower levels of radius measurement were obtained with 1.0 mm short die spacer application.

Table I shows the level of radius on the margin of test castings by two different methods of die spacer application. Table II shows the range, mean, coefficient of variation and upper 95% confidence level [experimental values of deficiencies of castings] for two different methods of die spacer application. Table III shows the comparative statistics between the two different methods of die spacer applications.

The above observations show that die spacer application which is 1.0 mm short gave more accurate test castings with less deficiency value, compared to full length die spacer application. The mean deficiency in die spacer application 1.0 mm short of finish line was 28.6µm compared to 36.25 µm for full length die spacer application. The mean difference between the two groups was 7.65µm (21.1%). The difference between the two groups was found to be statistically highly significant ($p< 0.001$).The above statistical analysis shows that die spacer application 1.0 mm short of finish line results in more accurate castings with less marginal deficiency when compared to complete axial die spacer coverage.

Discussion

Marginal adaptation between a tooth and a fixed prosthesis is of vital importance to increase the longevity of the restoration by reduction of the exposure of the cement at the margins and thereby preventing caries. The more accurate the casting fits the prepared tooth, the more difficult it is for

Table III Comparison of Deficiencies of Castings

Spacer Application	N	Deficiency(Mm)			't'value	Significance
		Mean	S.D.	S.E		
Full Length	20	36.25	4.77	1.07	5.24	P <.001 H.S.
1.0 mm Short	20	28.60	4.46	1.00		

the cement that gets trapped between the crown and the tooth to escape leading to incomplete seating and crown elevation.

Since no casting fits completely onto the prepared tooth precisely, the best solution is to provide internal relief.

The most popular method among the various methods of internal relief is the use of paint on die spacer because of its convenience and cost effectiveness. The standard procedure of die spacer application is that the walls of the preparation are coated 0.5 to 1.0 mm short of finish line. However, there is a opinion that leaving the cervical part of the axial walls near the margin uncovered with spacer negates the effect of spacer on the remaining portion almost completely. Thus this study was conducted to compare the accuracy of castings obtained by incomplete and complete axial die spacer coverage.

Rafel Grajower had stated that plastic deformation of the wax pattern may result, from its removal over an undercut created by a short spacer leading to a widening of the walls of the cervical part of the wax pattern to a greater extent than the thick occlusal part[6]. However no manifestation of this phenomena was found in this study. Increased casting accuracy with die spacer application 1.0 mm short of finish line could be due to the reason that unpainted area will ensure an area of close adaptation at the margin[7,8,9]. This area plays a significant role in better seating leading to improved marginal adaptation and thereby reducing the film thickness of the luting agent at the margins and thus reducing its dissolution.

► Conclusion

From this study, it can be concluded that the application of die spacer 1.0 mm short of finish line on the die is beneficial to reduce the discrepancy in marginal fit and also to reduce the exposure of the cement at the margins compared to complete axial die spacer coverage.

► References

1) Ivy S Schwartz , 'A review of methods and techniques to improve the fit of cast restorations '. J Prosthet Dent1986;56: 27 -32.
2) Pilo R, Cardash H S, Baharav H and Helft M, 'Incomplete seating of cemented crowns: A literature review '.J Prosthet Dent 1988;59:429-432.
3) Campagni w v, Preston J D, and Reisbick M H; 'Measurement of paint on die spacers used for casting relief '.J Prosthet Dent 1982; 47:606-609.
4) Olivera A B etal; 'The effect of die spacer on retention and fitting of complete cast crowns'; J Prosthodont 2006; july-aug.
5) John E Rhoads, Kenneth D Rudd, Robert M Morrow; 'Dental laboratory procedures- fixed partial dentures'. Second edition, C.V. Mosby Co.
6) Rafel Grajower, Yuval Zuberi and Israel Lewinstein; 'Improving the fit of crowns with die spacers ';J Prosthet Dent 1989;61:555-559.
7) Stephen F Rosenstiel,Martin F Land and Junhei Fujimoto, 'Contemporary fixed prosthodontics';Mosby co.
8) Keith E Thayer, 'Fixed prosthodontics'; year book medical publishers Inc.
9) Passon c, Lambert R H, Lambert R L and Newman S ' The effect of multiple layers of die spacer on crown retention'; J Operative Dent 1992; 17:42-45.

* Jayanthi, ** Varun B.R.

1. A 45 year old female patient presented with multiple areas of white patches and plaques on the tongue, palate and buccal mucosa. The white patches were non scrapable, having a papillary surface and was not associated with tobacco habit. Recurrence was noted on the tongue lesion 6 months after the excisional biopsy. The most probable diagnosis is

a. Proliferative verrucous leukoplakia,
b. Speckled leukoplakia
c. Candidal leukoplakia
d. Nodular leukoplakia

2. A 40 year old female patient complained of burning sensation of the mouth for the past 2 months. On examination, the entire maxillary gingiva was appearing erythematous both on the buccal and palatal sides. Incisional biopsy revealed basal cell degeneration and subepithelial dense band of lymphocytes. The appropriate clinical diagnosis is

a. Plasma cell gingivitis,
b. Desquamative gingivitis
c. Necrotizing ulcerative gingivitis,
d. Scorbutic gingivitis

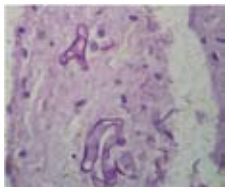
3. A 38 year old male patient complained of an ulcer on the tongue since 2 months. History revealed that he had the habit of smoking 10 cigarettes per day for the past 15 years. On examination, an ulcero proliferative growth was noticed on the right side lateral border of the tongue. Biopsy showed islands of malignant epithelial cells invading into the connective tissue. The diagnosis is

a. Verrucous carcinoma,
b. Squamous cell carcinoma
c. Verrucous hyperplasia,
d. Verrucous leukoplakia

4. An 18 year old female patient reported with history of recurrent oral ulcers. Clinical examination revealed multiple small ulcers on the buccal mucosa, lips and tongue suggestive of recurrent minor apthae. Multiple apthous like ulcerations are seen in which of the following syndromes?

a. Behcet's syndrome,
b. Reiter's syndrome
c. SWEET syndrome,
d. All of the above

5. A 50 year old male patient had necrosis of the maxilla following extraction of upper molar. His glycosylated hemoglobin was 12% and post prandial blood glucose was 300 gm/dl. Biopsy and histopathological examination showed presence of non septate fungal hyphae suggestive of

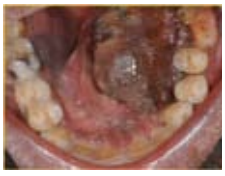


a. Candidiasis,
b. Mucormycosis
c. Aspergillosis,
d. Blastomycosis

6. A 30 year old male patient reported with difficulty in mouth opening for the past 4 months. History revealed that he had the habit of chewing panparag for the past 10 years. On oral examination, blanching of both sides buccal mucosa was noted with reduced mouth opening. On palpation, vertical fibrotic bands were identified. The probable diagnosis is

a. Tetanus, b. Myofibromatosis
c. Oral submucous fibrosis, d. Systemic sclerosis

7. A 45 year old male patient reported with a growth on the palate since 2 months. On examination, a reddish brown growth was seen on the hard palate extending into the palatal gingiva of maxillary molars. Hematological investigation revealed that the patient was HIV positive. Biopsy showed presence of malignant spindle cells of vascular origin. The most common malignant neoplasm in HIV patients is



a. Hemangioma, b. Lymphangioma
c. Kaposi sarcoma, d. Hodgkin's lymphoma

8. A 17 year old presented with a firm swelling in relation of left maxillary canine. Radiograph showed unilocular radiolucency between 23 and 24. Biopsy revealed presence of columnar and spindle shaped cells arranged in duct like pattern and in rosettes. The probable diagnosis is

a. Adenomatoid odontogenic tumor, b. Unicystic ameloblastoma
c. Solid ameloblastoma, d. Ameloblastic fibroma

9. A 60 year old female patient presented with an ulcerated growth on the right lateral border of the tongue. She had generalized attrition of teeth with multiple sharp cusps. Biopsy revealed presence of an ulcerated epithelium with dense inflammatory infiltrate in the connective tissue along with numerous eosinophils. Following biopsy, there was spontaneous resolution of the lesion. Which of the following is the most appropriate diagnosis?

a. Squamous cell carcinoma,
b. Keratoacanthoma
c. Traumatic ulcer,
d. Traumatic ulcerative granuloma with stromal eosinophilia (TUGSE)

10. A 50 year old female patient complained of blister formation in the mouth. On examination, areas of erosion and ulcers were noticed on the gingiva and palate. Application of lateral pressure on normal appearing mucosa resulted in formation of new bulla. Biopsy showed presence of intra epithelial split and acantholytic epithelial cells suggestive of

a. Pemphigus, b. Bullous pemphigoid
c. Cicatricial pemphigoid, d. Epidermolysis bullosa

Answers: 1. a, 2. b, 3. b, 4. d, 5. b, 6. c, 7. c, 8. a, 9. d, 10. a

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E-mail: drjayanthip@gmail.com

REGISTRATION CATEGORY		Up to January 10th, 2016	Up to December 1st 2016	From December 2nd 2016
Reception Committee member*	IDA Member	Rs. 3500	Rs. 4000	Rs. 4500
	Non Member	Rs. 5500	Rs. 6000	Rs. 6500
Delegate**	IDA Member	Rs. 800	Rs. 1000	Rs. 1300
	Non Member	Rs. 2000	Rs. 2300	Rs. 2500
UG Student/ Intern **	IDA Member	Rs. 300	Rs. 400	Rs.500
	Non Member	Rs. 500	Rs. 600	Rs. 700
Accompanying Person***	Non Dentist	Rs. 2500	Rs. 3000	Rs. 3500
Children	6yrs-10yrs	Rs. 1000	Rs. 1500	Rs. 2000
	above 10 yrs	Rs. 2500	Rs. 3000	Rs. 3000

Includes:* Registration kit, Inaugural dinner, Gala banquet dinner, Two Lunches, Gift, Entry to Scientific sessions & Trade Exhibition.
** Registration kit, Entry to Scientific sessions & Trade Exhibition.
*** Similar to RC. But No certificate of participation.

IDA Hope Report

Dr. Joseph C.C.
Hon. Secretary

Dear friends in the profession,

My sincere gratitude for your confidence & support you bestowed on me last year for the smooth running of the office of IDA HOPE. It is my pleasure working with the profession in different magnitudes. I will list out some salient features of our scheme.

Scheme

IDA HOPE is a members welfare of IDA Kerala state and registered as IDA KSB Society in 2013 Reg No.TVM/TC/651/2013

It was formed by merging the PPS & SSS of IDA Kerala state in 2007-08

It has 2444 members..

IDA Hope has made its presence in all the 31 local branches of IDA Kerala State.

Objectives of the Scheme

Indemnity insurance and legal aid to the members.

Financial compensation to the families of the deceased member or Total Permanent disability.

Medico-legal awareness/education.

Encourage promote and popularize ethical treatment amongst Dentists.

Membership

Member from any local branch of IDA Kerala State with a valid DCI registration

Membership is co terminus with the membership of IDA Kerala State.

Admission criteria- New members

Copies of Birth Certificate or passport or SSLC for proof of age and residence.

Copy of professional degree certificate and post graduate certificate if any.

Copy of dental council registration certificate and latest renewal receipt

Two passport size photographs (1. In Application form, 2 For the Certificate)

Application Form (To be endorsed by the branch representative or the secretary for proof of branch membership)

DD for admission fees drawn in favor of IDA Hope Payable at Thamarassery.

Admission Fees for New Members

Up to the age of 30 - Rs.5000

31-40 yrs of age - Rs.7500

41-50 Years of Age - Rs.10000

New memberships stops at the age of 50

Annual Renewal fee

Annual renewal amount - Rs.1200

Additional Rs.500 / claim in a year

The management committee shall be the final authority to accept/deny all the applications.

Membership Contributions - Fraternity contribution

Payment of fraternity contribution @ of Rs. 500/- is mandatory along with the next year's renewal in the event of death of any member.

Membership Renewal

The membership renewal period is between 1st –April to 31 May every year at local branch level.

Table with the list of members and their renewal amount, status etc will be sent to the representatives by the end of March.

You may contact your representative to know your amount

The membership will be terminated if not renewed before the end of the year.

Receipts will be issued by local branch Representative. 1st page counter foil is for the member and 2nd page counter foil along with payment should reach the state office before April 15th.

The receipt book with the 3rd counter foil to be returned before the end of the financial year for auditing

HOPE MEDI

"The purpose of human life is to serve and to show compassion and the will to help others."

HOPE is moving one step ahead with our new health insurance scheme HOPE MEDI. Conflating our members and the insurance corporation, we successfully implemented this new health insurance plan. We are glad to inform that, 1018 members joined the scheme. This includes spouse, kids and parents. Total of 4500 family members are the covered under HOPE MEDI umbrella. Our TAILOR MADE GROUP POLICY NO.: 1009042815P108336608, PERIOD OF INSURANCE FROM 01/10/2015 To Midnight on 30/09/2016

We have paid Rs. 93,66,316/- (Rupees Ninety Three Lakhs Sixty six Thousand and Three Hundred and Sixteen only) as premium. Till last month we have had 124 claims and around 79.5 lakhs we conferred as claims.,

IDA hope expresses sincere thanks to The United India Insurance Co, Mr. P.V. Alex and team of Cosmos insurance brokers for their timely efforts for HOPE MEDI.

Our Hope Medi Insurance which is a tailor made policy covering IDA HOPE members and their immediate family members, This unique policy covers pre existing diseases and also offers insurance sharing, at a very nominal premium. This policy can be claimed from any accredited hospital all over India. An additional feature of this policy is it gives cashless or reimbursement

SOCIAL SECURITY - Current year we had 2 Claims, Two deaths. PPS Legal - 24 cases at present

Membership Rights and Obligations

In the event of death of a member of at least 12 months membership the nominee/legal heirs will be paid an amount 1000000 (10 lakhs)

In case of death due to accidents a benevolent contribution is paid as soon as member ship is realized from the scheme office.

The Professional indemnity coverage of the member will commence one month after the acceptance of membership.

The maximum liability that will be borne by the scheme shall be Rs. 200000/--

Continuous membership is obtained on timely renewal.

The members shall maintain proper records and adopt standard protocols and safe dental practices as recommended by the scheme from time to time.

LEGAL ISSUES

Presently 24 cases pending in the consumer redressal forum.

The cases are as under.

Post Extraction Pain / Dry Socket.
Post Extraction Bleeding
Post Extraction Infection / trismus
Removal of Lower third Molar Causing Fracture of Mandible
Wrong tooth extraction
Post filling pain
Full Denture Not Satisfactory
Orthodontic result Not Satisfactory
Orthodontic Brackets Breakage / Multiple non attending appointments.
Anesthetic complication in Orthognathic surgery / Death of the Patient.
Bridge not satisfactory

Before starting and procedure on a patient, the member is advised to

1. Write the details of clinical findings,
2. Diagnosis,
3. The treatment options advised,
4. Treatment given etc
5. Medical / Dental / Allergy History (even if no history – note that) in the case paper, if not relevant to the present procedure. This will help us to defend in majority of the cases.

In an event of medico legal case

Never panic

Explain to the patient/relatives in polite manner that we have done the procedure for the best interest of them. Complications very rarely occur and are part of the life, which we never wish to happen.

Be firm, but don't agitate them.

False justification will lead to trouble. Now day's patients are well aware of the treatment procedures.

Inform the IDA HOPE representative of your branch & IDA HOPE secretary.

Send the following to the secretary within a week on receipt of the notice.

Your Name, IDA Hope No:
Copy of the notice received
Copy of the case sheet
Detailed version of the case with your explanation.

Do not send any reply of your own or through any advocate with out the permission of the scheme office. All cases were well managed by our team with the help of our advocates especially Adv. Shyam Padman.

HOPE TEAM - THE MANAGEMENT COMMITTEE

Chairman -The President IDA Kerala-
Dr.Muhammed Sameer P T. Malappuram
1 st Vice Chairman - Dr. Samuel K Ninan (Legal Cell) Pathanamthitta
2 nd Vice Chairman - Dr. Bijukumar S D. (SSS) Kollam
Hon. Secretary - Dr. Joseph CC Tamarassery, Mob: 9447252873
Joint Secretary - Dr. Manoj Joseph Michel Calicut, Mob: 9349982041
Treasurer - Dr. B. Madhavankutty Tamarassery, Mob: 9447447080
Internal Auditor - Dr. Nizaro Siyo Tamarassery

Members from IDA Kerala State - President, IPP, Pre Elect, Secretary & Treasurer

One representative each from local branches elected from the IDA HOPE members

President / Secretary of the local branch who are state executive members.

The Office and Address of the Scheme shall be that of the Secretary of the scheme.

You are always welcome to contact me at the address below for any query / details etc.

Dr. JOSEPH CC,
Hon. Secretary – IDA HOPE,
Dental Specialty Clinic, Thamarassery, Calicut (Dt)
KERALA Pin - 673573.
Phone: Mobile 9447252873
0495 2222904 (clinic), 0495 2372971 (Resi)
E mail: secretaryidahope@gmail.com or josephjyothi@yahoo.com

FOR HOPE MEMBERSHIP PROMOTIONS

For north zone ……..Hope office

For Central zone……Dr.Samuel K Ninan
Legal Cell Chairman- 9447440004

For South zone …… Dr.Bijukumar SD
Social Security Chairman -9447077147

For hope membership renewal details will be sent to your hope representatives of branch directly and you can pay the amount directly to him. All these things are possible with dedication, determination of the leaders and the trust of the members. We are sure that our experiences in leading IDA Kerala State in the past and the continuous support of members.

Dr. JOSEPH CC,
Hon. Secretary – IDA HOPE

Nedumbassery Branch

Celebrated Dentist Day on March 6th
Conducted a Dental Health exhibition for the public on the venue.
Website launched on the same day.
Oral Health day March 20th
Oral Health Day Celebrations at Janaseva Sisu bhavan inaugurated by Cine Star ASif Ali.Dr Anish P President Kerala Dental Council was the Chief guest of the day. A free dental clinic was also opened on that day. Insertion of the first Free denture of our `snehasmitham` Denture project was done by Dr Muhammad Sameer, President, Kerala State.

March 20th - Symposium on current challenges in Dentistry in the State. A path finder to a policy driven approach. A productive day well attended by many senior dentists, KDC Officials, IDA Leaders, Academicians and legislative members.

Karunagappally Branch

DENTIST DAY CELEBRATION (ORPHANAGE ADOPTION PROGRAMME)

We celebrated the dentist day 2016 by adopting Anvarsseri Orphanage, Pallisserickal PO, Sasthamkotta.

This is our first Permanent Project of this year.

The function was conducted at the Anvarsseri Orphanage campus on 6th march 2016 at 9.00 AM.

We are planning to conduct various check up camps and will do the necessary treatments for the inmates of the orphanage.

REPORT OF CDE PROGRAM

Conducted our first accredited CDE program

Topic - A PRACTICAL REVIEW OF INTERCEPTIVE AND PREVENTIVE ORTHODONTICS

Date - 3-4-2016
Venue - Grant e Muscat hotel karunagappally.
Faculty - Dr. Gopu Hareendralal. MDS.
Timing - 10 am to 4.30 pm.
Total participants was 45.
Dental Council allotted 6 credit points (Order no -

FAMILY TOUR PROGRAM

Conducted one day family tour program on 10-4-2016 to Tekkady.
Nine families are participated.
Program was filled with fun and enjoyment.

Alappuzha Branch

The installation ceremony of present team of office bearers IDA Alappuzha branch for the year 2016 lead by President Dr Joe Bijoy was conducted at Camelot convention centre Pathirappally, Alappuzha on 13.12.2015

The 48th Kerala State Dental Conference " ALOHA 16" was organized by IDA Alappuzha Branch on 8th, 9th and 10th of January at EMS Stadium Alappuzha.

The first executive committee meeting was conducted at Ramavarma club Alappuzha on 15.01.2016 and the projects and budget for the coming year was presented by Hon Sec Dr Tijo Alex. Planning regarding the CDE & CDH activities for the year was also discussed.

CONTINUING DENTAL EDUCATION PROGRAM

The first CDE of the branch was organized on 28.02.2016 at Hotel Royal Park from 6-8pm and the orator was Dr Mathew P C BDS MDS FCCS Oral & Maxillofacial Surgeon and the attendance was 30 members.

The second executive meeting of IDA Alappuzha branch was conducted on 09.03.2016 at Ramavarma club and the planning for the upcoming treatment camp at St. Lourde Vadakkal was done.

CDH ACTIVITY

The first CDH activity of IDA Alappuzha was a treatment camp at St. Lourde LP School, Vadakkal in association with Rotary Club Alappuzha Coir City and Govt. Dental College Kottayam on 11/ 03/ 2016. Among 155 students 65 of them got treatments including extractions, scaling and fillings.

FAMILY MEET: The first family meet of IDA Alappuzha was organized at Palma Laguna, Mannanchery, Alappuzha on 17.04.2016 and it was conducted along with an EOGM regarding the presentation of ALOHA Accounts.

The eogm started at 12:00pm and was followed by the family meet.



Vatakara Branch

I First Executive Meeting was held on 21/1/2016 at Kallat Dental Clinic, in which 12 executive members participated.

II First General Body Meeting was held on 14/2/2016 at Hotel Sreekrishna International, Vatakara. 48 members participated.

a) Meeting accepted the year plan presented by the executive.

b) Report and Account since the formation of branch was presented.

c) Decided to intensify membership campaign, CDH activities and to conduct total of 8 CDEs in year 2016.

d) In addition to the Slogan "Save Six at Six" branch put forward additional slogan "Guide them Right" to prevent and intercept Dentofacial Anomalies.

e) It also mooted the idea of conducting "Cluster meetings" in different part of Vatakara Taluk to increase the relation among members of IDA and other practicing Dentists.

f) It was followed by Fellowship and dinner.

g) A family get together was planned on 6/3/2016 at Fabina Gardens Kuningad, Vatakara.

III The Family get together at Febina Gardens, on 6/3/2016 was well attended by the members. Nearly 30 members with their family including parents attended the function totalling 120 persons.

Had a memorable one with every member participating in various cultural activities.

The female representation was very impressive with lot of stage item like dances, folk songs and games etc.

CDE PROGRAMME

Ist CDE Programme of the year was conducted on 14/2/2016 at Hotel Sreekrishna International on Management of Medicaly Compromised Patients and emergencies in Dental Clinics. Dr. Manoj Kumar MDS (Oral Surgery) Prof: HOD. KMCT was the Faculty 42 doctors participated.

CDH ACTIVITIES

Six CDH programmes were conducted in various days Abhayagiri Colony, Valayam; Vellore Sout LP School, Vellore Mappila LP School, Vidyaprakash Public School, Kunhalimarakkar L.P. School, Kottakkal, Right Choice Public School, Chombala. About 623 patients examined.




Trichur Branch

ACTIVITIES IN THE MONTH OF FEBRUARY

• A CDH Camp was conducted at Sri Sri Ravisankar School Pullazhi on 10th February 2016. The camp was attended by Dr. Vijith Jayan (CDH representative), Dr. Rinco C Mathew, Dr. John Alappat. Totally 230 students were screened.

ACTIVITIES IN THE MONTH OF MARCH

• On 3rd March 2016 a CDH Camp was conducted at Sri Bhodhanandha LP School Koorkenchery. The camp was conducted by Dr. Benil P (Hon. Secretary), Dr.Jayakar V S (President) given classes on oral hygiene methods.

• On 6th March 2016 as celebration of Dentist Day a General Body was conducted.

• A CDE programme was conducted on 6th March 2016 (Dentist Day). Topic was How to Deal with Hyperactive Child in Dental Chair & other Child Behavioural Problems. ADHD (Attention Deficit Hyper Active Disorder). Dr. Deepa Deepak MD specialist in Child Psychiatry, took classes.

• As on Dentist Day Senior Dentist Dr. Antony J Maliyekkal, was hounoured

• On 10th March 2016 a CDH Camp was conducted at Govt. School Kottekkad, Thrissur. The camp was conducted by Dr. Vijith Jayan (CDH representative), Dr. Dennis George.

• On 13th March 2016 fifteen members from Thrissur Branch, participated in Football Competition held at (Valancheri Stadium) and reached in semifinals.

ACTIVITIES IN THE MONTH OF APRIL

• A condolence meeting was conducted on 2nd April 2016 to condemn the brutal killing of dental surgeon Dr. Pankaj Narang at Delhi.

• A general body and family meeting was conducted on 2nd April 2016 at Das Continental. About 90 members with their family attended the function. The function was a grand success. Kids and family enjoyed the function.

• On 3rd April 2016 a CDH Camp was conducted at Poothole, along with medical checkup and eye checkup by Seva Bharath. Dr. Vijith Jayan (CDH representative), Dr. Subha Benil, Dr. Rekha Mallaya conducted the camp. Around 100 members screening was done.




Pathanamthitta Branch

1. Indian Dental Association Pathanamthitta celebrated World Dentists Day on March 6th 2016 at Hotel Mannil Regency, Pathanamthitta. As part of the Dentists day celebration kerala States most senior Dentist veteran Dr T G Daniel who is also a member of IDA Pathanamthitta was honoured by Kerala State Dental Council Vice President Dr Johnykutty Jacob. President of the branch Dr Manoj M Kumar presided over the function.

2. Indian Dental Association Pathanamthitta hosted the womens day celebration of IDA Kerala State on 8th March 2016 at Hotel Mannil Regency, Pathanamthitta. The programme was inaugurated by the chief guest, IDA Kerala State vice president Dr Eugene Varghese Joseph. Dr Mercy Joji, the chairperson of WDC Kerala State presided over the function. WDC Pathanamthitta chairperson Dr Rincy Eugene welcomed the gathering. Mrs Megha Sudheer, an eminent writer delivered a speech on empowering the modern women. Mrs Rajani Pradeep, the muncipal chair person of Pathanamthitta was the guest of honour and key note speaker. Vote of thanks was bestowed by Dr Swapna Sreekumar, secretary WDC Kerala State. WDC members from neighbouring branches had made their presence to make the event a memorable one.

3. Indian Dental Association Pathanamthitta celebrated World Oral Health Day on March 20th 2016 at Hotel Mannil Regency, Pathanamthitta. The programme was inaugurated by Kerala State Dental Council Vice President Dr Johnykutty Jacob. As part of the programme a training programme was conducted for the staffs and assistants of various Dental Clinics. The classes were taken by Dr Rajesh V, Dr Binu Chacko and Dr Suku Koshy. Gifts and certificates of participation was distributed to all the attendees.

1st inter branch CDE and hand on workshop "Clinical Alteration of Growing Face "of IDA Pathanamthitta was held on Sunday 28th Feb.2016 at Hotel Hills Park, Kumbazha.

The CDE Programme was inaugurated by the Dr.Johnny Kutty Jacob, Vice president of Kerala Dental Council.

The Faculty was Dr. Joby Peter MDS PGDCFS, Pediatric dentist and Professor Head Of Department of Pedodontics and Preventive Dentistry Malabar Dental College and Research Centre, Mannor.

The topics were "Tips for identifying malocclusion at early age in your practice and there were hands on schedule" conducted with demonstration and discussion on use and activation of various interceptive appliances.

There were 84 participants; Study materials and books worth Rs.5000/ was distributed to all who registered for the CDE.

Registration fee was Rs.600/.including the lecture class, study materials and Hands on course.

The Cde programme was sponsored by Max Dent Ortho, Muvattupuzha.

6 Credit points was given by the KDC for this CDE.




Eranad Branch

Ernad branch celebrates republic day,dental screening camp,and distribution of dental kit on 6 centres in Malapuram dist (26/01/16). 18 dentists participated and 915 students screened. Ernad branch participated in Run Perinthelmenna Run marathon on 14/02/2016.30 members attended. Got best award for registering the most number of participants. First executive committee meeting was held on 18/02/2016 at hotel woodbine Manjery. 14 members attended. First CDE on 'live demo on surgical removal of impacted tooth 'was held on EMS hospital and hotel Hiton Perinthelmenna. 53 members attended. Dentists day and honouring our senior member Dr Narayanan was held on Snehalaya orphanage Nilambur on 06/03/2016 .Womens day celebration was held on 6th march at Nilambur service cooperate bank hall Chandakunnu. Second CDE saving the '6' was held on 20/03/2016 at Hiton Perinthelmenna. 59 members attended. IDA Ernad participated in IDL football league and entered semifinals. CDH program on Koramkode Anganavadi Akambadam on 31/3/2016. 25 students screened. Second executive meeting of Ernad was held on 9/4/16 at hotel woodbine Manjery. 10 members attended. Dental camp was done on Snehalaya orphanage Nilambur on 10/04 /16.

Tripunittura Branch

THIRD CDH: Third CDH was conducted by IDA, Tripunithura at Arakunnam. IDA Tripunithura in association with A.P. Varkey Mission Hospital, Arakunnam at. P. Varkey on 07.02.2016 (Sunday). The camp was inaugurated by Sri. B. Rajeev, former Rajya Sabha M.P. There was a free oral dental checkup camp where almost 45 patients participated. Those patients who needed further assistance were referred to the nearby clinics for further treatments.

FOURTH CDH: The fourth CDH namely "Punchiriyude Rehasyam" was conducted by IDA, Tripunithura at Amballore, Kanjiramattom in association with Amballore Grameena Vayanasala on 24.02.2016 (Wednesday) at Old Panchayath, Kanjiramattom. The camp was inaugurated by Smt. Neena Mukundan, standing committee chairman, Amballore Panchayath and welcome speech was delivered by Sri M.R. Radhakrishnan, President, Amballore Grameena library. A public awareness class was conducted by Dr. Civy. V. Pulayath.

FIFTH CDH: On the occasion of oral hygiene day 20/03/2016 IDA Tripunithura in association with SNDP Youth movement kundannoor branch.

DENTSIT DAY CELEBRATION

On behalf of IDA Kerala state branch "DENTIST DAY "was celebrated at Thannirchal park Tripunithura organized by IDA Tripunithura. Amritha College of dental science conducted Dental Exhibition for the public at the park.

Dr kunal viswam and dr alias Thomas promoted "DENTIST DAY" by participating in a talk show "KABBADI KABADDI" AT CLUB FM ON 7/03/2016.

At the function IDA National former president Dr Alias Thomas was honored.

This year IDA also honored special public prosecutor Adv Udayabhanu, Romy Mathew (Malayalamanorama keralacan), Dr Abhilash (Hello Doctor Kairali TV), Siraj Qasim (Mathrubhumi Aarogya Masika), Mrs Sudha Namboothiri (Times of India). Team ALOHA organizers were also honoured in this function.

Program was inaugurated by state IDA President Dr P T Mohamed Sameer, Secretary Dr Suresh Kumar G, CDH Chairman Subash Madhavan, Dr Biju Nedumpuran, Dr Kunal Viswam spoke on the occasion. Dr Krishnakumar state IDA treasurer, state 1st vice president Dr Ciju Paulose and state 2nd vice president Dr Eugine Varghese gave the awards.

A dental and medical related magic show and dental quiz was also conducted after the function. Dental awareness pamphlets were distributed along with balloons for the children at the park.

Around 100 dental surgeons belonging to IDA Tripunithura and neighboring branches attended the program with their family. Around 500 public were there to witness the program.

All the major channels and news papers covered the function and was well appreciated by the public.

FIRST CDE: On 14th February 2016 at Hotel Hill Palace first CDE Program titled "CATCH THEM YOUNG, WATCH THEM GROW" A CDE on interceptive orthodontics including myofunctional appliance was conducted. The faculties were Dr Joby Peter and Dr Binu T Abraham.

WDC TRIPUNITHURA BRANCH ACTIVITY

WDC TRIPUNITHURA INSTALLATION: The WDC Tripunithura office bearers for the year 2016-17 were installed on 14th February 2016 at Hotel Hill Palace, Irupanam, Tripunithura at 7pm. Dr Kunal Viswam, Secretary IDA TPN welcomed the gathering.

WOMENS DAY CELEBRATION 2016

On March 8th 2016 as part of Women's day, a dental awareness camp was conducted by WDC TPN Team.

Venue: Paripalana Madam – A rehabilitation centre for mentally challenged women, Udayamperoor, Tripunithura. The centre was run by sisters of DSHJ convent with Sister Rani as Center In-charge. There were 25 mentally challenged women at the center.

Welcome speech was given by Dr Dhanya followed by an informative talk and interactive session on oral hygiene habits and methods was delivered by Dr Kavita Kumar.

Oral hygiene aids – tooth brushes and tooth paste samples along with sanitary items were handed over to the inmates. The camp was concluded by vote of thanks by Sister Rani.

It was indeed a great day to celebrate and experience women hood among these deprived women.

Kodungallur Branch

1. Installation of new office bearers and new year celebration held on 2/01/2016
2. Executive committee held on 20/1/2016
3. Attended president-secretary seminar on 6/2/2016
4. General body and scientific sessions held on 17/2/2016 and 23/3/2016 Topic-17/02/2016-Dental treatment of medically compromised patients 23/02/2016-Tax free wealth creation.
5. Dentist day celebrated by honouring senior member Dr. Jolly E.F.
6. Dental camps
   a. 1/2/2016- L.P. School, Peringottukara
   b. 8/2/2016-L.P. School Pullu
   c. 12/2/2016-S.N. Vidhya bhavan, Chentrapinni
   d. 17/2/2016 L.P. School Alappad
   e. 17/2/2016-Baratya vidya bhavan, Kodungallur
   f. 4/3/2016 Gurusree School, Kodungallur
   g. 8/3/2016-Gurusree School, Kodungallur
   h. 15/3/2016-Labour L.P. School, Kodungallur
7. Adoption of institute - Swantanam school for differently abled children on 10/3/2016


Quilon Branch

The second CDH programme: of IDA Quilon branch,a medical and dental check up camp, highlighted with a talk on 'oral health in children' by Dr Maneesha R. (Dept. of Pedodontics and preventive dentistry, Azeezia Dental College) was conducted for School Children (SPC) on 6th February'16 at Meenakshi Vilasam Govt. Vocational Higher Secondary School, Punthalathazham, Qln from 9.30 am. The event was inaugurated by the Vice President of IDA,Qln Branch, Dr Manoj Varghese followed by Sri. H. Mohammed Khan (Sub Inspector of Police, Kilikoloor station), Sri. N. Shivrajan (Sub Inspector, Assist Dist. Nodel officer), Dr Anney George (CDH chairman, IDA, Qln br), Dr Zulfikar Ali (Joint secretary, IDA Qln br.) Dr Santhosh Kumar (past president, IDA Qln br.), Srimati Ambika Kumari (HM- LP School).

The talk was followed by a medical and dental check up camp with dispensing of medicines,toothpastes,mouth washes.

IDA National conference: President Dr B S Sundaresan, Sec: Dr Ciju P Cherian, HOPE Vice president Dr S D Biju Kumar, Dr Nizamudeen, Dr Shibu Rajagopal from IDA Quilon branch attended the Indian Dental Conference held at Delhi on February 19-21.

Second CDE: on by Dr Vivek on Radiological evaluation of dental diseases, CBCT, Ct,OPG. Dr Vinod Jacob on MRI and live demo at conference hall Quilon scans Kollam on 28th February. 55 members attended.

International Womens day programme: Dental camp was conducted at SN Womens College, Kollam.

CDH Programme: World oral health day programme (March 20th)

The programme was conducted on three different levels.

LEVEL 1- Awareness Programme on Radio Benziger FM Station 107.8. Broadcasted oral health day talk as 5 episodes of 15 minutes each from 20th to 24th of March.

Level 2- Dental & Medical Treatment Adoption of Abhayam Charitable Trust, Eravipuram.

Level 3- Charity Work: Donations For Abhayam Charitable Trust.

International dentist day: "Indian Dental Association, Quilon Branch Held Its International Dentist Day Celebrations In Five Levels."

Level 1: Community based programme: Cancer detection camp: A cancer detection camp in association with Cancer Care Centre, Qln and Palliative care unit was conducted at St. Johns School, Eravipuram from 9.30 am until 2.30 pm. Made a payment of rs 5000 towards Cancer care centre and an additional fee as transportation charge for the doctors & staff of Cancer Care centre

Level 2: Tribute to community: "Salute the silent worker award." Mr Yesudas Rozario, President of Sahaya Hastham, Palliative care unit, Eravipuram was recognised honoured and awarded for his humanitarian work after a brief introduction by the CDH chairperson.

Level 3: Dentist day talk: Dentist day talk by ex state secretary Dr Shibu Rajgopal who enlightened the crowd with his exemplary speech.

Level 4:Awards & honours: To honour the dental fraternity of Qln Branch. Honouring of senior dentists over the age of seventy years:

Appreciation awards to the members who had represented in state & national level and for their contributions:

The following members were awarded:

1) Dr Shibu Rajgopal (As state secretary) 2)Dr Joseph Edward (As Conference organising secretary & Assistant state secretary) 3)Dr Manoj Augustine(As Joint state secretary) 4)Dr Biju Kumar S D(As HOPE state vice president) 5)Dr Anil Kumar G (As state treasurer)

Level 5: Family get together with gala musical entertainment, lucky dips & dinner.

2nd Executive committee meeting: The second executive committee meeting held on 30th march 2016 at Hotel Shah International.


Attingal Branch

WORLD CANCER DAY PROGRAM: IDA Attingal branch observed World Cancer day on 4th February 2016. Branch conducted an awareness class and an oral screening camp on Veli St. Thomas Hall, Veli at 9.00am to 1.00pm. Camp was organized in association with IMA, Manorama Channel and Solace Mission Foundation.

CDE

First Interbranch CDE (21st February 2016): The First interbranch CDE program was held at Park Centre, Trivandrum on 21st February 2016 by the faculty Dr Krishnaraj Ganeshnarayan MDS, PhD (USA). The topic was Safety and Infection Control in Modern day Dental Practice-A Paradigm Shift. 129 members attended the CDE.

DENTIST DAY CELEBRATION (6/03/2016): CDH wing of IDA Attingal observed International Dentist Day on 6th March 2016 at Techno Park Club, Trivandrum. Hon Mayor of Thiruvananthapuram Adv.V. K.Prasanth was the Chief Guest. On this occasion Hon Mayor inaugurated a noble project of CDH wing 'Beat the B'.

WDC

INTERNATIONAL WOMEN'S DAY: WDC wing of IDA Attingal celebrated International Women's Day along with the Dentist Day celebration. Mayor Of Thiruvananthapuram Dr V K Prasanth was the chief guest and Dr Anish P (KDC President)was guest of honor. WDC Chairperson Dr Rakhee Rakesh briefed various project of WDC Attingal.

ADOPTION OF ORPHANAGE BY WDC: WDC wing of IDA Attingal adopted Al Himaya Charitable Society, Manacaud, TVM. Al Himaya is a charitable society run by only lady members. There are 20 inmates and WDC offered free dental treatment for the inmates. On International Women's day WDC distributed kits containing dress materials and other toiletries. KDC president Dr Aneesh P Inaugurated the function.

IDL 16: IDA Attingal participated Sevens Football League (Inter branch one day football) on 13th march 2016 at VFA Football Stadium, Vallanchery, Malappuram.

ORAL HEALTH DAY: IDA Attingal Observed Oral Health Day on 20th March 2016. On behalf of Oral Health day branch conducted an awareness class on S N College, Chempazhanthi.

2nd BRANCH EXECUTIVE COMMITTEE MEETING (March 29)

The 2nd branch executive was held Vyabarabhavan; Attingal on March 29 Tuesday at 7pm. President Dr Hari Kumar welcomed the members. The meeting discussed last three months activities of the branch and planed next 3 months programs of the branch.




Coastal Malabar Branch

1. 7th CDH ACTIVITY: Held on 12/02/2016,Friday from 09.00am to 1.30 pm. Oral cancer detection camp held at PHC Centre, Ennapara. Awareness class taken by Dr.Varun Nambiar. 57 patients examined.
2. Second Executive Committee Meeting: Held on 15/02/2016, Monday at Hotel K.K.Residency, Payyannur from 07.30 pm onwards.
   Second CDE finaliSed to be conducted on 28/02/2016.
   Decided to observe Dentists' day, Oral Health Day, International Womens' day in the month of March.
   Rs 22000/- handed over to a boy for heart surgery as a part of charity programme.
3. 8th CDH ACTIVITY: Held on 17/02/2016,Wednesday at Cambridge English Medium School, Cheruvathur from 12.30 pm to 4.00 pm. 160 students and 15 teachers examined.
4. 9th CDH ACTIVITY: Held at Central L.P. School, Karivellur on 21.02.2016,Sunday from 10.00am to 02.00 pm. Dental awareness class taken by Dr. Deepa Pramod. Dental check up done for around 200 patients.
5. SECOND CDE PROGRAMME- 28.02.2016, Sunday. Held at hotel JUJU INTERNATIONAL, Payyannur. Faculty- Dr. Santosh Ravindran. Topic – Lecture & Hands on Course in invisible aesthetics. Release of our magazine "MIRROR" done on the same day.
6. DENTISTS' DAY CELEBRATION - DENTATHON-2016
   Dental awareness class for students taken by Dr. Sreekumar C. Dental awareness class for parents taken by Dr.Ahamed Shafi. Teachers training programme done by Dr.Reshmi Jayakrishnan. Four competition held at Sub District level- Drawing competition, best smile competition, Quiz competition, Healthy teeth contest.
7. XI th CDH ACTIVITY - 08.03.2016, TUESDAY- International Womens' Day. Held at ISD Senior Secondary English School, Payyannur. Dental awareness class taken by Dr.Sapna Sreekumar and Dr. Deepa Pramod. Dental check up done for 100 students and teachers.
8. XII th CDH ACTIVITY- 12.03.2016, SATURDAY. Held at Avon Library, Karivellur from 02.00pm to 05.00pm. Parental awareness class taken by DR.Reshmi. Jayakrishnan. 55 members took part in the awareness class.
9. PARTICIPATED IN INDIAN DENTAL LEAGUE (IDL) ON 13.3.2016
10. XIIIth CDH ACTIVITY- 13.03.2016, SUNDAY. Held at Puthilot A.U.P School, Kodakkad from 01.00pm onwards. Dental awareness class taken by Dr. Sweatha Sooraj. Dental check up and oral hygiene kits distributed to 100 patients.
11. XIVth CDH ACTIVITY- 20.03.2016,SUNDAY- WORLD ORAL HEALTH DAY CELEBRATION. Adoption of old age home and inauguration of free dental clinic at Snehalayam (Akashaparavakkal), Ambalathara from 10.00am onwards. Inauguration of the programme was done by Smt. Sharadha S. Nair, (Pulloor – Periya Panchayath President). Switch on of Dental Chair was done by Sri. Rajagopal (SI, Ambalathara Police station). Dental checkup and treatment including extractions done for inmates.
12. THIRD CDE PROGRAMME-30/03/2016, WEDNESDAY
    Venue: Hotel Juju International, Payyannur, Faculty: Dr.Sameep Shetty, Assistant Professor, Dept. of Oral Surgery, College of Dental Surgery, Mangalore
    Topic: Do's and Don'ts In Treating Oro Facial Infections Using Antibiotics
    Date: 30/03/2016, Wednesday



Malappuram Branch

DENTIST'S DAY: MIDA conducted the DENTIST DAY MUSIC NIGHT AND GRAND FAMILY GET TOGETHER on Sunday 6/ 3/ 16 at Hotel HI TON, Perinthalmanna, The chief guest for the programme was Dr Muhammed Ali, President, IMA, Perinthalmanna. The guest of honour was Mr Rajeev Menon, president, Rotary club, Perinthalmanna. MIDA honoured all the past presidents of MIDA and their families. The official inauguration of dentists of mida"android application "MIDAS TOUCH" is done by Dr Rajan Mathews, former president, MIDA.

EXECUTIVE COMMITTEE MEETINGS: Second Executive committee meeting held on 24/2/16 from 9 pm onwards at Hotel Rydgess Inn, Kottakkal. 38 members were attended.

MIDA FOOTBALL TEAM SELECTION AND PRACTICE MATCH

MIDA conducted mida football team selection and practice match on Sunday 6/ 3/ 16 at. Soccer football stadium, Kottakkal. More than 25 members were participated. Special thanks to Dr Navab Jhan.

INTERNATIONAL WOMENS DAY CELEBRATION: The International Womens Day Celebration were done at Hotel Hi Ton, Perinthalmanna on Sunday, 6/3/16. The Mehendi fest, jewellery making demonstrations, the Art Exhibitions were the highlight of the programme. The programme was well organized by MIDA LOTUS members and the leaders.

IDL -16 (IDA KERALA STATE SEVENS FOOTBALL FEST): The IDA Kerala state inter branch sevens football tournament for IDA Malappuram Winners Rolling Trophy hosted by IDA Malappuram were held at VFA football stadium Valanchery on 13/3/16. 12 branches from IDA Kerala were participated. The football tournament is conducted in association with VFA organization and officials. IDA Malappuram and IDA Central kerala Kottayam became the joint winners of the IDL. Dr Muhamed Shareef VP, IDA Malappuram became the best player of the tournament.

HONORARY MEMBERSHIP: IDA Malappuram honorary membership to Dr Radika Menon, widow of late Lef.Cnl Niranjan Kumar handing over function done at residence of Late Niranjan kumar, Pallor, Pulamanthole on Saturday, 26/3/16.

CDH REPORT

FOURTH CDH CAMP: Fourth CDH camp was held at Payyanad (Manjery) on 27/03/16. More than 110 patients were benefitted from this screening camp. The camp was lead by Dr. Sujith, Dr. Ragesh Gangadharan, Dr. Prasanna Biju, Dr. Natasha Hameed,

FREE DENTAL CLINIC

MIDA is decided to start free dental clinic in malappuram district for poor and diseased patients in relation to free community dental health programme. The first free dental clinic will be installing at VRIDHASADANAM, THAVANUR. The dental clinic is sponsored by Dr Abdul Razak Pattathil, Past President, MIDA.

CDE REPORT

2 nd CDE PROGRAMME: Our second CDE programme was on" Tips in teeth preparation for crowns" were held at Rydgess Inn hotel, Kottakkal on Wednesday 24/2/16. The faculty of the programme was Dr Sadiq Ali, MDS. Prosthodontist and implantologist.

3 rd CDE PROGRAMME: Our 3rd CDE programme was on" Maintaining Asepsis and sterilization protocols in dental office". The faculty for the programme was Dr Ajay Haridas, MDS. Oral and maxilla facial surgeon.

4 th CDE PROGRAMME: Our fourth CDE programme and First inter-branch CDE Programme was on "Strategic Implantology" were held at Rydgess Inn hotel, Kottakkal on Wednesday 20/3/16. The faculty of the programme was Dr Prasanth Pillai, MDS. Oral, maxillofacial surgeon and implantotlogist. More than 32 members participated in the one day programme. The Kerala Dental council granded 4 credit points towards the programme.

CLINICAL CLUB: We conducted the first clinical club meet at Rydgess Inn, Kottakal on 8/3/16. The topic was in association with GC , More than 10 members from Kottakal and surroundings are participated. Special thanks to Dr Navab Jhan.

Valluvanad Branch

CDH PROGRAMS:

1. INTERNATIONAL DENTIST DAY CELEBRATIONS: International dentist day was celebrated by IDA Valluvanad branch by observing a five days dental screening camp at Pattambi government hospital. Camp inauguration was done on 6th march, 2016 by medical superindent Dr. Abdul Rahman. Dr. Vishal Korah, Dr. Rajarajan, Dr. Shoukath Sli, Dr Sajoy Mathew, Dr. Vishak Sreekumar, Dr. Nousham, Dr. Shabna participated in the camp. Camp was from 6th march to 10th march 2016

2. DENTAL SCREENING AND AWARENESS PROGRAM: A dental screening and awareness class program is conducted by IDA Valluvanad branch on march 16 th, Wednesday at Kizhayoor Govt UP school in association with Pattambi municipality 15th ward. Camp inauguration was done by Sri. K.P. Vapputty, the municipal chairman. Welcome address by Sri. Govindan, Mrs Vineetha Gireesh, Mr Madhusoodhanan, Mrs Latha also addressed the gathering. Vote of thanks given by Dr. Shoukath Ali. About 500 students benefiited.

Dr. Haris TP took awareness class for Childrens and parents. Oral hygiene kits were distributed. Certificate for teachers participated in the camp were also distributed. Dr. Srikanth, Dr. Geethanjali also participated in the camp.

3. DENTAL CAMP ATTAPPADI: A dental screening and treatment camp is conducted for Attapadi tribals on 27th march 2016 at Vivekananda medical mission centre dental wing sponsored by IDA Valluvanad. Dr. Subash Madhavan and Dr. Sruna Subash attended the patients and treatment was done to 20 patients

CDE PROGRAMS: Our first interbranch cde program was conducted on april 3rd, Sunday at Hotel Nakshathra Regency, Pattambi. The full day program was based on the rotary endodontics taken by Dr. Jojo Kottoor, MDS., Reader, Mar Baselios Dental College.

MONTHLY MEETING: IDA VALLUVANAD monthly meeting was conducted on 10th February, 16th march and on, 08th april, 2016. Programs for the respective months were discussed and carried out accordingly.

Malabar Branch

CDH ACTIVITY No.1: Dental Screening and awareness camp was conducted at Kunjali Marakar Higher secondary School Kottakal Vadakara, Kozhikode on 20/12/2015 in association with Dept. of Education Govt. of Kerala. Around 100 Participants were present in the camp.

CDH No.2: Dental check up and awareness camp was conducted at Devaseva Sangham Kaithapadam Pottamal Kozhikode on 31/01/2016 in association with Lions Club Daffodils. Around 100 Participants were present in the camp. On behalf of IDA Dr. Dinesh KR, Dr. Prathap, Dr. Sudheer KT, Dr. Haris, Dr.Susha, Dr.Sandeep Rajagopal, Dr. Pravish and Dr. Hussain Participated the camp.

PARTICIPATION IN PRESIDENT SECRETARY SEMINAR & STATE EXECUTIVE: Dr. Dinesh KR and Dr. Sudheer KT participated in the president Secretary seminar held on 06/02/2016 and state executive meeting on 07/02/2016 at Trivandrum Club, Trivandrum.

FAMILY GETOGETHER & A DISCUSSION ON FAMILY HARMONY CHALENGES AND POSSIBILITIES.: A family getogether and a discussion on family harmony challenges and possibilities were arranged by IDA Malabar branch on 28/02/2016. The programme started by Dr. Ram Manohar former Principal Govt. Dental College Calicut in the presence of Dr. Dinesh KR president IDA Malabar branch. IDA Malabar has chalked out an innovative programme with two very reputed speakers to guide and enlighten on the subject. One Faculty was Swami Adhyatmananda Saraswathi one of the most prominent spiritual leaders of Kerala. He received "Vedantha rethna" Puraskar in 2009.

PARTICIPATION IN DISCUSSION IN ALL INDIA RADIO IN CONNECTION WITH DENTIST DAY: IDA Malabar branch President Dr. Dinesh KR, IDA Malabar branch Past President Dr. Saju NS and our senior member and IDA Kerala state Past president Dr. Antony Thomas participated in a discussion on Challenges and Controversies in Dentistry and an awareness class to public in All India Radio which was transmitted in both FM and AM on 04/03/2016.

CDH ACTIVITY NO. 3: Dental check up and awareness camp was conducted at Keerangai Mapila LP School Payolli on 05/03/2016 in association with Keerangai Relief Community. On behalf of IDA Dr.Mithun Sreedhar participated the camp.

DENTIST DAY CELEBRATIONS, ADOPTION OF OLD AGE HOME & INSTALLATION OF DENTAL UNIT.: Dentist day celebration was held on March 6th in an oldage home namely Home of Love situated in Kotoolly Kozhikode, run by Kristu Dasi Sisters consists of 91 inmates including male and females. IDA Malabar branch installed a full fledge Dental chair in the oldage home and various treatment were done for the inmates. More than 60 extractions and 6 complete dentures were done. The programme started at 10.00AM and was inaugurated by Fr Antony Kozhuvanal in the presence of Dr. Dinesh KR President IDA Malabar branch. Many Members including Dr.Antony Thomas, Dr. Kunjamma Thomas Past Presidents IDA Kerala State and senior members like Dr. Shamshudheen were present. Oral health orientation programme and check up camp was conducted at Home of Love. The lunch was arranged and served by members of IDA Malabar branch to the inmates and had lunch with inmates.

CDH No.4: Dental check up and awareness camp was conducted at Govt. UP School Thrikuttyssery, Balussery, Kozhikode on 27/03/2016 in association with Niranjana Kala Kayika Vedi, Thrikiuttyssery. Around 150 Participants were present in the camp. An orientation class was taken by Dr.Haris CDH Convenor IDA Malabar branch. On behalf of IDA Dr. Sitahara, Dr. Reshmi, Dr. Rejul, Dr. Prajith, Dr. Subhash, Dr. Jaffer, Dr. Riyas, Dr. Manoj Michele, Dr. Haris and Dr. Sudheer participated the camp.


Kochi Branch

February 2016

IDA Kochi Branch had its 2nd Monthly meeting and scientific session by Dr. Sherry Peter on Topic "Changing Faces"and overview on management of facial deformities on 25th February 2016 at IMA House, Kochi.

- "Changing Faces" and Overview on Management of Facial Deformities.

March 2016

- IDA Kochi branch conducted 3rd EC meeting on 17th March 2016 at IMA House, Kaloor, Kochi.
- On March 6th 2016 Dentist Day Conducted Dental Check up and awareness Programme
- Conducted Dental Check up for 125 Kids at Anganvadi Kadavanthra on 20-03-16
- Actively Running Free Dental Clinic at Chalikkavattom.
- Conducted CDE program on A Day with Dental Implants on 24th March 2016 at Hotel Down Town, Kadavanthra.
- A Day with Dental Implants.

Sports

Conducted 2 intra Branch sports Activities:

- Cricket
- Football
- INTRA BRANCH CRICKET
  INTRABRANCH FOOTBALL
  Participated In IDA Kerala State 7's Football Tournament




Kunnamkulam Branch


INSTALLATION 2016


CHENNAI RELIEF CAMP


CHRISTMAS & NEWYEAR


HEALTH CAMP

North Malabar Branch

CDE PROGRAMME

1. The first CDE Programme of IDA North Malabar branch was conducted on 21.02.2016 on the topic UPGRADE 2 UPDATE- Rotary training course on Root Canal Treatment and Re-Treatment. The faculty for the programme was Dr Ashish Medha, Mumbai. The programme was accredited with 6 CDE points by the Kerala Dental council

2. The second CDE lecture was taken by Dr Santosh Raveendran on the topic Glass Ionomer As Posterior Restorative Material on 27. 02.2014 at IDA hall, Kannur. The lecture was followed by an interactive session.

CDH ACTIVITIES

1. As part of Dentists day celebration , a Oral health awareness programme for 250 Kudumbasree mission workers was conducted on 6th March 2016 at North Malabar Chamber of commerce, Kannur. Mrs Sreemathi teacher, Member of Parliament, Kannur Constituency was the Chief guest and was presided over by Dr Jayashree KT, President IDA Norh Malabar Branch. Dr Anil Kumar PK and Dr Prabath Ramakrishnan took classes for the Kudumbasree members.Dr C Roopesh, Secretary IDA NMB delivered vote of thanks. IDA North Malabar also honoured our Executive member and Cine music Director Dr Ranjith C V for his contribution to the field of music. Mrs Sreemathi Teacher presented him a momento of appreciation.

2. Lunch was provided for the 150 inmates of Amala bhavan, on dentist day 6 th March 2016. Dr Jayashree KT, President IDA North Malabar Branch, Dr Roopesh C, Secretary, IDA North Malabar Branch and Dr Anil Kumar PK arranged the proceedings.

3. An Oral Cancer detection camp was conducted in association with Kannur Dental College Anjarakandy, Kannur at NMCC Kannur on 6th March 2016. Total of 85 patients were screened.

4. Indian dental association North Malabar Branch in association with Home Department, Govt of Kerala conducted a Dental awareness class for inmates of Kannur Central Prison& Correction centre on 20th march 2016.

5. An Oral check up camp for 250 inmates of Kannur Central jail was conducted on 20th march 2016. Dr Jayashree kt,Dr C Roopesh, Dr Anil Kumar PK,Dr Sumitha Viswanath, Dr Reshma Jithesh, Dr Thomas KC, Dr Mohammed Shajir, Dr Vimal Rimy, Dr Shareeque and Dr Sumaiya participated.

6. School Dental Check Up Camp was conducted in Sree Sankara Vidya Nikethan School, Mayyil, Kannur on 21 March 2016. 50 students were screened

Family get together: A family get together was conducted in Hotel Malabar Residency, Kannur on 14 February 2015. Dr Khader Mangad, Vice chancellor, Kannur University was the chief guest. More than 60 families attended the function. A cultural programme directed by Dr Ranjith CV, Cine Music director added pomp and galore to the event

Womens day: Womens day was celebrated on 6th March at NMCC hall. Mrs Sapna S. District co ordinator of Kumbasree mission Inaugurated the session. Members of IDA north Malabar, Kannur Sports school and Kudumbasree mission participated in the discussion.

Tellicherry Branch

2nd executive committee meeting was held at parco residency Thalassery. It was attended by 15 members.

Dentist day celebrations

We organised a dental camp in Chokli along with jwala sahaya sangham on 3rd March. It was inaugurated by Chokli Panchayath president Mr Rakesh. Dr Firoze, Dr Sujith, Dr Ali kpm, Dr Preetha Rajeev, Dr Jithesh kk, Dr Purushothaman, Dr Firozi, and Dr Sruthi KC participated in the camp. Around 100 patients were examined and medicines distributed.

In the evening there was a class by our senior member Dr Ratnakaran "tips and tricks of dentistry". He shared his vast experience which was of great help to younger generation of dentists.

We organised a family trip to Wayanad on 2nd and 3rd of April. 25 members with family attended the tour.

Our 2nd CDE was conducted by Dr Madhu S. of GDC Calicut. The topic was apexification and apexogenesis: an update. 29 members attended the CDE.

Dr.Mercy Joji
Chairperson

WDC Report

Dr.Sapna Sreekumar
Secretary

IJWDC, THE JOURNAL OF WDC KERALA STATE HAS BEEN INTERNATIONALLY INDEXED WITH THE NUMBER 2592 FROM THIS YEAR ONWARDS. THE ISSN NUMBER OF THE JOURNAL IS 2348-1374. FOR PUBLISHING ARTICLES, KINDLY CONTACT THE ABOVE ADDRESS OR THE EDITOR DR.RATHY RAVEENDRAN (rreditorijwdc@gmail.com/www.idakerala.com). THIS WILL BE APPROVED BY THE DENTAL COUNCIL AND INDEXING AGENCIES.

WDC kerala state conducted women's day celebration at Hotel Mannil Regency, Pathanamthitta, Dr.Eugene Varghese Joseph inaugurated the function. Pathanamthitta municipal chairperson Mrs.Rajani was the chief guest, Mrs.Megha Sudheer spoke on enlightening the modern women, Dr Mercy Joji, the chairperson WDC, Dr Sapna Sreekumar, the secretary WDC, Dr.Johnykutty Jacob, the vice president KDC, Dr.Thaj Rajmohan, Dr.Rincy, Dr.Manoj Kumar spoke. WDC Pathanamthitta hosted the event & Dr.Hema Rajesh was the co-ordinator.

WDC KERALA STATE CONDUCTED WOMEN'S DAY CELEBRATION, PATHANAMTHITTA

PUNYAM 2016, BY WDC MALABAR BRANCH

WDC COASTAL MALABAR BRANCH INSTALLATION

WDC ERANAD WOMEN'S DAY CELEBRATIONS

CDE Report

Dr Nirmal George Saibu
Convenor CDE

Dear colleagues,

As per the IDA state executive committee's decision, the CDE wing of IDA Kerala state invited application, to enroll as the 'official speaker' of IDA Kerala state(faculty hunt). The last date for submission of application was 20th April 2016. Around 120 members applied to the state office.

We are planning to arrange a one day training program at Cochin on 29th May 2016. The chief faculty for the program is Prof. Dr Chitra Sanker.

Upcoming programs

1st state level CDE program will be held on 26th June 2016 by eminent implantologist Dr Tosun Tosun from Istan bul, Turkey. The topic for the program is "management of ailing and failing implants".

2nd state level CDE program will be held on 28th august 2016 by eminent pediatric laser specialist Prof Dr Geovani Olivi from Rome, Italy. The topic for the program is "trauma management in young permanent anteriors".

Thank you for all the sincere support

With warm regards

Dr Nirmal George Saibu
CDE Chairman

CDH Report

Dr. Subhash Madhavan
Chairman CDH

IDA Kerala State DENTIST DAY CELEBRATION

On behalf of IDA Kerala state branch "DENTIST DAY "was celebrated at Thannirchal park Tripunithura organized by IDA Tripunithura. Amritha College of dental science conducted Dental Exhibition for the public at the park.

Dr Kunal Viswam and Dr Alias Thomas promoted "DENTIST DAY" by participating in a talk show "KABBADI KABADDI" AT CLUB FM ON 7/03/2016.

At the function IDA National former president Dr Alias Thomas was honored.

This year IDA also honored special public prosecutor Adv Udayabhanu, Romy Mathew (Malayalamanorama keralacan), Dr Abhilash(hello doctor kairali tv), Siraj qasim(Mathrubhumi Aarogya Masika), Mrs Sudha Namboothiri (Times of India). Team ALOHA organizers were also honered in this function.

Program was inaugurated by state IDA President Dr P T Mhd Sameer, Secretary Dr Suresh Kumar G, CDH Chairman Subash Madhavan, Dr Biju Nedumpuran, Dr Kunal Viswam spoke on the occasion. Dr Krishnakumar State IDA treasurer, state 1st Vice President Dr Ciju Paulose and state 2nd Vice President Dr Eugine Varghese gave the awards.

A dental and medical related magic show and dental quiz was also conducted after the function. Dental awareness pamphlets were distributed along with balloons for the children at the park.

Around 100 dental surgeons belonging to IDA Tripunithura and neighboring branches attended the program with their family. Around 500 public were there to witness the program.

All the major channels and news papers covered the function and was well appreciated by the public.

WORLD ORAL HEALTH DAY 20th MARCH 2016

IDA Kerala State observed world oral Health Day on 20th March 2016 at Athani near Aluva. IDA Nedumbasseri hosted the funcition.

In the morning session a symposium on current challenges in dentistry- "A path finder for a policy driven approach" was done Symposium started at 9.30 Am at Hotel Diana Heights, Athani

Leaders of Indian Dental Association,President &Members of Dental council of Kerala,Members of Government Dental staff union, Member of legislative assembly,Senior Dental Academician,other lumineries of Dental industry were among the participants.

The out come of the symposium was promising for the next level meeting in a broder settings incorporating the public prespective of the issues. Symposium Closed by 3.30 Pm

In the afternoon session a free dental clinic for orphans in Jana Seva Shishubavan Aluva was inaugurated. The function was inaugurated by KDC President Dr. Aneesh.P and presided by IDA State President Dr. Muhammed Sameer. Dr. Subash Madhavan State CDH Chairman was guest of honour. The free dental clinic was inaugurated by famous cine artist Asif Ali.