ISSN No. 0972-396X

KDJ

Kerala Dental Journal

Vol 33 | No. 2
April 2010
Quarterly Publication of Indian Dental Association, Kerala State Branch

Ocular Prosthesis

Best State Branch Journal Award 2008-09

Email: editorkdj@gmail.com
Web: www.idakerala.com

Kerala Dental Journal

Vol. 33 | No. 2 | April 2010

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President's Message

Dr. Samuel K. Ninan

Caring For You Sincerely

I am glad that the first issue of KDJ has reached all the members directly without delay and now the second issue of the year is in your hands. Our Editor Dr. K. Nandakumar and team are tirelessly working to make sure that all the issues reach our members on time.

In the last decade, dentistry in India and especially in Kerala has changed a lot. The first dental school in India was inaugurated in 1924 and in 1960 the dentist - population ratio in India was around 1:300000. But, in 2004 the ratio has changed to 1:22000. Presently, in Kerala the ratio is much lower with around 8000 dental surgeons Registered in Kerala Dental Council covering a population of over 31 million. A lower ratio will definitely enhance the personal care and the quality of the treatments up to a certain extent on one side. We are yet to witness much more changes in the profession in the coming years because presently we have 23 dental colleges in the state admitting 1150 students a year for BDS. At the same time, we have only less than 50 seats for post graduation in a year and less than 70 posts in the government health service of the state as a whole. So, a careful approach is essential to maintain the quality of Dental Education as well as to uphold the dignity, cooperation and co existence within the profession.

The Dental Council of India has taken an initiation to start a course for Dental Operatory Room Assistant which was one of our requests to DCI. Hope this decision will enable our clinics to have trained assistants and eventually it will improve the quality of our services.

The last six months in the chair of the President was satisfactory even though the days were busier than what was expected. Within this short period of time we could do a lot of things for the benefit of the members, association, profession and the public. This year, the student's conference will be unique at the Capital City of Kerala, with two days event for the first time and it will hopefully witness all the leaders of the profession in India. Dental college principal's summit has also been planned along with the student's conference. IDA Wayanadu has taken the privilege to host the next State Executive committee meeting and is probably the first state programme at Wayanadu. We are trying to reach each and every member in all possible ways and I am proud of your cooperation and encouragements. My heartfelt thanks to all dear members, my team of office bearers in the state as well as in the local branches, State executive members and all other leaders for the continuous support.

I love to be cared by you and I love to care for you sincerely.

Thanking You,

Jai IDA

Pathanamthitta,
15-04-2010.

Dr. Samuel K. Ninan

The health university

Dr. K. Nandakumar

Establishment of the Kerala University of Health and allied sciences is considered as a significant policy initiative in the medical education sector. It has been a long felt need but the impetus was received when the number of institutions offering medical education has increased in enormous proportions within a short period of time. The immediate effect will be that the courses related to all the systems of medicine will be brought under one roof and the course duration will be unified. From admissions to qualifying examinations, the University will be responsible and it will ensure uniform standards all over the state. The main objective of establishing the university is claimed to be to promote research and to improve the quality of medical education. No body seems to take this statement seriously because every time something new is formed, such a fashionable statement is made by the concerned but without any commitment to the cause. So far, the respective councils were supposed to be guarding the standards of the profession. The standard of the profession has been misunderstood with the availability of modern amenities. We proudly point out that India has become the ultimate destination of medical/dental tourism because medical treatment facilities are available here for the foreign nationals at a lower price affordable only to them. Will the same facility be available to the common man in Kerala? Do we have the real health statistics of the Kerala population so that a solid health policy can be drafted and implemented. Do we have a data of deaths happening in our society every year and on what reason? What is the dental health status of our school children? In the field of research, what is our contribution and do we have a data on the research done in Kerala. What follow up action has been taken to the research findings, if those were relevant to our society. Could we improve the ethical standards of practice in the state in the last twenty years. Another paradox is that our children fight tooth and nail to get an admission to the government medical and dental institutions. But the same youngsters after obtaining the degrees, do not want to join the esteemed institutions of the state with love and passion. The University should first obtain a data on what is happening to our young professionals. Are they practicing or simply idling away the time in the comforts of home. Are they opting for other professions? Are they in India or working in some unknown alien circumstances? The state councils are the appropriate agencies to track them down and find out their present status and help the university.

No doubt we are all proud to have a health university in our state. An eminent and experienced person - Dr. Mohan Das - has taken over the reigns as its Vice Chancellor. The Journal and the association wish him all the best in his future endeavors. I take this opportunity to point out a glaring omission that has crept into the ordinance document. In page 6, item 4 (composition of the university) the different schools to be established are listed. 11 schools are listed but dentistry does not find a place there. I need not elaborate on the unique nature of dentistry, the only speciality that run a graduate programme exclusively, with subsequent postgraduate courses. This is a great omission. I request the honourable Vice Chancellor to take remedial action without much delay and hesitation. The dental profession views it with great concern.

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Ocular Prosthesis

The art of making artificial eye has evolved with time. Egyptian priests tried making artificial eyes as early as fifth century BC. By 17th century AD, artificial eyes were made in glass and they were popular till the development of acrylic eye shells. When the eye ball is lost due to surgical interventions, eye shells are indicated. Different types of eye shells – in varying shapes and shades are available in the market. An appropriate and matching shell can be selected and used. These ready made shells will not have an accurate fit which will lead to accumulation of fluids and possible infection. Dentists can modify the shells by providing a customized fitting surface. After selecting the eye shell, it is duplicated to form an impression tray in self cure acrylic resin. After placing the tray under the eye lids, light body elastomeric impression material is injected. The impression is then invested in a flask using plaster. Into this mould tooth colored acrylic resin is packed and processed. The colour of acrylic resin should match the sclera. The prosthesis is polished and placed inside the socket. The iris portion is then marked with a permanent marker. The prosthesis is removed and at the marked area, a recess is prepared to accommodate the iris. The iris is harvested from the first selected eye shell and fitted into the recess using auto polymerized acrylic resin. The prosthesis is stored in water for 48 hours and then polished and delivered.

Cover Case: Dr. K. Chandrasekharan Nair

Edited by: **Dr. K. Nandakumar,** Hon. Editor • Published By: **Dr. Shibu Rajagopal,** Hon Secretary • **For IDA, Kerala State Branch** • Production : **Suman Graphics,** sumangfx@gmail.com

Palliative Care and the Dental Surgeon

*** Suresh Kumar**

Do Dental Surgeons have a role in the care of the bed ridden, the incurably ill and the terminally ill patient? I am happy that the Indian Dental Association in Kerala has decided that it has.

Dental Surgeon as a responsible citizen

We all have to die one day. Statistics show that only less than 10% people can hope for a sudden death. Vast majority of us will be bed ridden for a period – days, weeks, months or even years – before we leave this world. These last days usually are the most difficult time in almost everybody's life – miserable, painful and lonely. A large part of this suffering is avoidable if the person has easy access to a system of care capable of addressing the physical, psycho social and spiritual problems associated with end of life. Our reasons for getting involved in a service for the bed ridden or incurable can be religious, social or political. But we are in fact building a social structure of most likely use to us in future when in the attempt to develop palliative care services in our neighbourhood. Efforts to tap in and develop social capital in the community are long term investments for our own future.

A well established social support system is beneficial to the health of the community in many other possible ways also. There has been a lot of research work exploring the relationship between social factors and disease processes. It has now been fairly well established that social factors enhance or lower susceptibility to diseases generally, though not for any specific disease like cancer. It has also been proven that social supports act by buffering the effects of stressors in the social environment.

Dental Surgeon as a health care professional

Modern medicine has the know how to address most of the difficult physical problems of advanced illness. Simple remedies and protocols are available to take care of symptoms like pain, breathlessness, nausea, vomiting, fungating ulcers etc. Most people with incurable illness live and die in misery despite the knowledge and skills available in this area. One of the important reasons is that the health care professionals very often do not take efforts to learn and update knowledge in these areas. These knowledge and skills need to be part of primary health care. Any practitioner of medicine should know how to control a pain or nausea or to settle the foul smell from a wound.

Most of us are at a loss before an emotionally upset patient. Breaking a bad news and containing an emotional reaction in a patient are skills that any clinician should acquire. This is all the truer in the case of dental surgeons in this part of the world were malignancies of head and neck form a large percentage of the cancers. A fairly good percentage of these cancers are clinically diagnosed first by the dental surgeons.

Medicine claims to have a wholistic approach to patients, but this is very often not so in real practice. There is a huge gap between the disease process recognised by the physician and the illness experience by the patient. Physicians see illness in terms of disturbance of body function. Patients see it as a disruption in all aspects of life. Diagnosis of a major illness affects everything in the patient's life – his relationships, his work, his sense of who he is and who he might become, his sense of what life is and ought to be – Effective intervention in this complex area will require good amount of knowledge and skills on the part of the physician. Without this knowledge, skills and the resulting intervention, the doctor tends to get reduced into a mere technician of the body. The physical phenomena of the illness of the patient are empirically verifiable. The mental phenomena and symptoms like pain, however, require a different form of enquiry. The theory of knowledge (epistemology) of medicine at this point is concerned with questions such as what should we know about the patient to be effective physicians and how can this knowledge be acquired. Palliative care

can be a good training ground for the health care professional to acquire this knowledge and skills.

Dental Surgeon as the expert

Symptoms related to oral cavity are some of the most distressing problems of terminal illness. Mucositis, Xerostomia, Halitosis and infections of the oral cavity are very common in people with advanced disease. Collaboration with dental surgeons can improve the palliative care team's expertise in assessment and monitoring of oral cavity, assessment of oral symptoms and patient education in oral hygiene. In the absence of practically any effort at systemic data collection, there is a huge void of clinical data in all these major areas of palliative care. Development of oral care protocols relevant to our situation is also an important but inadequately addressed task. A sensible Dental surgeon's entry into the palliative care team can go a long way in improving the quality of life in patients with advanced diseases. Help in limiting the problems of head and neck cancers and in preserving the integrity of oral cavity during anti neoplastic therapy are also important areas in which such an input can make a huge difference.

The possible areas of collaborative work include

* Epidemiological studies

Collection of data on oral problems in advanced diseases in collaboration with local palliative care units and analysis of pooled data at the state level can make a huge difference in the present situation. This activity at the local level will need planning at the state level.

* Development of tools for assessment and referral by health workers in the community

Clinical work in palliative care in Kerala is enriched by the involvement of trained lay person volunteers. Availability of screening questionnaires will help them in identifying patients in need of intervention by experts. For example, the use of a validated Malayalam version of 'Distress Thermometer', a questionnaire to rate distress, is being used by volunteers in many palliative care units to identify patients in need of professional psychological support. No such questionnaires exist in the area of oral problems in advanced diseases in the

Developing World. This can be a major area for Dental surgeons to work with palliative care teams in future.

* Development of protocols / guidelines for best practice for prevention and management of various oral problems in advanced diseases

Collaborative work between palliative care professionals and dental surgeons is expected to generate appropriate guidelines and protocols for our country.

Indian Dental Association as facilitating and coordinating body

The concept of involving in palliative care is relatively new to the dental surgeon community in India. Indian Dental Association's Kerala state branch has a challenging and rewarding area before it as a pioneer in the field. Motivating the members take up this noble cause as socially responsible individuals and professionals, equipping the dental surgeons in Kerala with the necessary knowledge and skills, establishing a mechanism to ensure quality control and linking up with other social and professional bodies in palliative care are some of the important tasks ahead. A possible first step would be the formation of working groups by IDA to work on specific academic/ research / clinical work in collaboration with palliative care teams. Such working groups / task forces can concentrate on specific tasks on a time bound basis. IDA does not have models in the field, but has a great opportunity before it to set itself as a model for the rest of the country to follow.

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Copy milled Titanium full arch fixed prosthesis - clinical and laboratory procedures

* Eldo Koshy, ** Sony Jacob Mevada, *** Sunitha Raj Philip

Abstract

Maxillary teeth are the focal point of human smile. Restoring the edentulous maxilla with implant prosthetics is the most challenging area in implant dentistry. Several techniques have been described for the successful restoration of the edentulous mandible/maxilla. Fixed-detachable prostheses with either hybrid prosthesis design or conventional implant supported fixed partial dentures and implant-retained /supported over dentures are some examples. A clinical report is presented describing the clinical and laboratory procedures involved in the fabrication of a copy milled fixed full arch maxillary prosthesis prosthesis. Similar procedures may be followed by the reader in the making of a fixed full arch copy milled mandibular prosthesis.

Introduction

It is a challenge for the dentist to choose among the various materials and techniques available for fabricating an implant-supported prosthesis. Every single step in fabricating an implant supported prosthesis influences the fit between the implants and the final prosthesis.[1,3,11,18] There are many methods to construct a framework for a complete arch fixed implant prosthesis. Casting procedures as well as CAD/CAM and milling procedures are among the reported techniques. Metal framework fabricated by conventional casting procedures inevitably result in discrepancies between the frameworks and the implants because of distortion in the casting process.[4,12,16]

Titanium and gold alloys are commonly used framework materials, and different cobalt-chrome alloys have been presented as alternatives because of low cost and favorable mechanical properties.[6,13] Several alternative framework fabrication techniques have been presented, often aimed at reducing distortion problems.[17]

The term "copy mill" comes from the key duplication business where an existing key is placed on one side of a machine and a blank on the other. As the key is traced by a probe, the other side moves a cutting instrument over the key blank. This creates an exact copy mill of the key. This was exemplified by the Celay milling machine and the term has since been adopted in dentistry.

Here, wax ups of bars are created, scanned and digitized and then milled from that digitized file. An advantage of copy milling in dentistry is the ability to obtain a true "what you see is what you get" design which sometimes may be hard to create or visualize on a screen. Additionally, the model work with fixture replicas and abutments are also scanned and the files are merged.[2]

Based on these studies, compared to milled frameworks in commercially pure (CP) titanium have been shown to have a better fit traditional cast gold alloy frameworks.[10,12,15]

Planning for implant placement for an implant-supported fixed denture also requires concern for occlusogingival dimension. To ensure an esthetic, phonetic, hygienic, and mechanically robust prosthesis, an absolute minimum of 10 mm of occlusogingival dimension is recommended to accommodate 4 mm of incisor length above the metallic bar, 4 mm for the prosthetic cylinders, metallic bar and retaining screws, and 2 mm to account for the transmucosal dimension of the abutment beyond the crest of bone. After examining mandibular casts mounted to oppose the established maxillary dentition at the correct vertical dimension of occlusion, any occlusogingival dimensional discrepancies should be addressed by consideration of an alveolectomy at the time of implant placement.

Case Report

A 53 year-old male non-smoker patient with edentulous maxillary arch presented for treatment with a chief complaint of dissatisfaction with his existing maxillary complete denture because of the inconvenience of removing it every day. He was the director of a marketing company. He also encountered speech problems related to the full palatal coverage of the complete denture and lack of adaptability to its bulk. In addition to this, his upper denture lost retention many a times at some of his important business meetings causing a lot of embarrassment to him. He would only be satisfied with a fixed, functionally stable and esthetically pleasing solution for his lost teeth.

After thorough intra oral examination, ridge mapping and treatment planning with articulated casts and orthopantograph and discussing with the patient about the advantages and disadvantages of various treatment modalities possible, it was decided to place eight implants in the maxilla and a fixed full arch copy-milled Titanium

Fig. 1 Implant cover screws removed

Fig. 2 Healing caps placed

Fig. 3 Healing caps exchanged for open tray impression copings

Fig. 4 Impression copings linked by dental floss

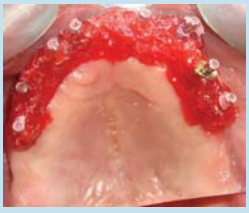

Fig. 5 Self cure (pattern resin) linking of the impression copings

Fig 6. The open tray impression

Fig. 7 Copy milled Titanium full arch framework for try –in. Labial view on cast

implant-supported maxillary prosthesis six to eight months later.

Seven regular platform and one wide platform (Nobel Biocare) implants were placed in the maxilla. Eight months later, at the second stage surgery, after assuring adequate osseointegration it was decided to carry out the prosthetic phase. The cover screws were removed (Fig 1) and replaced with gingival formers (Fig 2). A preliminary impression was made with alginate in a suitable stock impression tray with adequate depth. The elevations of the gingival formers denoted the regions of the implants for making the special tray for an open tray impression, also recording the relationship of the implant to the adjacent soft tissue and functional sulci in order to aid in positioning the teeth and framework of the prosthesis. The impression was rinsed in water, sprayed with disinfectant and sent to the laboratory for pouring and making the special tray.

Patient was recalled after three weeks and open tray impression copings (Fig 3) corresponding to the implant sizes was placed. The impression copings were linked to each other with dental floss (Fig 4) and quick setting autopolymerising resin (Pattern Resin, GC company) placed on them assuring immovable stabilization of the impression copings during the impression procedures, while transferring to the laboratory and during laboratory pouring procedures (Fig 5). An open tray impression was made in stiff elastomeric impression material after injecting light bodied impression material around the copings (Fig 6) and the impression sent to the laboratory for pouring. After the impression is taken, healing caps are replaced and impression is send to the laboratory.

In the lab, abutment replicas are placed on the copings, implant analogs attached to the copings and the impressions are poured using die stone

The accuracy of the master cast was clinically established using a verification jig [check bar]. The jig was placed on the copings of the dummy abutments in the master cast initially. It was then verified by seating it intraorally by placing the copings in the bar over the abutments and the fixing screws partly inserted. One screw was tightened while the others remained slack. The fit of the copings were also checked clinically for any visible gaps. Thus the verification jig returned from the laboratory was analyzed in the mouth, its passive fit and clinical stability ascertained and sent to the lab.

The maxillomandibular relation record was made by using a customized acrylic record base plate and wax occlusal rim. The base that was constructed by incorporating holes over the abutments and was secured by using the screws. The wax rims were contoured to establish lip support, incisal edge position, buccal corridor, midline and vertical dimension of occlusion.[14] Teeth selection was done based on conventional principles. Proper verification of records was made in order to ensure that the teeth are in the most advantageous position prior to constructing the milled framework and that the teeth was positioned in a way that it could be linked to the underlying implants as well as be hygienically maintained along with controlling occlusal loads. A group function occlusal scheme was planned in this case.

The waxed up trial denture on the master cast is tried in the mouth. It was ensured that both the patient and dentist are satisfied with the facial appearance, position of the teeth with the opposing dentition, underlying ridge and implants, space below prosthesis to maintain oral hygiene and with the accessibility to the fixture screws.

On to the milled Titanium framework that comes from the milling centre, the lab attaches the teeth using the previously made index as reference for the final try-in. The framework (Fig 7 & 8) was screwed into position

Fig 8 Copy milled Titanium framework for try-in. Palatal view on cast

Fig. 9 Intra oral try-in. Labial view

Fig. 10 Intra oral try-in. Palatal view

Fig. 11 Finished prosthesis

Fig. 12 Copy milled Titanium full arch prosthesis in mouth. Note the screw holes sealed with composite resin

Fig. 13 Post prosthetic OPG

intraorally (Fig 9 & 10) and appearance checked for from all directions when the patient moved his lips, speaks and relaxes. Minor changes in the tooth position, extention of the gingival flanges and level of gingival margins were done at this stage. Examination of the surface contours of the prosthesis was done to check for obstruction of lip or tongue movement during swallowing and speaking. Occlusion and access for oral hygiene was also verified. The appliance was then sent to the laboratory for processing.

The final prosthesis (Fig 11) was inserted after centering it over the abutments optimally initially tightening the screws lightly and sequentially. The fit of the framework, level of bone, position of the abutment and contact of the fixtures were ascertained before torquing it to its final position. Examination of the occlusion with the help of articulating paper was done with the appliance in the mouth. After the screws are fully torqued, the holes through which they are inserted are sealed using a silicone impression material and the access holes were sealed with light cure composite resin (Fig 12). The patient was given oral hygiene instructions and discharged (Fig 13).

The patient was recalled after one week and a thorough examination of the prosthesis and surrounding tissues was made. Further recall appointments were given at six month intervals.

Discussion

The clinical procedures and a brief description of the various laboratory procedures involved in the construction of a full arch maxillary prosthesis made of a copy milled titanium frame is described here starting from the second stage surgery. In an edentulous patient, at least four and up to six or eight fixtures are required to support a fixed superstructure. The number of fixtures depends on the implant length, location, implant orientation, bone quality and the length of the cantilever.[9]

Though the type of superstructure to be employed is made primarily on the basis of clinical examination and assessment of a trial or diagnostic denture, it is wise to caution the patient that even with careful assessment, the findings at implant insertion may dictate the number and location of implants which can be inserted and hence the type of prosthesis that may be used.. Previous careful inspection of original study casts articulated with the trial dentures and Comparison of the position of the healing abutments in relation to adjusted complete dentures will provide useful guidance on the choice of the type and length of the definitive abutments. In a majority of cases the measured depth of the healed mucosal cuff plus 2mm produces sufficient clearance beneath the fixed prosthesis

Some of the factors must be evaluated when planning the treatment that would influence the final outcome are to analyze the bone anatomy - to see if sufficient bone depth and width is present to accommodate four to five fixtures.[7] Checking of the opposing prosthesis or natural teeth influences the choice of restoration. Also the prosthetic space, that is, the amount of resorption present should be looked for.[7] For instance, in case of severe resorption, it would be advisable to give flanged prosthesis for lip support. The potential location of fixtures should be compatible with the positions of the teeth required to restore the appearance and occlusion without creating excessive leverage.[7]

Impression copings, which are implant specific, are necessary as they help in recording the position and orientation of the fixtures accurately. Linking of the impression copings is at the discretion of the clinician. There are disparate school of thought regarding the

linking of impression copings prior to the final impression recording. This is done to record the relationship between the fixtures and to produce an accurate impression which would not distort during its transit to the laboratory and during laboratory pouring procedures. The fixtures can be linked by use of dental floss, self cure acrylic resin and by custom fabricated cast cobalt chromium bar. It is said that this method of linking the copings with floss and self cure can lead to considerable inaccuracies due to the curing shrinkage of acrylic[7]. It is at the discretion of the clinician to decide the impression procedure.

An impression may be recorded in a stiff elastomeric impression material without linking the copings. With an open tray impression technique, impression copings with long screws make it easier to remove the copings when the impression material has set. Closed trays or non perforated trays are used along with tapered copings in areas with restricted access like in the more distal areas of the mouth[7]. Here the impression copings remain attached to the implants when the impression is removed from the mouth.

The advantages of copy milled fixed prosthesis are that there is no need for soldering, welding, waxing or casting. As the framework is computer milled, it is more accurate than other techniques. It has superior strength when compared to conventional techniques and has a passive fit and adaptability.

No mucosal support is required here as the implant abutment unit supports the prosthesis. Hence no potential tissue irritation due to prosthesis movement is caused.[14]

A few complications may arise in such fixed prosthesis. Primary among these complications are bridge screw loosening and fracture, abutment screw loosening and fracture, prosthesis fracture and prosthetic tooth wear. Tooth wear is a complication that must be addressed intermittently. The increased functional capacity imparted to the implant-supported fixed denture patient is clearly observed by prosthetic tooth wear. The restoration of the occlusal and vertical dimension of occlusion for acrylic denture teeth should be considered approximately every 3 to 5 years. When oral hygiene may be questioned or restricted for physical reasons, the implant-supported fixed denture may be dissuaded in favor of an over denture prosthesis

Conclusion

Clinicians should encourage patients to consider the potential use of endosseous dental implants as an effective means of improving their own perceptions of function, appearance, and image.

Harnessing the light weight of Titanium and the precision obtained three- dimensionally by CAD-CAM milling is the biggest blessing when using copy milled titanium for the framework of fixed implant prosthesis. It eliminates the cumbersome casting procedures and the inherent casting distortion. It should however be remembered that adequate vertical space between the ridge crest and the occlusal plane is required to accommodate a zone for hygiene as well as the superstructure. Proper home care and regular monitoring of the maintenance of oral hygiene by the patient is mandatory for the long term success of the restoration.

Reference

1. Assif D,Marshak B, Schmidt A. Accuracy of implant impression techniques. Int J Oral Maxillofacial Implants 1996;11:216–222.
2. Baba N,Watanabe I, Liu J, Atsuta M.Mechanical strength of laser-welded cobalt-chromium alloy. J Biomed Mater Res B Appl Biomater 2004; 69:121–124.
3. Carr AB. Comparison of impression techniques for a five implant mandibular model. Int J Oral Maxillofac Implants 1991; 6:448–455.
4. Carr AB, Stewart RB. Full-arch implant framework casting accuracy: preliminary in vitro observation for in vivo testing.J Prosthodont 1993; 2:2–8.
5. Ganeles J, Rosenberg MM, Holt RL, et al. Immediate loading of implants with fixed restorations in the completely edentulous mandible: report of 27 patients from a private practice. *Int J Oral Maxillofac Implants*. 2001;16(3):418-426.
6. Hellden LB, Ericson G, Olsson CO. The Cresco bridge and implant concept: presentation of a technology for fabrication of abutment-free, passively fitting superstructures. Int J Periodontics Restorative Dent 2005; 25:89–94.
7. Hobkirk J.A,Watson. R.A,Ktsson T.A,1995,Colour atlas and text of Dental and Maxillofacial Implantology,Mosby-Wolfe
8. Lang NP, Berglundh T, Heitz-Mayfield LJ, et al. Consensus statements and recommended clinical procedures regarding implant survival and complications. *Int J Oral Maxillofac Implants*. 2004;19(suppl):150-154.
9. Lawrence A. Weinberg, 2003, Atlas of Tooth and Implant supported prosthodontics, quintessence books.
10. Örtorp A, Jemt T, Bäck T, Jälevik T. Comparisons of precision of fit between cast and CNC-milled titanium implant frameworks for the edentulous mandible. Int J Prosthodont 2003; 16:194–200.
11. Phillips KM, Nicholls JI, Ma T. The accuracy of three implants impression techniques. Int J Oral Maxillofac Implants 1994; 9:533–540.
12. Riedy SJ, Lang BR, Lang BE. Fit of implant frameworks fabricated by different techniques. J Prosthet Dent 1997; 78:596–604.
13. Sertgoz A. Finite element analysis study of the effect of superstructure material on stress distribution in an implant supported fixed prosthesis. Int J Prosthodont 1997; 10:19–27.
14. Stevens P.J, Frederickson Edward J, Greff Maurice L, 2000,, Implant Prosthodontics-Clinical and Laboratory procedures, Mosby publication 2nd edition.
15. Takahashi T, Gunne J. Fit of implant frameworks: an in vitro comparison between two fabrication techniques. J Prosthet Dent 2003; 89:256–260.
16. Torres EM, Rodrigues RC, deMattosMda G, Ribeiro RF. The effect of commercially pure titanium and alternative dental alloys on the marginal fit of one-piece cast implant frameworks Dent 2007; 35:800–805.
17. Van Roekel NB. Prosthesis fabrication using electrical discharge machining. Int J Oral Maxillofac Implants 1992;7:56–61.
18. Vigolo P, Millstein PL. Evaluation of master cast techniques for multiple abutment implant prostheses. Int J Oral Maxillofac Implants 1993; 8:439–446.

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Reinforcement of root canal with thin dentinal wall using flowable composite and fibre posts

* Varna R., ** N.O. Varghese, *** Jolly Mary Varughese

Abstract

Tooth trauma has been and continues to be a common occurrence that every dental professional must be prepared to assess and treat when necessary. The greatest gift that an endodontist can give the patient is the esthetic rehabilitation of badly broken down teeth. Restoration of broken down anterior teeth is a dilemma to the dentist both diagnosis and treatment wise. Since esthetics of the anterior teeth is extremely important, the treatment plan comprises of a combined effort from the endodontic and periodontal specialties.

The case report is of a 14 year old patient reported to our clinic with the complaint of dislodged crown. IOPA revealed a partially filled root canal with thin dentinal walls. Conventional treatment with custom made cast post can lead to further weakening and fracture of the tooth. Hence the treatment plan of reinforcing the root canal with fiber post and flowable composite was decided.

Introduction

Teeth can sustain a variety of injuries in the developing years of dentition. Tooth fracture constitutes 4-5% and luxation injuries 30-44% of all the dental trauma injuries. Most commonly affected teeth during trauma are the anterior teeth. The injuries range from avulsion to intrusion, lateral displacement, fracture, or just a concussion. An injury can result in cessation in root development. Since complete root development takes 2 years once the tooth has erupted into the oral cavity, the result of pulpal necrosis would be an incompletely developed root apex and thin dentinal walls. Such a root apex is called as a '*blunderbuss apex*' which derives its name from the Dutch word '*Donderbus*' which means thunder gun.

The treatment of immature permanent teeth with open apices is a challenge to the endodontist. Mechanical debridement is very difficult since the thin dentinal walls are prone to fracture. The conventional method of treating immature permanent teeth is to induce apical closure by long term calcium hydroxide. But there are different disadvantages for this treatment modality. Calcium hydroxide induces only an apical barrier formation where it comes into contact with the vital tissue, there will not be any continued root development or progressive thickening of the dentinal walls. The restoration of such a tooth presents a dilemma to the clinician.

For many years, cast posts were most commonly used for the treatment of endodontically treated teeth with wide canals. Their disadvantages include catastrophic root fractures in teeth with reduced remaining dentinal thickness, shadowing and graying of the root and discolouration at the tooth's gingival margins.

In the past decade, other post systems including prefabricated aesthetic posts, have gained popularity. Endodontically treated teeth with weak canals i.e. remaining dentinal thickness <2mm, should be ideally reinforced before post placement. Light polymerized composite resin can be used for this purpose. Composite resin absorbs and distributes forces in a more uniform manner as compared to metals, and increases resistance to fracture, thus providing improved prognosis. An adhesive bonding system used with these resins is based on its ability to create micromechanical retention, which has an added advantage for a weakened root.

In various clinical situations, when the post does not allow light transmission, it is only possible to light polymerise the resin within the intra radicular space to a maximum depth of 2-3 mm, due to the limited effect of trans-illumination within the composite resin. However, introduction of commercially available light transmitting posts allow light polymerization by trans illumination, that effectively polymerises the composite along the entire length of the radicular preparation.

Following is a case report, which describes the step by step procedure of post and core restoration of a maxillary central incisor with weakened root.

Case report

A 14 year old patient reported to Dept. of Conservative Dentistry and Endodontics, Govt. Dental College, Trivandrum complaining of dislodged crown. The patient wanted re fabrication of crown on 21. The patient has a history of trauma at the age of 7 years after which he suffered a complicated crown fracture (Ellis Class III) and the tooth became non vital. He has a history of treatment in the Dept of Pedodontics for quite some time(Fig 1).

On examination an open root canal with flared walls was found. Radiographic examination revealed a partially

Fig 1. Preoperative view

Fig 2. Radiographic view

Fig 3. After cleaning and shaping

Fig 4. After obturation

Fig 5. After retaining apical guttapercha

Fig 6. Application of etchant

Fig 7. Application of bonding agent

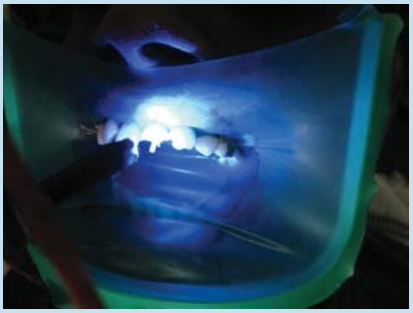

Fig 8. Curing of flowable composite

filled large root canal with closed apex. (Fig 2)

Since the root canal was open to the external environment thorough cleaning and minimal shaping of the root canals were carried out. However, the thin dentinal walls still presented a clinical problem. If secondary injuries occur, teeth with thin dentinal walls are more susceptible to fractures that render them non restorable. The access opening was refined and canal disinfection was carried out with intracanal irrigation of 2% sodium hypochlorite and intracanal dressings of calcium hydroxide. This was repeated until the canal became dry and ready for obturation. (Fig 3)

Obturation was done using thermoplastisized gutta-percha (Obtura, Spartan) and apical 7 mm of gutta percha was retained.(Fig 5) The root canal was etched with 37 % phosphoric acid (Meta etch)(Fig 6). Bonding agent (Prime N bond NT, Dentsply) was applied to the interior of the root canal with applicator tip (Dentsply) and cured. (Fig 7)

Flowable composite (EsthetX, Dentsply) was injected to the inside of the canal with syringe tip. FRC Postec Plus is a highly aesthetic and highly radiopaque root canal post composed of glass fibre-reinforced composite. The FRC Postec Plus system consists of light-transmitting glass fibre-reinforced composite posts in three sizes.

The surface of the post was coated with glycerine and placed in to the canal filled with composite. The tip of the composite curing unit was placed on the post and cured (Fig 7). After curing the post is removed from the composite and etched with 37% phosphoric acid and washed thoroughly. The surface of the post was treated with silane coupling agent (Monobond –S) for air dried for 60 sec. This was repeated several times.

Resin cement (Calibra, Dentsply) was mixed on the paper pad (Fig 9) and placed inside the created post space using a clean endodontic file. The post is also coated with the resin cement and placed inside the post space and cured through the post. (Fig 9)

Composite core build up was done and crown preparation was completed. Gingival retraction was done (Pascal Dental) and impressions were taken (Aquasil impression material, Dentsply). Metal ceramic crown was fabricated on 21 and luting was done. (Fig 11 & 12)

Discussion

This technique helped to create a monoblock in the root canal thereby effective dissipation of stress**.**The term monoblock literally meaning a single unit, has been employed in dentistry since the turn of the century. Replacement monoblocks created in the root canal has been classified as primary, secondary and tertiary depending upon the number of interfaces present between the bonding substrate and the bulk material core. (Fig 13) A primary monoblock has only one interface between the material and the root canal wall.The combined use of a core material and a cement / sealer in contemporary endodontic obturations and fibre post adhesion introduces additional interfaces into a monoblock. Secondary monoblocks are those that have two circumferential surfaces, one between the cement and dentin and the other between the cement and the core material. Tertiary monoblocks are those in which a third circumferential interface is introduced between the bonding substrate and the abutment material. Fiber posts that contain either an external silicate coating or unpolymerized resin composite for relining root canals that are too wide or not perfectly round for the fitting

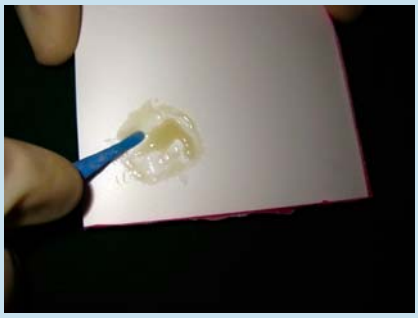

Fig 9. Mixing of resin cement

Fig 10. FRC post placed inside the canal and cured

Fig 11. Metal ceramic crown luted on 21

Fig 12. Post obturation IOPA

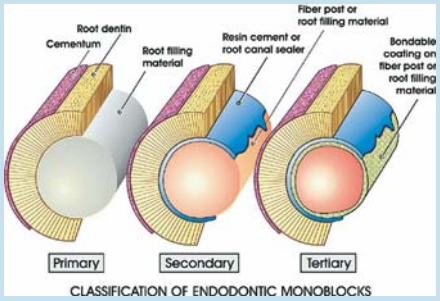

Fig 13. Type of monoblocks

of conventional fiber posts. Anatomic posts may be considered as tertiary monoblocks. In the latter, the post is adapted to a lubricated post space and photoactivated to partially polymerize the composite. The relined assembly is then removed and optimally polymerized before reinsertion for bonding with a resin cement. The efficacy of these systems has not been thoroughly investigated.

Conclusion

Failure in endodontically treated teeth is more likely due to restorative failure than the endodontic treatment itself. Thus, it is important to plan the treatment with respect to the endodontic technique and the feasibility of successful restoration as well. Also, post selection affects the stress patterns in the root canal. For a weakened root, the use of cast post can concentrate the wedging forces at the weakened coronal portion of the root canal. The use of prefabricated post entails the obturation of large defects with the cementing medium, thus creating a weak link between the entire post-core-crown-tooth complex. Thus, for a flared canal, it is important that lost dentin is rebuilt with a strong substitute. Composite resin bonds well to the dentinal wall after the acid etching and the tooth bonding procedure, and serves to reinforce the weakened root. The use of light transmitting post along with light curing composite resin facilitates complete polymerisation to the depths of the canal. This technique has advantages like reinforced root strength as light-cured composites internally reinforce the root structure, providing maximum sheer load support and retention. There is also improved control since light-curing composites are easy to control, are more adaptive and safer than auto-cured composites that may prematurely harden.

Bibliography

1. Katebzadeh N, Dalton BC, Trope M Strengthening immature teeth during and after apexification J Endodont 24(4) 256-259. 1998.
2. Robbins J W guidelines for the restoration of endodontically treated teeth J Am Dent Assoc 120(5):558-562, 1990.
3. Takeda T, Ishigami K, Shimada A, et al: A study of discoloration of gingival by artificial crowns Int J Prosthodont9(2):197-202, 1996.
4. Strassler HE: Restoring endodontically compromised teeth with fiber reinforced light transmitting anchors. Contemporary Esthetics and Restorative Practice 3(3): 58-60, 1999
5. Strassler HE, Simon R, Hiatt H, et al: Using an esthetic post to restore and rein- force a maxillary incisor. Contemporary Esthetics and Restorative Practice 4(2): 36-44, 2000.
6. Glassman G, Serota K, Soll J A new method for restoring endodonticallt treated tooth th eluscent anchor system Oral health 6 (12) 23-26. 1999
7. Saupe WA, Gluskin AH, Radhi RA Jr.: A comparative study for fracture resistance between morphological dowel and cores and a resin reinforced dowel system in intraradicular restoration of structurally compromised teeth Quintessence Int 27(7):483-491, 1996
8. LA Conclaves, LPV Vansan, SM Paulino, MS Neto, Fracture resistance of weakened roots restored with a transilluminating post and adhesive restorative materials. Journal of Prosthetic Dentistry 2006; 96:339-44.
9. Lui, J.L Composite Resin Reinforcement of Flared Canals Using Light-Transmitting Plastic Posts. Quintessence International 1995;25: 320-25.
10. Robbins JW. Guidelines for restoration of endodontically treated teeth. Journal of American Dental Association 1990; 120:558-62.

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Maxillary second molar with single root and an incompletely fused single canal diagnosed with Spiral CT.

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Abstract

Tooth with unusual and complicated morphology present a challenge to the dentist in diagnosis and treatment. To achieve this goal, we need to be familiar with all possible variations of the root and root canal, and have adequate information of root and root canal morphology of the tooth needing treatment. This article presents an endodontically managed maxillary second molar with an unusual morphology of a single root and a single canal, in a patient who reported with oblique chisel fracture of maxillary second molar. Newer diagnostic tools like spiral CT help to determine the exact three-dimensional morphology of the tooth and pulp space. Due to unusual morphology of this tooth, spiral CT was used for an accurate assessment of the canal morphology. This report also highlights the role of Spiral computed tomography as an objective method to confirm the three-dimensional anatomy of teeth.

Introduction

The variation of root canal system morphology, especially in multirooted teeth, is a constant challenge for diagnosis and successful endodontic therapy[1]. Knowledge of the most common anatomic characteristics and their possible variations is fundamental, because the nontreatment of one canal can lead to endodontic treatment failure[2]. Human molar teeth demonstrate considerable anatomic complexities and abnormalities with respect to the number of roots and root canals. Conventional intra-oral periapical radiographs are an important diagnostic tool in endodontics for assessing the root morphology and canal configuration. Nevertheless, it is not completely reliable owing to its inherent limitation[3]. Recently, newer diagnostic methods such as computed tomography (CT) and Spiral CT (SCT) overcome the disadvantages of radiographs by producing a three-dimensional image. These imaging techniques have emerged as powerful tools for evaluation of root canal morphology[4]. This case report presents a maxillary second molar with an unusual morphology of a single root and a single, but incompletely fused canal and highlights the use of Spiral CT as a diagnostic tool to confirm the same.

Case report

An 18-year-old male patient was referred to our department from a private clinic for completion of endodontic treatment on left maxillary second molar. He gave a history of fall which occurred 3 weeks ago, and had been experiencing severe pain since then. Endodontic treatment had been started 1 week back. The preoperative radiograph (Fig. 1) confirmed commencement of endodontic treatment and also revealed an unusual anatomy of the involved tooth with a single root and a single canal. Completion of the endodontic treatment was planned. Access opening was done in the left maxillary second molar under rubber dam isolation. Clinical examination showed the presence of a single canal orifice in the center of the pulpal floor. Several X-rays in variable horizontal angulations were taken to further ascertain this unusual morphology. On instrumentation, all the scouting files converged into a single broad canal.

Conventional film based dental radiography is considered the current standard for clinical and research examination of the oral hard tissues. However, the main disadvantage with such radiographs is that, it is only a two-dimensional image of a three-dimensional object resulting in superimposition of images. Existing diagnostic methods such as the computerized tomography (CT) greatly facilitates access to the internal morphology of soft tissue and skeletal structures. CT combines thin-section imaging or tomography with electronic image acquisition and computerized image generation. It enables visualization of a section of the patient's anatomy by blurring regions of the patient's anatomy above and below the section of interest. This is achieved by a synchronized movement of the film and the tube in opposite directions, about a fulcrum. The thickness of the image layer depends on the angle of rotation or the amount of movement of the tube. If the path of the X-ray tube is short, and the angle is small then the image layer is relatively thick and if the angle of movement increases, the thickness of the image layer decreases. Detectors measure the intensity of the X-ray beam emerging from the patient and convert this into digital data which is stored and manipulated by the computer. The image can then be reformatted into tomographic sections of the body and adjusted to detect minute differences in tissue alterations. Recently, a new CT technique, Spiral CT or SCT, has been developed

Fig.1 Pre-operative IOPA

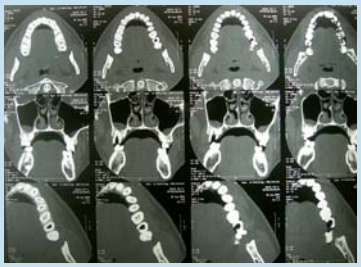

Fig.2 Spiral CT Image

Fig.3 Spiral CT Image

Fig.4 Spiral CT Image showing (a) relatively round pulp chamber

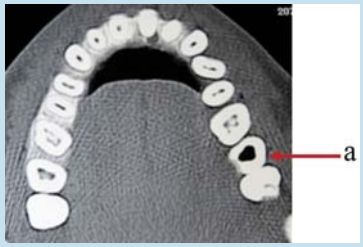

Fig.5 Spiral CT Image showing (b) 'clover leaf - shaped' canal space

Fig.6 Spiral CT Image showing (c) complete fusion

that has its inherent advantage. SCT acquires raw projection data with a spiral-sampling locus in a relatively short period[5]. The teeth can be viewed as conventional transaxial images, such as multiplanar reconstructions, or as three -dimensional reconstructions. With SCT, it is possible to reconstruct overlapping structures at arbitrary intervals and thus the ability to resolve small objects is increased.

To ascertain the precise morphology of the root canal, dental imaging with the help of spiral CT was therefore planned. Informed consent from the patient was obtained. A Spiral CT imaging was performed in the maxilla in coronal and axial planes with sections of 0.5 mm thickness (Fig. 2, 3). In the axial CT, in which cross sections of the tooth can be seen, the images revealed that the left maxillary second molar had a single root with a single fused canal. The pulp chamber was relatively round in shape (Fig. 4). However, in the coronal third of the root canal, incomplete fusion has resulted in a 'clover leaf - shaped' canal space (Fig. 5). In the apical third, the root canal space is a bucco-lingually elongated triangular space, which is suggestive of a more complete fusion (Fig. 6). In the coronal CT, where longitudinal sections of the tooth are viewed, an incomplete lateral extension can be seen. This is further suggestive of an incomplete fusion (Fig. 7). It is equally important to observe the ipsilateral and contralateral molars. The ipsilateral first molar and the contralateral first and second molars had 3 roots and normal canal configurations (Fig. 8).

Working length was determined using radiographs (Ingle's method) and an apex locator. Cleaning and shaping was done using crown-down technique with hand instrumentation (Dentsply Maillefer). Irrigation between each instrument was done using 2.5% Sodium Hypochlorite solution. Final irrigation with 17% EDTA was done and the root canal space was sealed using cold lateral compaction of gutta-percha and AH plus sealer (Dentsply Maillefer). The tooth was then subsequently restored. Figure 9 shows the post obturation radiograph.

Discussion

Maxillary second molars with one root and one root canal have very low percentage of occurrence. Most of the studies on root morphology of maxillary molars, due to limitations of small sample size, fail to provide data on frequency of teeth with one root and one root canal. Y-L. Ng (2001) and Alavi et al (2002) failed to find any case of single rooted teeth in study among 77 second molars.[6, 7] Barbosa (1978) found this type of abnormality in 1% of extracted human second molars.[8] Hartwell & Bellizzi (1982) found maxillary second molars with one root canal in 0.6% of root-filled teeth.[9] A higher percentage of 3.1% of endodontically treated maxillary second molars with one root and canal was reported by Peikoff et al (1996).[10] Rwenyonyi (2007) found 0.5% of maxillary second molars to have all roots fused.[11]

These variations can be detected in routine radiographs as in the present case. However, care should be taken to assess the correct anatomy in the preoperative radiograph to reduce confusion with another anatomic variation of the same tooth where two roots are present, one buccal and one palatal, which could be superimposed on the diagnostic radiograph. Such cases can be confusing clinically, because we may not be able to rule out the possibility of a missed second root or a second canal. Also we may not be absolutely certain that there are fewer canals than the normally presumed

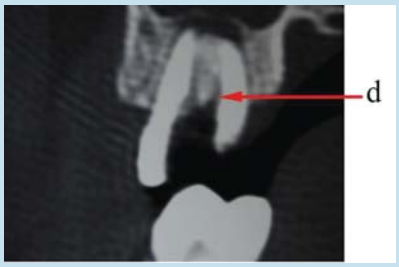

Fig.7 Spiral CT Image showing (d) an incomplete lateral extension

Fig.8 Spiral CT Image showing (e) ipsilateral first molar and (e) contralateral first and second molars had 3 roots and normal canal configurations

Fig.9 IOPA after obturation

canal morphology. In such doubtful cases, a radiograph even at different angulations cannot be considered to be foolproof because of its inherent limitations. The role of spiral CT and the benefits offered by it as a diagnostic tool was shown by Gopikrishna et al in a case report of a maxillary first molar with one root and one root canal.[12] In this case also, Spiral CT helped in comprehending the root and canal morphology in its finest detail, at different levels throughout the entire length of the root. ie, relatively round in the pulp chamber, 'clover leaf-shape' in coronal third and triangular space in the apical third of the root (Fig. 4-6).

In cases of unusual root and canal morphology, it is recommended to observe the contralateral and the bilateral tooth. Sabala et al stated that the more rare the aberration, the more probable that it was bilateral.[13] Examples of bilaterality were reported in maxillary molars by Sabala et al[13] and Dankner et al.[14] in this case, the ipsilateral first molar and the contralateral first and second molars had 3 roots and normal canal configurations (Fig. 8).

Conclusion

One of the most important aspects in contemporary endodontics is a thorough knowledge of external root anatomy and internal root canal morphology. Anomalies in root canal morphology need not only be in the form of extra canals. It could also be in the form of fused or fewer numbers of roots and canals. This report shows that the clinician must be aware of anatomic variations during the diagnostic and treatment phases of maxillary molars, so that correct root-canal therapy can be performed respecting the possible challenges of pulp space anatomy. This paper also highlights the immense potential of using Spiral CT as an advanced diagnostic tool in endodontics.

References

1. Malagnino V, Gallotini L, Passariello P. Some unusual clinical cases on root anatomy of permanent maxillary molars. J Endod 1997;23:127–8.
2. Christie WH, Peikoff MD, Fogel HM. Maxillary molars with two palatal roots: a retrospective clinical study. J Endod 1991;17:80–4.
3. Hildebolt CF, Vannier MW, Pilgram TK, Shrout MK. Quantitative evaluation of digital dental radiograph imaging systems. Oral Surg Oral Med Oral Pathol 1990;70:661– 8.
4. Peters OA. Current challenges and concepts in the preparation of root canal systems: A review. J Endod 2004;30:559–67.
5. Kalender WA, Siessler W, Klotz E, Vock P. Spiral volumetric CT with single-breadthhold technique, continuous transport and continuous scanner rotation. Radiology 1990;173: 567–8.
6. Y-L. Ng, T. H. Aung, A. Alavi, K. Gulabivala. Root and canal morphology of Burmese maxillary molars. International Endodontic Journal 2001; 34: 620–30.
7. A. Alavi, A. Opasanon, Y-L. Ng, K. Gulabivala. Root and canal morphology of Thai maxillary molars. International Endodontic Journal 2002; 35: 478–85.
8. Barbosa SV Topografia dentaÂria aplicada aÁ Endodontia: segundos molares superiores permanentes. (1978) Natal, RN, Brazil.
9. Hartwell G, Bellizzi R. Clinical investigation of in vivo endodontically treated mandibular and maxillary molars. Journal of Endodontics 1982; 8: 555-7.
10. Peikoff MD, Christie WH, Fogel HM. The maxillary second molar: variations in the number of roots and canals. International Endodontic Journal 1996;29: 365±9.
11. C. M. Rwenyonyi, A. M. Kutesa, L. M. Muwazi & W. Buwembo. Root and canal morphology of maxillary first and second permanent molar teeth in a Ugandan population. International Endodontic Journal 2007;40: 679–83.
12. Gopikrishna V, Bhargavi N, Kandaswamy D. Management of a maxillary first molar with a single root and a single canal diagnosed with the aid of spiral CT: a case report. Journal of Endodontics 2006; 32: 687–91.
13. Sabala CL, Benenati F, Neas BR. Bilateral root and root canal aberrations in a dental school patient population. Journal of Endodontics 1994; 20: 38-42.
14. Dankner E, Friedman S, Stabholz A. Bilateral C-shaped configuration in maxillary first molars. Journal of Endodontics 1990; 16: 601-3.

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White spot lesions: diagnosis and management

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Abstract

White spot lesions are most common iatrogenic side effect of orthodontic therapy. These unaesthetic localized areas of demineralization are a routine problem in orthodontic scenario but if meticulous measures are taken they can be easily prevented. This article prevents the etiology, prevalence preventive measures and management of white spot lesions.

White spot lesions or early enamel decalcification is a common iatrogenic effect in orthodontics which occurs because of prolonged plaque retention around brackets. For most of our patients, improved esthetics is the main reason for seeking treatment. If the ultimate goal of orthodontic treatment is to achieve healthy and esthetic results, orthodontists should take a proactive role to prevent the development of white spot lesions. It is our responsibility to minimize the risk of patients having enamel decalcifications as a consequence of orthodontic treatment. For a successful management of white spot lesions it is essential for the orthodontist to know its etiology, preventive measures and treatment if required as a last resort.

White spot lesions have been defined as "subsurface enamel porosity from carious demineralization that present themselves as "a milky white opacity" . . . when located on smooth surfaces.[1]

Why white spots appear?

Number of studies have investigated the relationship between orthodontic treatment with fixed appliances and caries development. Studies have shown that fixed orthodontic appliances induce a rapid increase in the volume of dental plaque.[2] Such plaque has a lower pH than that in nonorthodontic patients[3] and induces a rapid shift in the composition of the bacterial flora of the plaque following the introduction of orthodontic appliances. The levels of acidogenic bacteria, such as S. mutans, become significantly elevated in orthodontic patients compared to people not wearing braces.[4] When the pH of oral fluids fluctuates below the physiologic norm (BELOW 5), calcium and phosphate ions diffuse from hydroxyapatite mineral in the enamel to the pellicle and into the oral cavity causing demineralization or white spot lesions (fig 1).

Prevalence

Decalcification or white spot lesion (WSL) development of the enamel surface is by far the most important iatrogenic effect of fixed orthodontic appliance therapy.

- Gorelick & Geiger found that prevalence of at least one white spot lesion in patients who underwent treatment with orthodontic appliances was 49.6%; this compares to only 24% in an untreated control Group.[5]
- Using more advanced detection techniques like quantitative light-induced fluorescence (QLF), Boersma[6] observed that 97% of all subjects and on average 30% of the buccal surfaces in a person were affected.
- Sandvik[7] reported about 50% of the patients receiving orthodontic treatment developed one or more White spot lesions during treatment and 5.7% of the teeth were affected. This compared with a matched group of nonorthodontic patients in whom 11% developed white spot lesions on the labial surfaces in the same period of time and 0.4% of the teeth were affected.

Distribution

White spot lesions are found to be greatest on the cervical and middle thirds of the crowns of the maxillary and mandibular first molars, maxillary lateral incisors, and mandibular lateral incisors and canines, and mainly on the vestibular surfaces of the teeth.[8]

White spot lesions are well differentiated from surrounding enamel, often located in the middle of the tooth, and randomly distributed in orthodontic patients, white spot lesions are often seen under loose bands, around the periphery of the bracket base, and in areas that are difficult for the toothbrush to access and for the patient to easily detect.[8]

Detection and diagnosis[9]

Sound diagnosis forms the cornerstone of every treatment modality and its proper knowledge ensures that the operator does not misdiagnose or miss the diagnosis. Various diagnostic tools are available for white spot lesion detection, some of which are enumerated here:

- Clinical Examination: It is simple and clinically valid but it is often difficult to distinguish white spots caused by demineralization and those that are due to other causes, such as developmental hypoplasia or fluorosis

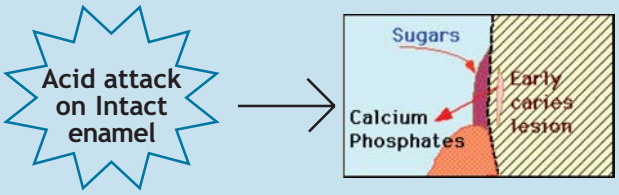

Fig 1. Demineralization following acid attack leading to formation of white spot lesions

Fig 2A. Pretreatment intra oral photograph showing lack of white spot lesions.

Fig 2B. Post orthodontic treatment patient has developed white spot lesions in cervical regions (black arrows)

Fig. 3A,B. Patient after 4 months of usage of fluoridated toothpaste. The white spot lesions have regressed and natural luster of teeth has been restored. No futher treatment was required for white spot lesions in this patient

Fig 4A. Pretreatment photograph showing malaligned lower anteriors and spacing. Gingival recession on 41 was present along with grade 2 mobility and periodontal pockets

Fig. 4B. Brackets were bonded only on lower arch and alignment and space closure was carried out.

- Photographic Examination: Photographs provide a permanent record and can be re-examined at a different time to determine reproducibility. Their disadvantage is that photographs tend to overestimate the incidence of opacities, partly due to the reflection of the flash from the tooth surface
- Optical Nonfluorescent Methods: Demineralization leads to more scattering of the light entering enamel. The scattering results in a sideward displacement of the light, which can be measured using the Optical Caries Monitor (OCM): Ten Bosch. 100-W white light is used as a light source and measured backscatter with a densitometer enables a convenient and nondestructive quantification of enamel demineralization. It is particularly technique sensitive and results can vary with the degree of wetness or drying of the tooth.
- Optical Fluorescent Methods: Carious enamel shows up as a dark area with fluorescent techniques. Fluorescent Dye Uptake and Ultraviolet rays were used earlier for detection but both have their flaws. Dye uptake method is technique sensitive and UV rays method has potential of causing retinal damage to the operator.

Recently argon-ion laser producing light in the blue-green range of the electromagnetic spectrum (440-570 nm) is used. DIAGNODent (KaVo, Germany) is an example of portable system, which emits laser light of wavelength 655 nm or the red end of the electromagnetic spectrum.

- Light (Quantitative Light-Induced Fluorescence or QLF) A smaller portable system for intraoral use has been developed with a new light source and filter system. This is the basis of the most promising fluorescent method of measuring demineralization in use today. It employs an arc lamp with a liquid light guide.

Preventive measures

What patients can do ?

Patients can help prevent white spot lesions by maintaining good oral hygiene and tooth brushing with a fluoridated dentifrice. Dentifrices typically contain either sodium fluoride, monofluorophosphate, stannous fluoride, amine fluoride, or a combination of these compounds. As orthodontic patients are at an increased caries risk, a fluoride concentration below 0.1% in dentifrices is not recommended. The fluoride concentrations may vary, but the maximum concentration allowed in the European community is 0.15%. Fluoridated mouth rinses containing 0.05% sodium fluoride used daily have been shown to significantly reduce lesion formation beneath bands. Antibacterial agents such as chlorhexidene, triclosan, or zinc can be added to improve their cariostatic effect.[10]

What an orthodontist should do?

Oral hygiene instruction and periodic reinforcement by a professional goes a long way in preventing white spot lesions. Selection of small brackets or usage of self ligating brackets, removal of any composite flash, cement lutes, minimal use of looped archwires are other general precautions which an orthodontist can take to minimize bacteria harboring areas.

Fig 5A. white spot lesions and discoloration of lower anteriors seen following debonding

Fig 5B. 18% HCl mixed with pumice applied over the anteriors in thick paste consistency using rubber cup at slow speed.

Fig 6A. Following micro abrasion the white spot lesions disappeared and good esthetics were obtained.

Fig 7A. Patient during treatment.

Fig. 7B. Following debonding white spot lesions are visible

Fig 8A. White spot lesions seen in intraoral oblique view.

Fig. 8B. Rubber dam isolation prior to bleaching process.

More definitive treatment includes periodic topical fluoride application by orthodontist. Commonly used fluoride agents include 1.23% acidulated phosphate fluoride (APF), 2% sodium fluoride, 8% stannous fluoride, Duraphat® [DPT] varnish, 5% sodium fluoride in a colophony base Fluor Protector TM [FP]. Titanium tetra fluoride solutions have also shown promising results for white spot lesion prevention.[10]

Topical fluorides are known to inhibit demineralization and enhance remineralization. Stannous fluoride has a plaque-inhibiting effect in addition to the anticaries effect. Stannous ions interfere with the adsorption of plaque bacteria to enamel by being bound to the phosphate polymer lipoteichoic acid present on the surface of Gram-positive bacteria. Stannous fluoride also interferes with the acidogenicity of plaque. It is possible that tin bound to the surfaces of the bacteria also blocks the passage of sucrose into the cell and inhibits acid formation[11]. Fluorides have been successfully incorporated in the bonding agents, and help in sustained fluoride release around the brackets reducing the susceptibility of tooth to decay. Nita Pai and Ashima Valiathan[12] reviewed the efficacy of four fluoride releasing bonding agents Flour- Ever Oba, Time line, Ultra bond and Orthodontic cement VP 862. It was found that all the four bonding agents were efficacious in caries inhibition and showed initial "burst effect" but the time line and ultra bond were not suitable as orthodontic adhesive due to poor shear bond strength.

Titanium Tetrafluoride forms a retentive, titanium-rich, glaze-like coating on treated enamel surfaces. At low pH, titanium binds with an oxygen atom of a phosphate group, which is densely distributed on enamel surfaces. Ti-O-Ti-O-chains are formed on the tooth surface, and covalently bound titanium atoms cover this surface. A strong complex is thus formed between the titanium compounds and the hydroxyapatite. This surface coating has been found to resist challenges even under extreme alkaline and acidic conditions. Titanium tetrafluoride is probably the only fluoride compound for which the cariostatic effect is not due to the fluoride ion.[11]

Casein phosphopeptide –amorphous calcium phosphate, is another caries inhibiting agent used for preventing white spot lesions. When CPP-ACP is applied in the oral environment, it binds to biofilms, plaque, bacteria, hydroxyapatite and soft tissues and increases bioavailability of calcium and phosphate locally. A number of different media have been produced to deliver the CPP-ACP, including a water-based mousse, a topical cream, chewing gum, mouth rinses, and sugar-free lozenges, tooth paste.[13-14] The material is marketed under the trade name "Recaldent."

Role of sealants and adhesives

Because of the recent improvements in the fluoride-releasing capabilities and the shear bond strength of resin modified GIC, it has been suggested that these adhesives should play a greater role in white spot lesion prevention.[8] Fluoride releasing cements, sealants and adhesives are also available. Fluoride-releasing sealant (ProSeal; Reliance Orthodontic Products, Itasca, IL) is a promising breakthrough and has been shown to be was capable of releasing fluoride ions for 17 weeks. While the sealant initially released ions at 0.074 ppm/wk/mm2, this level dropped to 0.01 by the end of the 17th week. However, the sealant was shown to have

Fig 9A. Application of dual activated bleaching agent over the upper anteriors

Fig 9B. light curing the bleaching agent.

Fig 10A. Rinsing after the bleaching agent has been cured. The white spot lesions have disappeared and the esthetic results are excellent

Fig 10B. Intra oral frontal view of the teeth showing successful camouflage of white spot lesions.

the ability to be recharged with fluoride ions using a foaming solution of acidulated phosphate fluoride.[15]

Anti microbial agents

Various antimicrobial agents have been incorporated in sealents and bonding agents to aid in preventing white spot lesions. An earlier concern regarding their addition was compromise on clinical bond strength of brackets, but recently many case reports support the incorporation of these agents without any significant difference in bond strength with additional benefit of caries inhibition. It is reported that combining chlorhexidene with the bonding primer or applying it after bonding is completed resulted in no significant decrease in shear bond strength.[16] A recent report[17] that evaluated the use of another antimicrobial, cetylpyridinim chloride (CTC), found no significant differences in tensile bond strength between an adhesive impregnated with 2.5% cetylpyridinium chloride and a control. Moreover, the adhesive containing 2.5% cetylpyridinim chloride was shown to inhibit bacterial growth for 196 days.

Treatment

"Prevention is better than cure" holds true for white spot lesions!!!!! but in case of developed white spot lesion an orthodontist should take following measures to restore tooth esthetics.

Following debonding first allow for a slower calcium and fluoride ion penetration of the white spot lesions from saliva or through the application of lower concentrations of fluorides. If high doses of fluoride are used locally, the arrested lesion remains of the same size and frequently becomes unsightly and stained with organic debris. Ogaard and coworkers[4] warned against treating visible white lesions on labial surfaces with concentrated fluoride agents, since this arrests both demineralization and remineralization in the lesion by surface hypermineralization.

If lesion does not regress on its own, tooth whitening or bleaching can successfully camouflage these white enamel areas. Bleaching can be done both by patient at home or by a professional in dental office.[11] Home Bleaching system includes tray-based whitening systems containing carbamide peroxide gel used overnight in tray based system(night guard) or with over-the-counter polyethylene strips applied for 30 minutes/twice daily that carry varying doses of hydrogen peroxide within a gel whitening system.[18]

In office bleaching or Vital bleaching involves the following steps[19]

- Etch the labial and incisal third of the palatal surface of the tooth with phosphoric acid for 60 secs, wash and dry.
- Thoroughly soak a strip of gauze in the 35% hydrogen peroxide and cover the teeth to be bleached. Alternatively hydrogen peroxide gel may be accurately applied to the teeth.
- Position the heat source (Union Broach Lamp) 13-15 inches from the teeth.. The gels on the market recommend a standard curing light directed onto individual teeth
- The gauze or the gel will need to be repenished every 3-5 mins.
- After 30 mins remove the rubber dam, clean off the Orabase or Vaseline and polish the teeth using shofu stones. Apply fluoride drops for 2-3 mins.

If bleaching alone does not camouflage the white appearance of the remineralized areas, enamel microabrasion can be performed.[10] Microabrasion[20] is merely the application of an acidic and abrasive compound to the surface of the enamel. Two techniques are available for the same:

- Hydrochloric acid/pumice technique:18% HCl is applied for 5 seconds maximum 10 applications
- Phosphoric acid/pumice technique:37% phosphoric acid is applied for 30 seconds followed by removal of frosted white surfaces by bur

Microabrasion compounds remove 12 um on the first application and 26 um on subsequent applications. The microabrasion process abrades surface enamel while compacting calcium and phosphate into the interprismatic spaces. Therefore, a portion of the whitened enamel is removed and a portion is camouflaged by the highly polished surface. Murphy[21] reported 83% reduction in white spot lesion following microabrasion.

Composite Restorations or porcelain veneers are kept as last treatment resort for highly resistant and large multiple lesions.

Case reports

Case report 1: 18 year old female treated for class II division1 malocclusion developed generalized white spot lesions on her teeth around the bracket periphery post debonding. The lesions were mild and hence she was advised regular use of fluoridated tooth paste and recalled for check up every month. After 4 months of recall her white spot lesions regressed considerably and natural optimum luster of teeth was restored.

Case report 2: A 34 year old male was referred from department of Periodontics for alignment of lower anteriors and space closure as an adjunctive treatment prior to periodontal flap surgery and prosthetic restoration required by the patient. His lower anteriors were bonded and alignment and space closure was carried out orthodontically. Patient had poor oral hygiene and developed white spot lesions and discoloration of teeth due to consumption of tobacco. Before proceeding with periodontal surgery microabrasion of lower anterior teeth to obtain good esthetics was planned. 18% HCl mixed with pumice powder into a thick paste, to prevent its swallowing by patient was used for microabrasion. 5 applications for 5 seconds each were carried out followed by rinsing with water to obtain desired results.

Case report 3: A 24 year old female treated in our department for class II division 1 malocclusion developed white spot lesions during the course of treatment. She discontinued the treatment in between for the purpose of marriage, on debonding moderate amount of white spot lesions were seen on incisors and extensive white spot lesions on canines and premolars. Patient was given options of bleaching and microabrasion for immediate esthetic restoration of her teeth. Patient opted for vital office bleaching. Bleaching was performed using hydrogen peroxide based Hi Lite dual activated bleaching system. Sectional rubber dam isolation was done to prevent ingestion or iatrogenic injury to gingiva by bleaching agent. Powder liquid system were mixed and applied using a brush on teeth followed by light curing and rinsing. Post bleaching white spot lesions were well camouflaged and patient was happy with the results.

Conclusions

White spot lesions are the uninvited guests in orthodontic scenario and can be easily avoided and tackled by combined efforts of both patient and the orthodontist. If the patient follows oral hygiene instructions meticulously and the orthodontist uses topical fluorides and other general measures the incidence of these lesions will come down drastically. In case the white spot lesions still prevail in the patient, the specified treatment modalities can be sought.

References

1. Summitt JB, Robbins JW, Schwartz RS: Fundamentals of Operative Dentistry: A Contemporary Approach, 3rd ed. Hanover Park, IL, Quintessence Publishing, 2006, Chapter 1, pp 2-4
2. Gwinnett JA, Ceen F: Plaque distribution on bonded brackets: a scanning electron microscope study. Am J Orthod 1979,75:667-677.
3. Chatterjee R, Kleinberg I: Effect of orthodontic band placement on the chemical composition of human incisor plaque. Arch Oral Biol 1979,24:97-100.
4. Øgaard B, Rolla G, Arends J: Orthodontic appliances and enamel demineralization. Part 1. Lesion development.Am J Orthod Dentofacial Orthop 1988,94:68-73.
5. Gorelick L, Geiger AM, Gwinnet AJ: Incidence of white spot formation after bonding and banding. Am J Orthod 1982,81:93-98.
6. J.G. Boersma.Caries Prevalence Measured with QLF after Treatment with Fixed Orthodontic Appliances: Influencing Factors.Caries research 2005,39:41-47
7. Sandvik K, Hadler-Olsen S, El-Agroudi M, Øgaard B: Caries and white spot lesions in orthodontically treated adolescents—a prospective study. Eur J Orthod 28:e25Russell AL: The differential diagnosis of fluoride and nonfluoride enamel opacities. J Public Health Dent 1961,21:143-146.
8. Samir E. Bishara.White Spot Lesions: Formation, Prevention, and Treatment. sem in orthod 2008,14(3):174-182.
9. Philip Benson.Evaluation of White Spot Lesions on Teeth with Orthodontic Brackets, sem in orthod 2008,14(3):200-208.
10. Kevin J. Donly, Potential Remineralization of Postorthodontic Demineralized Enamel and the Use of Enamel Microabrasion and Bleaching for Esthetics, sem in orthod 2008,14(3):220-225.
11. Bjørn Øgaard. White Spot Lesions During Orthodontic Treatment: Mechanisms and Fluoride Preventive Aspects. sem in orthod 2008,14(3):183-193.
12. Nita Pai, Valiathan A. Fluoride release from bonding agents. K Dent J 1992,15(3):740-6.
13. Reynolds EC: Remineralization of enamel subsurface lesions by casein phosphopeptide-stabilized calcium phosphate solutions. J Dent Res 1997,76:1587-1595.
14. Reynolds EC, Cai F, Shen P, et al: Retention and remineralization of enamel lesions by various forms of calcium in a mouthrinse or sugar free chewing gum. J Dent Res 2003,82:206-211.
15. Soliman MM, Bishara SE, Wefel J, et al: Fluoride release from an orthodontic sealant and its clinical implication. Angle Orthod 2006,76:282-288.
16. Bishara SE, Vonwald L, Zamtua J, et al: Effects of various methods of chlorhexidene application on shear bond strength. Am J Orthod Dentofacial Orthop 1998,114:150-153.
17. Al-Musallam TA, Evans CA, Drummond JL, et al: Antimicrobial properties of an orthodontic adhesive combined with cetypyridinium chloride. Am J Orthod Dentofacial Orthop 2006,129:245-25.
18. Donly KJ, Gerlach RW: Clinical trials on the use of whitening strips in children and adolescents. Gen Dent 2002,50:242-245.
19. Donly KJ, Segura-Donly A, Baharloo L, et al: Tooth whitening in children. Compend Contin Educ Dent 2002,23:22-28.
20. Segura A, Donly KJ, Wefel JS: The effects of microabrasion on demineralization inhibition of enamel surfaces. Quintessence Int 1997,28:463-466.
21. T. Murphy, D. Willmot.Management of postorthodontic demineralized white lesions with microabrasion: A quantitative assessment. Am J Orthod Dentofacial Orthop 2007,131(1):27-33.

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Case report

Orthognathic surgery for syndromic patients

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Abstract

We are reporting two syndromes; Marfan and Noonan Syndorme and the facial surgical treatment for correction of dentofacial deformity in those patients. Both these syndromic patients will be having associated cardiac problems, so proper cardiac evaluation and antibiotic prophylaxis for Sub acute bacterial endocarditis should be done prior to surgery in such patients. With proper diagnosis and treatment planning, the dentofacial deformities in such patients can be corrected. To improve the facial esthetics and to get more socially accepted, orthognathic surgery were done in both cases.

Introduction

Syndrome is a group of symptoms that collectively indicate or characterize a disease, psychological disorder, or other abnormal condition. A syndrome is the association of several clinically recognizable features, signs, symptoms, phenomena or characteristics that often occur together, so that the presence of one feature alerts the physician to the presence of the others. A combination of maxillary and mandibular osteotomies can be performed to correct the skeletal deformities after cessation of growth. Orthodontic preparation for surgery plays a key role. Ideally dental crowding should be corrected and the dental arches are aligned so that when the orthognathic surgery is completed a good dental occusion is achieved. Usually syndromic patients will be having associated cardiac or renal abnormalities and these must be assessed before surgery.

Marfan syndrome (Fig 1-4)

Marfan syndrome is a spectrum of disorders caused by a heritable genetic defect of connective tissue that has an autosomal dominant mode of transmission[1]. The primary purpose of connective tissue is to hold the body together and provide a framework for growth and development. Since connective tissue is found throughout the body, Marfan syndrome can affect many body systems, including the skeleton, eyes, cardiovascular, nervous system, skin, and lungs. It is caused by a defect in the fibrillin-1 gene (FBN1) on chromosome 15. One of the more famous instances being that of President Abraham Lincoln. Estimated incidence of Marfan syndrome ranges from 1 in 5000 to 1 in 10,000 births which includes still births. Marfan syndrome affects different people in different ways. Some people have only mild symptoms, while others are more severely affected. In most cases, the symptoms progress as the person ages.

We are presenting a case of Marfan syndrome in which the facial features were corrected by orthognathic surgery.

Case report

A 22 year old female came with the complaints of elongation of the face and prognathic mandible. These changes have happened after ten years of age. On examination patient showed typical features of Marfan syndrome like disproportionately long extremities in relation to the rest of the body, dolicocephaly, arachnodactyly, high arched palate, dental crowding, malar hypoplasia, Joint hypermobility and pectus excavatum. ECG and dopplar studies revealed mitral valve prolapse.

Surgical procedure

Cephalometric studies and presurgical orthodontics were done to decompensate the dental crowding and to realign the dental arches. Prior to surgery physician's, cardiologist's, and anesthetist's consent was obtained. Prophylaxis for sub acute bacterial endocarditis (SBE) was given. (American heart association's SBE prophylaxis regimen I). Under GA,bilateral sagittal split osteotomy and 7 mm mandible set back, lefort I osteotomy of maxilla with 5 mm superior positioning and 5 mm advancement done. Intraoperative and post operative period was uneventful.

Noonan Syndrome (Fig 5-7)

Noonan Syndrome (NS) is a relatively common congenital genetic condition that affects both males and females equally. It used to be referred to as the male version of Turner's syndrome. The syndrome is named after Dr. Jacqueline Noonan, a pediatric cardiologist in the U.S. The overall incidence of Noonan syndrome is believed to be between 1/1000 and 1/2000 livebirths.[1]. The four known genes that cause Noonan syndrome are: PTPN11, SOS1, RAF1, KRAS. However, the range and severity of features can vary greatly in patients with Noonan syndrome. Therefore, the syndrome is not always identified early age.

Case report

A 25 year old male came with the complaint of elongated upper teeth and exposure of the upper gums. Patient had typical features of Noonan syndrome including short stature, indentation of the chest, hypertelorism, epicanthic folds, antimongoloid slant of the palpebral fissures, ptosis, flat nasal bridge, low-set rotated ears with a thick helix and low hair line at the

Fig. 1

Fig. 2 a) Pre operative b) Post operative.

Fig. 3 a) Pre operative b) Post operative

Fig. 4 a) Pre operative

b) Post operative.

Fig. 5 a) Pre operative

b) Post operative.

Fig 6 a) Pre operative

b) Post operative.

Fig 7 a) Pre operative

b) Post operative.

nape of the neck. ECG and Doppler revealed pulmonary valve stenosis.

To correct the facial features, cephalometric and dental model analysis were done.

Surgical procedure

Surgery was done under general anesthesia after taking cardiologist's consent and pre anesthetic evaluation. Antibiotic Prophylaxis for sub acute bacterial endocarditis (SBE) was given. Anterior subapical osteotomy with extraction of 44 and 34 and closure of the extraction space by setbacking the anterior segment by 5mm.A premaxillary osteotomy with extraction of 14 and 24 and 5mm setback and intrusion of premaxillary segment 7 mm were done. Both intraoperative and post operative period were uneventful.

Discussion

Syndrome is a group of symptoms that collectively indicate or characterize a disease, psychological disorder, or other abnormal condition. Usually syndromic patients will be having associated cardiac or renal abnormalities and these must be assessed before surgey. There are several orthognathic surgery procedures to treat the facial deformity in such patients. Orthognathic surgery has made it possible to reposition of either or both the jaws in all possible directions. This has provided solution for the patients with severe dentofacial esthetic problems and malocclusion. With proper diagnosis and surgical treatment and with proper care the facial esthetics of such syndromic patients can be improved a lot. Thus a more socially acceptable facial features and the self confidence of such patients can be improved.

Conclusion

Being diagnosed and learning to live with a genetic disorder can cause social, emotional, and financial stress. It often requires a great deal of adjustment in outlook and lifestyle. A person with such syndromes may feel angry, afraid or may be mentally upset. There may also be concerns about passing the disorder to future generations or about its physical, emotional, and financial implications. Appropriate medical care, accurate information, and social support are key to living with the disease. The above presented cases shows that orthognathic surgery can improve the facial features in various syndromes and this can tremendously improve the social acceptance, mental well being and confidence of the patient.

References

1. Oral and maxillofacial pathology- A rationale for diagnosis and treatment; Robert E. Marx and Diane stern.
2. Text book of Oral Pathology: Shafers 5th edition.
3. Contemporary treatment of Dentofacial Deformity; William R. Proffit.
4. Principles of Oral and Maxillofacial Surgery; Larry J. peterson
5. Essentials of orthognathic surgery; Johan p. Rey.
6. Modern practice of orthognathic and reconstructive surgery; William H Bell.
7. Surgery of the mouth and jaws; J R Moore.

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Case report

Non-surgical endodontic therapy using triple-antibiotic paste

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Abstract

Microorganisms within the root canal system should be eliminated for the successful outcome of root canal treatment. This case report describes a successful non-surgical endodontic management of a periapical lesion with sinus tract resistant to calcium hydroxide intra-canal medicament using a combination of antibiotic drugs. A 19-year-old girl presented at the Department of Conservative dentistry and Endodontics with a chief complain of dull continuous pain with respect to her upper anterior teeth. On examination, the maxillary left central incisor was non-vital and there was a draining labial sinus tract with respect to it. Conventional endodontic treatment using calcium hydroxide as an intra-canal medicament did not resolve the sinus tract. Hence triple-antibiotic (metronidazole/ ciprofloxacin/ minocycline) paste was used as an intra-canal medicament. The patient when recalled after 4 weeks revealed significant healing with the disappearance of the sinus tract. When recalled after 1 year, the patient had no symptoms and radiograph showed complete resolution of the radiolucent lesion. The results indicate that triple-antibiotic paste is effective in managing teeth with persistent symptoms which are resistant to calcium hydroxide therapy.

Introduction

Endodontic success and failure is related to the absence or presence of signs and symptoms of apical periodontitis. Root canal treatment can be considered as the prevention or cure for this disease. Apical periodontal lesions include apical granuloma and radicular cyst as well as acute manifestations of inflammation.[1] The role of microorganisms in the development and perpetuation of periapical diseases is well documented.[2, 3] It is shown that sterilization of the root canal and periradicular region results in good healing of periapical diseases.[4] Therefore for the successful outcome of root canal treatment, the microorganisms within the root canal system should be eliminated.

Persistence or development of clinical signs (e.g. swelling or sinus tract) or symptoms (e.g. dull continuous ache or mastication sensitivity) or the persistence or development of pathosis radiographically (radiolucent lesion remaining the same, has enlarged or has developed since treatment) after the completion of the endodontic treatment suggests failure. The main cause for failure is the presence of inflammation because of the inability of the operator to completely clean the root canal.[5] Studies show that mechanical instrumentation along with antibacterial irrigation alone cannot predictably eliminate the bacteria within the root canal system.[6, 7] Hence, to ensure complete elimination of root canal bacteria, placement of an effective antimicrobial agent in the root canal is required for a predetermined time period to predictably eradicate or destroy any remaining bacteria.[8,9]

Calcium hydroxide is the most commonly used endodontic intra-canal medicament. Based on the current best available evidence, calcium hydroxide has limited effectiveness in eliminating bacteria from human root canals.[10] Therefore, for the effective removal of bacteria from within the root canal system, antibiotics or combination of antibiotics have been tried as intra-canal medicament. Because of the complexity of the root canal infection it is unlikely that any single antibiotic could result in effective sterilization of the canal. More likely a combination would be needed to address the diverse flora encountered. The Cariology Research Unit of the Niigata University developed the concept of 'Lesion sterilization and tissue repair (LSTR)' therapy that employs the use of a combination of antibacterial drugs for disinfection of oral infectious lesions, including dentinal, pulpal, and periradicular lesions.[11, 12]

Metronidazole has a wide bactericidal spectrum against anaerobes, which are common in oral sites. However, some bacteria in lesions are resistant to metronidazole and, thus, two other antibacterial drugs, e.g., ciprofloxacin and minocycline, are mixed with metronidazole in an effort to eliminate all the bacteria. Extensive in vitro and in situ studies have been conducted showing the mixed drugs to be effective against oral bacteria.[13, 14, 15] Hoshino et al.[14] in their in-vitro study on the antibacterial efficacy of these drugs alone and in combination against the bacteria of infected dentin, infected pulps, and periapical lesions show that none of the drugs is capable in complete elimination of bacteria, when used alone. However, in combination, these drugs are able to consistently sterilize all samples. An in situ study by Sato et al.[15] point out that this drug combination is very effective in killing bacteria in the deep layers of root canal dentin. Thus the drug mixture can eliminate all the possible bacteria from lesions,

indicating that LSTR therapy may be useful in endodontic management of infected teeth.

This case report describes a non-surgical conservative method to manage teeth with persistent sinus tract using triple-antibiotic (metronidazole/ ciprofloxacin/ minocycline) paste.

Case report

A 19-year-old girl presented to the Department of Conservative dentistry and Endodontics, Manipal College of Dental Sciences, Mangalore with a chief complain of dull continuous pain with respect to her upper anterior teeth. Patient gave a history of trauma to her front teeth seven years prior to her visit. The medical history of the patient was non-contributory. No previous endodontic therapy had been performed on any of the teeth. Clinical examination showed that her maxillary left central incisor displayed grayish discoloration and had a fractured mesial insical angle. There was a draining labial sinus tract with respect to the maxillary left central incisor. The maxillary left central incisor was slightly tender on percussion and exhibited normal mobility. The maxillary left central incisor failed to respond to thermal and electric pulp testing, whereas the other maxillary incisors responded within normal limits. A periapical radiograph demonstrated a large radiolucent lesion around the apex of the maxillary left central incisor with an ill-defined margin. Radiographically there was no sign of root fracture. A non-surgical endodontic therapy of the mandibular left central incisor was planned.

The access cavity was prepared without local anaesthesia under rubber dam. There was no drainage through the canal. The working length was determined 1 mm short of the radiographic apex and the canal was shaped with K-files (Dentsply- Maillefer, Ballaigues, Switzerland) using step-down technique until an apical preparation of ISO size #45 was achieved. During the preparation, the canals were irrigated copiously with 2.5% sodium hypochlorite (Novo Dental Products Pvt. Ltd., Mumbai, India), 17% EDTA (B. N. Laboratories, Mangalore, India) and 0.2% chlorhexidine (Vishal Dentocare Pvt. Ltd., Ahmedabad, India) and the final irrigation was performed with saline. Canal was dried with sterile paper points (Dentsply- Maillefer, Ballaigues, Switzerland). Injectable calcium hydroxide (Calicur, Voco, Cuxhaven, Germany) was placed into the canal and the access cavity was sealed with a zinc oxide eugenol temporary restoration (Dental Products of India, Mumbai, India). Two weeks later, the tooth was still symptomatic. There was a persistent sinus tract and the tooth was still sensitive to percussion. The canal was once again debrided, calcium hydroxide intra-canal medicament placed and temporized. Even on the recall visit after 2 weeks, the symptoms were still persisting. This prompted the operator to resort to antibiotic based intra-canal medicament.

After debriding the canal and drying it with sterile paper points, and a mixture of ciprofloxacin, metronidazole, and minocycline paste was introduced into the canal as described by Takushige et al.[13]

Drawbacks	Probable cause
Unable to eliminate microorganisms completely from the root canal system	• Inhibition by dentinal protein buffering, particularly in terms of the ability of hydroxyl ions to reach the apical third and have an antibacterial effect • The low solubility and diffusibility of calcium hydroxide may make it difficult to gain a rapid increase in pH to reach the level necessary to eliminate or kill bacteria within the dentinal tubules and anatomical variations • The varying alkaline potential of different formulations • Dense biofilms of bacteria located within the dentinal tubules can protect those located deeper inside the tubules • Necrotic tissue in ramifications, isthmuses and irregularities may protect bacteria from the action of calcium hydroxide • The ability of Enterococcus faecalis to colonize within dentinal tubules and thus evade the hydroxyl ions • Calcium hydroxide promotes the adhesion of bacteria to collagen (the main organic component of dentine) which increases the extent of tubule invasion and thereby resistance to further disinfection
Interfere with the sealability of root canal filling	• Difficult to remove intra canal calcium hydroxide from the root canal wall. Zinc oxide based root canal sealers in contact with calcium hydroxide were brittle in consistency and granular in structure • Residual calcium hydroxide may cause canal transportation
Long-term calcium hydroxide as a root canal dressing may increase risk of root fracture	• Disruption of the link between the hydroxylapatite crystals and the collagenous network in dentin • Reduced organic support due to denaturtion and hydrolysis can influence the mechanical properties of dentin

Table 1 *Possible disadvantages of calcium hydroxide as an intra-canal medicament.*

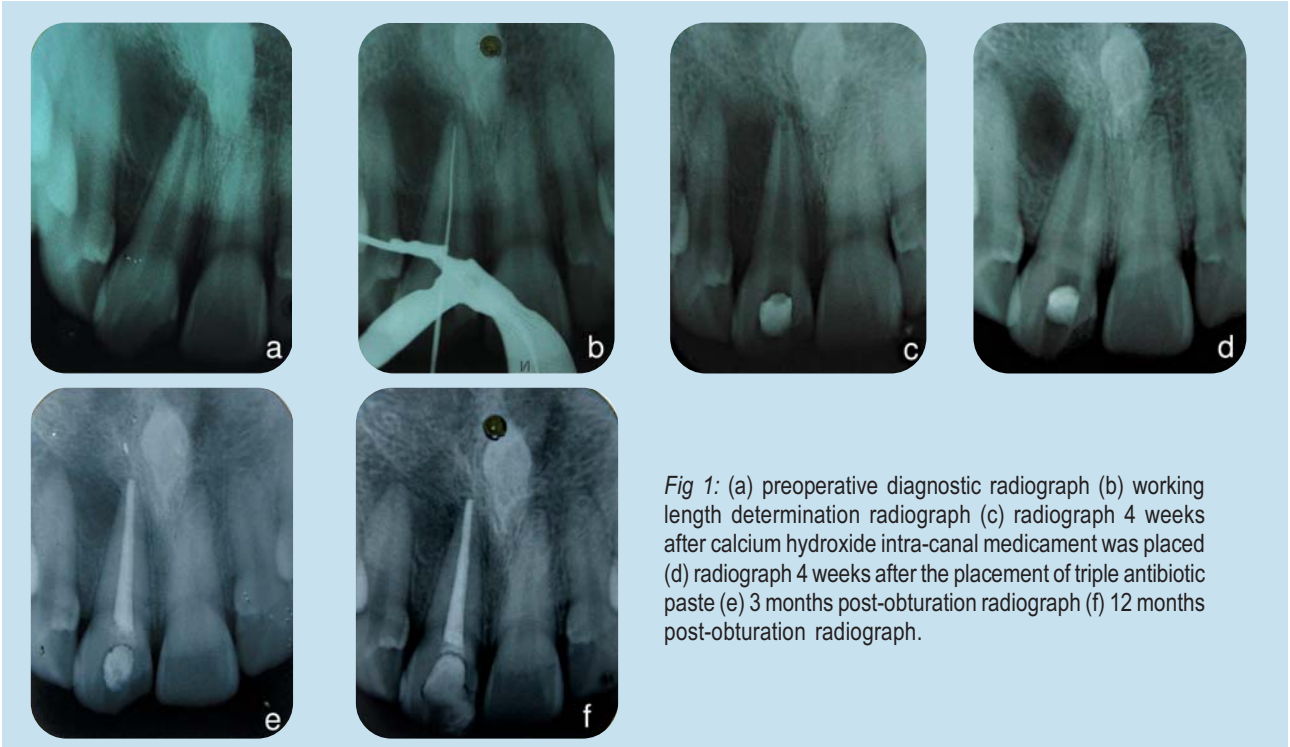

Fig 1: (a) preoperative diagnostic radiograph (b) working length determination radiograph (c) radiograph 4 weeks after calcium hydroxide intra-canal medicament was placed (d) radiograph 4 weeks after the placement of triple antibiotic paste (e) 3 months post-obturation radiograph (f) 12 months post-obturation radiograph.

Commercially prepared chemotherapeutic agents namely, ciprofloxacin (Cifran 500 mg, Ranbaxy Laboratories Ltd., India), Metronidazole (Metrogyl 400 mg, J.B. Chemicals and Pharmaceuticals Ltd., India) and Minocycline (Minoz 50 mg, Ranbaxy Laboratories Ltd., India) were used. After the removal of the enteric coating and the capsule that encloses the drug products, each of the drugs were pulverized using porcelain mortar and pestle The drug mixture and propylene glycol were thoroughly mixed to form triple antibiotic paste. Propylene glycol has efficient penetration into the dentin as a vehicle carrying the drug.[16] The prepared triantibiotic paste was spun down the canal with a lentulo spiral instrument (Dentsply- Maillefer, Ballaigues, Switzerland). The paste was further condensed using sterile cotton pellets before sealing the coronal access.

The patient when recalled after 4 weeks revealed significant healing. The sinus tract had healed and the tooth was non-tender to percussion. At this appointment the tooth was reopened, the antibiotic paste removed and the canal was obturated with gutta percha (Dentsply-Maillefer, Ballaigues, Switzerland) and AH plus sealer (Dentsply, De Trey, Konstanz, Germany) using the lateral compaction technique. The patient was recalled at 3, 6 and 12 month intervals. Clinical examinations showed no sensitivity to percussion or palpation, and the soft tissues were healthy. Post-operative radiographs showed the progressive process of healing (Fig 1).

Discussion

Sinus tracts are paths of drainage for abscesses and can occur both intraorally and extraorally. It is a fact that sinus tracts can heal with proper endodontic treatment. However, there are those types that are persistent and will not respond to any treatment. In theses perplexing cases, it may be necessary to resort to surgical endodontic therapy. But in the present case as the patient was not willing for any surgical procedure, a more conservative method to manage was considered. The advantages of non-surgical endodontic therapy in the following case are as follows; [17]

- The risk of jeopardizing the vitality of the neighbouring teeth by inadvertent cutting off of their blood supply is eliminated
- Possibility for damage to anatomic structure such as the nasal cavity can be avoided
- During surgery, bone support of the neighbouring teeth is not compromised.
- Pain and discomfort during or after surgery are avoided.
- Beneficial for patients who has dislike or phobia for blood and surgery.
- It avoids the cost of surgery for the patient
- Non-surgical approach removes the etiological factor from the root canal.

Conventional endodontic treatment with the use of calcium hydroxide as an intra-canal medicament failed to resolve the problem. The probable reasons the limited effectiveness of calcium hydroxide in disinfecting the root canal system as well as other potential disadvantages are given in Table 1.[18-21] Therefore a combination of metronidazole, ciprofloxacin and minocycline was

introduced into the root canal as an intra-canal medicament.

Whilst, systemic antibiotics appear to be clinically effective as an adjunct in certain surgical and non-surgical endodontic procedures, their administration is not without the potential risk of adverse systemic effects, such as allergic reactions, toxicity and the development of resistant strains of microbes. In addition, the systemic administration of antibiotics relies on patient compliance with the dosing regimens followed by absorption through the gastro-intestinal tract and distribution via the circulatory system to bring the drug to the infected site. Hence, the infected area requires a normal blood supply which is no longer the case for teeth with necrotic pulps and for teeth without pulp tissue. Therefore, local application of antibiotics within the root canal system may be a more effective mode for delivering the drug.[22]

Infections of the root canal system are considered to be polymicrobial consisting of both aerobic and anaerobic bacterial species. Because of the complexity of root canal infections, the use of a single antibiotic may not result in effective disinfection of the root canal system. A combination of antibiotics may be needed to address the diverse flora encountered. A combination of antibiotics might also decrease the likelihood of the development of resistant bacterial strains.[12]

Radiographic signs such as density change within the lesion, trabecular reformation and lamina dura formation confirmed healing, particularly when associated with the clinical finding that the tooth was asymptomatic and the soft tissue was healthy. Thus it is demonstrated in this case report that the use of a combination of antibiotic drugs in tooth with persistent sinus tract gives excellent clinical results. Previous studies have clearly demonstrated that this combination is capable of eliminating bacteria from infected dental tissues.[13-15]

Caution should be taken in general when dentists give local or systemic drugs. Although the volume of the drugs applied in this therapy is small and there were no reports of side effects, care should be taken if patients are sensitive to chemicals or antibiotics.

Conclusion

Non-surgical endodontic treatment using a triple-antibiotic (metronidazole/ ciprofloxacin/ minocycline) paste as an intra-canal medicament can result in successful healing of chronic periapical lesions resistant to calcium hydroxide dressing.

References

1. Orstavik D. Intracanal medication. In: Pitt Ford TR, ed. Harty's Endodontics in Clinical Practice. 5 th edn. Wright, Elsevier Ltd, 2004: 95-112.
2. Moller AJ, Fabricius L, Dahlen G, Ohman AE, Heyden G. Influence on periapical tissues of indigenous oral bacteria and necrotic pulp tissue in monkeys. Scand J Dent Res. 1981; 89: 475-84.
3. Sundqvist G. Ecology of the root canal flora. J Endod. 1992; 18: 427–30.
4. Bystrom A, Happonen RP, Sjogren U, Sundqvist G. Healing of periapical lesions of pulpless teeth after endodontic treatment with controlled asepsis. Endod Dent Traumatol. 1987; 3:58-63.
5. Mc Donald NJ, M Torabinejad. Endodontic surgery. In: Walton RE, Torabinejad M, eds. Principles and Practice of Endodontics. 3 rd edition, W. B. Saunders Company, Philadelphia, 2002: 357-75.
6. Byström A, Sundqvist G. Bacteriologic evaluation of the efficacy of mechanical root canal instrumentation in endodontic therapy. Scand J Dent Res 1981; 89:321-8.
7. Trope M, Bergenholtz G. Microbiological basis for endodontic treatment: can a maximal outcome be achieved in one visit? Endod Topics. 2002; 1:40–53.
8. Reit C, Dahlén G. Decision making analysis of endodontic treatment strategies in teeth with apical periodontitis. Int Endod J. 1988; 21:291-9.
9. Spångberg LSW, Haapasalo M. Rationale and efficacy of root canal medicaments and root filling materials with the emphasis on treatment outcome. Endod Topics. 2002; 2:35-58.
10. Sathorn C, Parashos P, Messer H. Antibacterial efficacy of calcium hydroxide intracanal dressing: a systematic review and meta-analysis. Int Endod J. 2007; 40: 2-10.
11. Ozan U, Er K. Endodontic treatment of a large cyst-like periradicular lesion using a combination of antibiotic drugs: a case report. J Endod. 2005; 31:898-900.
12. Windley W 3rd, Teixeira F, Levin L, Sigurdsson A, Trope M. Disinfection of immature teeth with a triple antibiotic paste. J. Endod. 2005; 31:439-43.
13. Takushige T, Cruz EV, Asgor Moral A, Hoshino E. Endodontic treatment of primary teeth using a combination of antibacterial drugs. Int Endod J. 2004; 37:132– 8.
14. Hoshino E, Kurihara-Ando N, Sato I, et al. In vitro antibacterial susceptibility of bacteria taken from infected root dentine to a mixture of ciprofloxacin, metronidazole and minocycline. Int Endod J. 1996; 29:125–30.
15. Sato I, Kurihara-Ando N, Kota K, Iwaku M, Hoshino E. Sterilization of infected rootcanal dentine by topical application of a mixture of ciprofloxacin, metronidazole and minocycline in situ. Int Endod J. 1996; 29: 118 –24.
16. Cruz EV, Kota K, Huque J, Iwaku M, Hoshino E. Penetration of propylene glycol through dentine. Int Endod J. 2000; 35: 330-6.
17. Daniel JG, Al Kandari A, Lin LM. Non-surgical mangament of chronic endodntic periapical lesions. In: Daniel JG, ed. Advanced endodontics for clinicians. 1st edn. J&J publishers, Bangalore, India, 1999: 169-89.
18. Athanassiadis B, Abbott PV, Walsh LJ. The use of calcium hydroxide, antibiotics and biocides as antimicrobial medicaments in endodontics. Aust Dent J. 2007; 52: S64-S82.
19. Margelos J, Eliades G, Verdelis C, Palaghias G. Interaction of calcium hydroxide with zinc oxide-eugenol type sealers: a potential clinical problem. J Endod. 1997; 23: 43-8.
20. Goldberg F, Alfie D, Roitman M. Evaluation of the incidence of transportation after placement and removal of calcium hydroxide. J Endod. 2004; 30:646-8.
21. Rosenberg B, Murray PE, Namerow, K. The effect of calcium hydroxide root filling on dentin fracture strength. Dental Traumatology. 2007; 23: 26–9.
22. Mohammadi Z, P. V. Abbott PV. Review on the local applications of antibiotics and antibiotic-based agents in endodontics and dental traumatology Int Endod J. 2009; 42: 555–67.

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Case report

Fabrication of silicon auricular prosthesis

* Manju V., ** Anil Mathew, *** Vinod P Nair

Abstract

Auricular prosthesis provides a form of rehabilitation when surgical reconstruction is not viable or preferred by the patient. Restoration with a prosthesis is a great challenge due to the convoluted shape of the ear. This article describes the various steps involved in the fabrication of prosthesis like impression, sculpting, investing, flasking, processing and staining silicon.

Introduction

An auricular prosthesis artificially restores the ear which has been lost due to cancer surgery, burns, trauma or congenital defects. It can be attached to the patient via skin adhesive or osseo integrated craniofacial implants. Also prosthetic ear can retain eye glasses and a hearing aid if needed. It also serves as a great psychological benefit in the rehabilitation of patient.

Case Report

This seven year old boy reported to maxillofacial prosthetic clinic at Amrita institute for ear prosthesis. (Fig. 1). He was suffering from a congenital malformation of left ear.

Steps in the fabrication of silicon prosthesis.

Impression procedure

The impression of the defect and the normal ear is made with free flowing alginate and is reinforced with plaster of Paris. Make sure that the remaining remnants of the ear will not be displaced while taking impression. The impression was carefully removed from the defective and normal side and the cast is formed.

Preparation of the wax pattern

The wax was properly contoured and carved to give it a simulation of normal ear (fig 2). The angulations from the base, length, position of various anatomic landmarks checked with the cast of the contra lateral ear. Try in of the wax pattern and necessary modifications done.

Investing the wax pattern (fig 3)

For ear prosthesis, flasking and de-waxing should be done with utmost care. A three part mold is made due to the convoluted nature of the ear. This facilitate the flow of silicon material into all aspects of mold and for the ease of removal after processing.

Processing and staining silicon

Room temperature vulcanization silicon (Factor II.com) with intrinsic stains packed into the mold in three separate portions according to the basic colours (Fig 4). After curing the borders of recovered prosthesis thinned to merge with the remaining soft tissue and extrinsic staining done. (Fig 6)

Conclusion

For prosthetic rehabilitation, total auriculectomy

Fig. 1 Defect

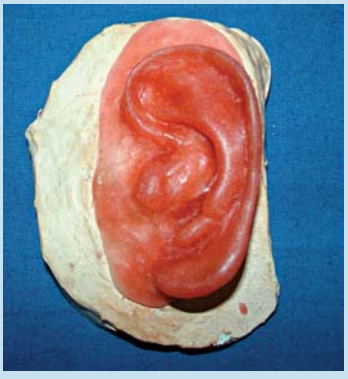

Fig. 2 Wax pattern

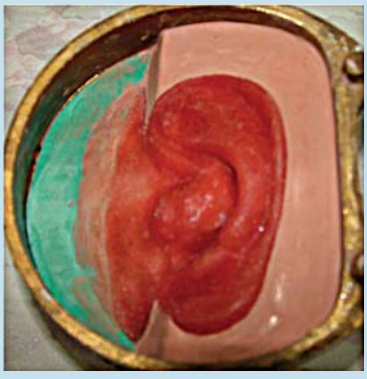

Fig. 3 Investing

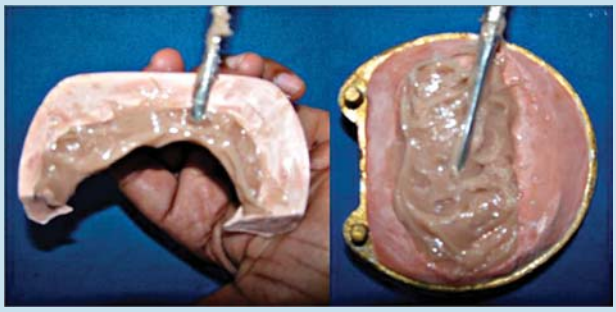

Fig. 4 Packing Silicon

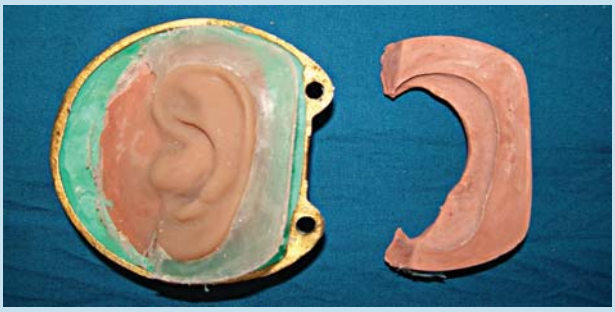

Fig. 5 Prosthesis

Fig. 6 Rehabilitation

defects are easier to restore than the partial. Sometimes the remaining remnants will be displaced. In growing children adhesive retained silicon prosthesis is the best choice for achieving clinical success and patient satisfication.

Bibliography

1. Buemer J,Curtis T A. Maxillofacial rehabilitation: Prosthodontic and surgical considerations.St Louis: Ishiyaku EuroAmerica, Inc;1996, p.401-39.
2. Laney W R .Maxillofacial Prosthetics. p.318-24.
3. Taylor T .Clinical Maxillofacial Prosthetics: Facial prosthesis fabrication.Quintessence publishing Co, Inc. 2000 p.256-64

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Case report

Coronally repositioned flap for the treatment of Millers class I gingival recession

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Abstract

Introduction: Gingival recession in its localized or generalized form is an undesirable condition resulting in root exposure. Aesthetic concerns and functional abnormalities, such as dentin hypersensitivity, are often associated with gingival recession defects.

Case: A 23-year-old male patient reported to our dental OPD with the chief complaint of sensitivity to hot and cold. Intraoral examination revealed a Millers class I gingival recession in the right maxillary 1st premolar region. Oral prophylaxis has been performed. Given the clinical appearance of the lesion, the patient's improved home care and the adequate thickness of gingiva it was decided to attempt a coronally repositioned flap technique.

Discussion: Mucogingival therapy includes increasing the dimensions of the gingival tissues to stop or prevent recession, to facilitate plaque control, and to improve aesthetics and to reduce or eliminate root sensitivity. Etiology and the contributing factors are important when deciding on appropriate treatment procedures for patients with localized gingival recession.

Conclusion: Total rehabilitation of Miller's classes I recession can occur by using the standard coronally repositioned flap technique that was used in this case. So, an effective and predictable treatment modality, such as the coronally repositioned flap technique should be considered when treatment planning for Millers class I gingival recession defects.

Introduction

Gingival recession is defined as the apical migration of the junctional epithelium with exposure of root surfaces.[1] It is a common condition and its extent and prevalence increases with age. It has been estimated that 50% of the population has 1 or more sites with 1mm or more of such root exposure. This prevalence rate increases to greater than 88% for individuals who are 65 years or older.[1] There are various etiological factors and complications that make gingival recession a concern for patients. Gingival recession puts the patient at risk for root caries and abrasion/erosion of roots due to exposure to the oral environment. Normally, the gingival margin is positioned 1mm to 3 mm coronal to the tooth's CEJ, covering the coronal portion of the root with gingival tissue. Permanent teeth with a thin periodontium are considered to be more susceptible to gingival recession, especially where areas of gingival inflammation exist.[2, 3] Exposed roots often result in hypersensitivity and serious esthetic concerns.

Etiology of gingival recession

In general, gingival recession arises more frequently when teeth are prominent in the dental arch and the overlying soft tissue is thin.[4] A combination of causal factors can be implicated in a marginal tissue recession. Predominant causative factors for the development of the recession appear to be local irritants such as plaque and calculus, Presence of excessive and abnormal occlusal forces; tooth mal-positioning, high muscle attachments, aggressive tooth brushing, orthodontic treatment and frenal pull also play an important role. These factors become even more important in areas where the underlying alveolar bone on the buccal surface is thin (bone dehiscence). In the gingival recession described in this article, the main causal factor was faulty tooth brushing technique.

Treatment modalities

The treatment plan will be based on the severity of symptoms, the goal of the patient and the body of knowledge in the current literature. A patient with minimal symptoms will benefit from education about the etiology along with preventive therapy, whereas a patient with severe sensitivity and esthetic concerns will likely elect to have surgical treatment.

Presence of gingival recession and gingival inflammation in areas with a lack or narrow band of attached gingiva is identified as a mucogingival problem. Periodontal plastic surgery procedures are performed to resolve these mucogingival problems. Various clinical studies have evaluated many surgical techniques for root coverage such as rotational flaps; advanced flaps; free gingival grafts; connective tissue grafts; guided tissue regeneration and a combination of these procedures.[5] Choice of technique depends basically of defect size (Miller classification)[6], localization in esthetic zone and the need of augmentation of attached gingival tissues.[5,7,8,9] Free gingival graft is preferred in case of deep and wide recession and a lack of attached gingiva.

Fig 1. Pre-operative photograph showing Miller class I gingival recession.

Fig 2. Vertical releasing incision along the distal line angle of canine

Fig 3. Crevicular incision is given

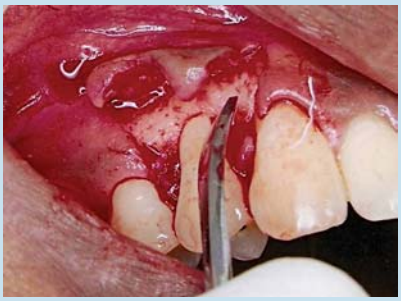

Fig 4. Full thickness mucoperiosteal flap is elevated

Fig 5. Flap has been positioned coronally at the CEJ level and sutured using a 5-0 absorbable suture

Fig 6. Three months postoperatively, there was complete root coverage with normal sulcus depth.

This case report describes the multidisciplinary treatment of a patient with gingival recession and adequate attached gingiva at the right maxillary 1st premolar region and whose main concern was the sensitivity to hot and cold. Recession coverage was achieved through a coronally repositioned flap procedure.

Case report

A 23-year-old male patient reported to our dental OPD with the chief complaint of sensitivity to hot and cold. Intraoral examination revealed a localized gingival recession in the right maxillary 1st premolar region. Gingival recession was 3.5 mm mesio-distally and 2 mm apico-coronally on the mid-facial aspect of maxillary right 1st premolar. As the marginal tissue recession of the tooth not extended to the mucogingival junction classification of the gingival recession was consistent with class I according to Miller's classification (Fig. 1). Mobility and fremitus were not observed during the intraoral examination.

Treatment plan

1) Initial Therapy

Major effort for the improvement of the patient's oral hygiene was undertaken. Oral prophylaxis has been performed and oral hygiene instructions were thoroughly explained with emphasis on the correct use of toothbrush and dental floss. At this point, the facial gingival contour of tooth showed a typical class I Miller recession without any local factors or signs of inflammation. Given the clinical appearance of the lesion, the patient's improved home care and the adequate thickness of gingiva it was decided to attempt a coronally repositioned flap technique.

2) Surgical procedure

The surgical intervention was carried out under local anesthesia. Following administration of local anesthesia and intraoral disinfection with 0.12 chlorhexidine mouth rinse the exposed root surface was planed with finishing burs to remove grooves and to reduce the convexity of the most coronal portion of the root.

The first surgical phase involves planning the design & extent of the flap. Two vertical releasing incisions (Fig. 2) were given along the line angles of mesial & distal teeth (canine – distal line angle & 2nd premolar – mesial line angle) such that the papillae were incorporated in the flap. A crevicular incision (Fig. 3) is the given and a full thickness mucoperiosteal flap was elevated (Fig. 4). Root conditioning has been done by tetracycline. The flap has been positioned coronally at the CEJ level and sutured using a 5-0 absorbable suture (Fig. 5) and a periodontal pack (Coe Pack) is given.

Upon completion of surgical treatment, the patient was reexamined after 24 hours and no post surgical complications were revealed. Chlorhexidine 0.12% was recommended twice a day for 2 weeks and the patient was given a prescription for an antibiotic and an analgesic to control postoperative pain and swelling. At the 2-week follow up visit no signs of inflammation were observed. Three months postoperatively, there was

complete root coverage with normal sulcus depth (probing depth = 2 mm) (Fig. 6).

Discussion

Mucogingival therapy includes increasing the dimensions of the gingival tissues to stop or prevent recession, to facilitate plaque control, and to improve aesthetics and to reduce or eliminate root sensitivity.[10] Etiology and the contributing factors are important when deciding on appropriate treatment procedures for patients with localized gingival recession. If the gingival recession is due to the malposition of teeth, orthodontic treatment needs to be considered with or without periodontal surgery.[11]

Recession predominantly caused by vigorous tooth brushing trauma can be differentially diagnosed from microbial plaque-induced recession by the presence of clinically healthy gingiva, where the exposed root has a wedge-shaped defect and its surface is clean, smooth, and polished. Occlusal trauma has been implicated as a causal factor in the development of gingival recession. Excessive occlusal forces result in compensatory remodeling of the support at the buccal/lingual aspect of the teeth, leading to the apical shift of the gingival margin.[12] Mechanical trauma, such as fingernail biting habits, also plays an important role in the enhancement of the destructive lesion.

In the present case, gingival recession was due to faulty tooth brushing technique. As the marginal tissue recession of the tooth not extended to the mucogingival junction classification of the gingival recession was consistent with class I according to Miller's classification and recession coverage was achieved through a coronally repositioned flap procedure. The chosen flap design included vertical releasing incisions, in order to permit adequate advancement of the flap. The end result restored gingival architecture and recreated conditions favorable for maintenance of optimal plaque control. The coronally positioned flap has been in periodontics for many years with several different variations.[13, 14, 15] Originally described in the early part of this century,[14] it was popularized in the 1980s by Tarnow[15] under the term semi-lunar coronally repositioned flap. Allen & Miller[13] presented a further modification. This procedure is limited by the height and thickness of the gingiva apical to the recession. Although there is no scientific basis, 3 mm of gingival height is generally felt to be a minimum height of gingiva necessary if coronal positioning of the gingiva is to be considered. The-gingiva should also be relatively thick. This procedure can only be done on Class I recession, and if a Class II or III recession is present, then either a subepithelial connective tissue graft or a coronally positioned flap augmented by connective tissue should be considered.

Conclusion

The induction of gingival recession by a single factor is unlikely. In reality, several factors may play a part, but not necessarily simultaneously or equally. The treatment plan should be based on the severity of symptoms, the goal of the patient and the body of knowledge in the current literature. A patient with minimal symptoms will benefit from non-surgical therapy such as scaling, polishing and root planing at appropriate intervals based on patient risk factors. Whereas a patient with severe sensitivity and esthetic concerns will likely elect to have surgical treatment. In recession defects associated with hypersensitivity it is important to consider a surgical approach that will provide complete root coverage. An effective and predictable treatment modality, such as the coronally repositioned flap should be considered when treatment planning for class I gingival recession defects.

References

1. Kassab MM, Cohen RE. The etiology and prevalence of gingival recession. J Am Dent Assoc. 2003; 134: 220-5
2. Gorman WJ. Prevalence and etiology of gingival recession. J Periodontol. 1967;38:316-322.
3. Maynard JG Jr, Wilson RD. Diagnosis and management of mucogingival problems in children. Dent Clin North Am. 1980;24:683-703.
4. Batenhorst KF, Bowers GM, Williams JE Jr. Tissue changes resulting from facial tipping and extrusion of incisors in monkeys. J Periodontol. 1974;45:660-668.
5. Tugnait A., Clerehugh V. Gingival recession – its significance and management. J of Dentistry Vol.29, 2001, 381-394
6. Miller P. D. Jr. A classification of marginal tissue recession. Int J Periodontics Restorative Dent 1985: 5: 9–13.
7. Miller P. D. Jr. Root coverage using the free soft tissue autograft following citric acid application. III. A successful and predictable procedure in areas of deep-wide recession. Int J Periodontics Restorative Dent 1985: 5: 15–37.
8. Miyasato M., Crigger M., Egelberg J. Gingival condition in areas of minimal and appreciable width of keratinized gingiva. J Clin Periodontol 1977: 4: 200– 209.
9. Modica F., Dell Pizzo M., Roccuzzo M., Romagnoli R. Coronally advanced flap for the treatment of buccal gingival recessions with and without enamel matrix derivative. A split –mouth study. J of Periodontol, November 2000, 1693 -1698
10. Smith RG. Gingival recession: reappraisal of an enigma condition and a new index for monitoring. J Clin Periodontol 24: 201-205, 1997.
11. Boyd RL. Mucogingival considerations and their relationship to orthodontics J Periodontol 49: 67-76, 1978.
12. Serino G, Wennström JL, Lindhe J, et al. The prevalence and distribution of gingival recession in subjects with a high standard of oral hygiene. J Clin Periodontol. 1994; 21:57-63.
13. Allen EP, Miller PD. Coronal positioning of existing gingiva: short term results in the treatment of shallow marginal tissue recession. J Periodontol 1989: 66: 316 - 319.
14. Harland AW. Discussion of paper: restoration of the gum tissue. Dent Cosmos 1907: 49: 591-598.
15. Tamow DP. Semilunar coronally positioned flap. J Clin Periodontol 1986: 13: 182-185.

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Tooth supported magnet retained over denture

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Abstract

Overdentures cover a number of possible solutions for patients with nearly all the teeth missing. Even though it resembles a complete denture externally the combination of periodontal and mucosal support in the prosthesis is what that makes overdentures special. In addition to retention and support that can be gained from the retained roots, overdentures are actually superior to conventional complete denture in biting force, chewing efficiency and force discrimination. Healthy retained roots are natural implants and although some may have limited length of usefulness, using them will improve the quality of patient lives.

Various attachments can be added for these overdentures to increase the retention. Also, the use of magnets has been very popular in dentistry nowadays. They are used as retentive aids for overdentures, removable partial dentures, implants, to connect multiple component in maxillofacial prosthesis, in orthodontics for correction of malocclusion and for treating unerupted teeth. Here we discuss a case report of Oral rehabilitation of a 55 year old female patient with tooth supported, magnet retained overdentures.

Introduction

Overdentures are any removable dental prosthesis that covers and rests on one or more remaining natural teeth and the roots of the natural teeth, and /or dental implants: a dental prosthesis that covers and partially supported by natural teeth, natural tooth roots, and /or dental implants.[1] They are also called by many other names; overlay denture, overlay prosthesis, superimposed prosthesis, hybrid dentures, teeth supported or assisted prosthesis. The physiological basis of overdenture therapy lies in the continued retention of reduced natural teeth under the denture base. The abutment teeth so retained apart from supporting and anchoring the dentures, contribute towards continued preservation of alveolar bone and periodontal proprioception.

In overdentures the retained teeth abutments may be few or numerous, coronally modified or restored and frequently endodontically prepared. The objectives are to distribute stress concentration between retained abutments and denture supporting tissues. Overdentures help us to reduce some of the complete denture consequences like residual root resorption, loss of occlusal stability, undermined aesthetic appearance and compromised masticatory function. It is also considered as a gentler transition to the completely edentulous state.

Usage of magnets in dentistry is been done from past many decades. Alnico magnets were one among the earliest magnets used. Later came the samarium magnets, and had extremely high magnetic permanence. Magnets of alloy based on neodymium-iron-boron (Nd-Fe-B) became available, and along with samarium magnets they were called as Rare earth magnets. The inability to resist corrosion in the oral environment has made the fabrication of these magnets difficult, thereby increasing the treatment cost. The need to replace the magnets due to discoloration and loss of retention, are some of the drawbacks. To overcome the above problem, samarium iron nitride is being developed for dental and medical applications

Case report

A 55 year old female patient reported to K.V.G. Dental College and Hospital for replacement of missing tooth. On examination upper canines and lower first premolars were present. The case was planned to receive tooth supported overdentures and magnets were planned for additional retention. The teeth were root canal treated; post spaces prepared and were reduced to receive tooth supported magnet retained overdenture copings. A tentative jaw relation was made in order to know the amount of height available for overdenture copings. For to design these copings, first single tooth impression including the post spaces were made with injectable elastomer. Wax patterns were fabricated in such a way that it receives small magnets. These patterns were casted and magnets were attached to these copings.

The overdenture copings were luted onto the abutment tooth. Special tray was fabricated. Border molding was done and final impressions maxillary and mandibular arches were made with elastomeric impression material. Beading and boxing were done by 'plaster of paris and pumice method' and master casts were obtained. Jaw relation was recorded, face bow transfer were done and the cast were mounted on the Hanau semi adjustable articulator. The articulator was programmed according to Hobo condition 1 of the twin stage procedure [Table 1]. The teeth were balanced and processed.

Fig. 1 Pre-operative intra oral view before and after abutment tooth preparation

Fig. 2 Over denture copings with the provision for to place magnets

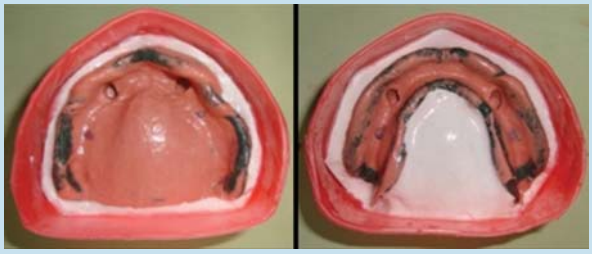

Fig. 3 Final impression: Beading and Boxing done with Plaster of Paris –pumice boxing method

Fig. 4 Master cast

Fig. 5 Final Intalgio surface of the dentures

On the intaglio surface of the denture also small magnets were attached with the aid of self cure acrylic resin. The dentures were inserted and the post insertion instructions were given about wearing and care of dentures. The importance of maintaining the health of the retained teeth was stressed upon since all the advantages solely depended on their continued presence. Patients was be cautioned to remove the prosthesis if an MRI Investigation is planned. For some cranial investigations it may be necessary to remove, temporarily, the magnetisable alloy keepers on the tooth roots or implants

Discussion

Overdentures treatment is a notion which precludes the inevitability of 'floating plastic' in edentulous mouths. It has always offered a sensible and a prudent appeal for dental practitioners and numerous patients have been benefited from its prescription. The applied ingenuity of the technique has mitigated much of the time dependent inherent in complete denture service - retention and stability has been enhanced, residual ridge resorption retarded and patient-mediated immune response much improved. [2]

The stability and retention of mandibular complete dentures have been a continuing problem. There has always been a vocal minority of patients for whom conventional prosthetic techniques have been inadequate. In an attempt to help these patients, a variety of aids and materials have been tried such as springs, suction cups, adhesives, implants of various types, and magnets. Magnets are also used frequently in maxillofacial prosthetics for retention.[3]

Behrman" and Toto and associates" have stated that magnets can safely be employed in the mouth and that magnetism per se has not been shown to have deleterious effects.[4,5] Several other studies in the literature report no microscopic, radiologic or clinical evidence of deleterious effects of magnets on osseous or soft tissues. Evidence available from biological safety tests suggests that the risks magnets hold for biological systems are negligible. Animal studies have not detected harmful effects from magnets on blood cells, dental pulpal tissue, periodontal tissues, buccal mucosa or alveolar bone.[6]

Repelling magnets were also used in complete dentures. Magnets were embedded in the posterior plastic teeth of complete upper and lower dentures with like poles in opposition. As the dentures came in contact, the magnets in the upper denture acted against the lower magnets and prevented the dislodgment of the lower denture.[3] Also techniques wherein magnets were cemented in cavities prepared within the roots of remaining endodontically treated teeth to attract magnets embedded in the lower denture has been described.[7]

The reason for popularity of magnets is related to their small size and strong attractive forces; these attributes allow them to be placed within prostheses without being obtrusive in the mouth. Despite their many advantages, which include ease of cleaning, ease of placement for both dentist and patient, automatic reseating, and constant retention with number of cycles, magnets have poor corrosive resistance within oral fluids and therefore require encapsulation within a relatively inert alloy such as stainless steel or titanium. When such casings are breached, contact with saliva

	Condylar path		Anterior Guide table	
Condition	Sagittal condylar path	Bennett angle	Sagittal Inclination	Lateral wing angle
Condition 1	25	15	25	10

Table 1: *Articulator arrangement values for Hobo Condition 1 of the twin stage procedure*

rapidly brings about corrosion and loss of magnetism. Improvements in sealing techniques (namely, laser welding) have resulted in more effective sealing of magnet encapsulations. The development of samarium-iron-nitride may offer better resistance to corrosion of magnets.[8]

Balanced articulation is the most suitable for complete denture prosthesis. In order to make a balanced articulation, the occlusal surfaces of the denture teeth are adjusted to establish a standard cusp angle according to "Condition 1" of the twin stage procedure.[9]

Conclusion

Overdenture therapy envisages essentially a 'Preventive Prosthodontic' concept since it attempts to conserve few remaining natural teeth. Magnets or any form of attachments do help in increasing the retention of these dentures. The main risks of treatment with overdentures are caries and the progression of periodontal disease adjacent to the abutment and hence meticulous oral hygiene is to be stressed upon.

Reference

1. The Glossary of Prosthodontic terms. Edition 8, J Prosthet Dent, Pg 58, Vol 94, Number 1, July 2005.
2. Harold W Preiskel:Overdentures made easy-A guide to implant and root supported prosthesis: Quintessence Publishing Co Ltd, 1996, Pg 7
3. Moghadam,Khaknegar B, Scandrett, Forrest R. Magnetic Retention for overdentures. J Prosthet Dent 1979:41:26-9
4. Behrman, S. J.: The implantation of magnets in the jaw to aid denture retention. J Prosthet Dent 10:807. 1960.
5. Toto, P. D., Choukas, N. C.. and Sanders, D.D Reaction of bone and mucosa to implanted magnets J Dent Res,41:1438. 1962.
6. Roy A. Rockman, K.Brad Hall and Mark Fiebiger: Magnetic retention of dental prosthesis in a child with ectodermal dysplasia.J Am Dent Assoc 2007; 138: 610-615
7. Makihira S,Sadamori S. Attaching a magnetic root coping to a fiber-reinforced post. J Prosthet Dent 2006 Nov; 96(5): 381-2.
8. Melissa Alessandra Riley, Anthony Damien Walmsley, and Ivor Rex Harris, Magnets in prosthetic dentistry,J Prosthet Dent 2001;86:137-42
9. Oral Rehabilitation –Clinical determination of occlusion, Sumiya Hobo, Hisao Takayama:Quintessence Publishing Co,Inc 1997. page 42

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Case report

An unusual oral presentation of Spindle cell carcinoma

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Introduction

Spindle cell carcinoma is an unusual and controversial tumour which occurs chiefly in the upper respiratory and alimentary tracts. The controversy is centered on the histogenesis of the malignant spindle cell, some investigators believing the tumour to be either a squamous cell carcinoma associated with an atypical benign, reactive connective tissue process, a combination of collision growth of a carcinoma and a sarcoma or squamous cell carcinoma with spindle cell anaplasia[1]. It is interesting that this highly anaplastic carcinoma can present as an exophytic polypoid growth[2]. A case of spindle cell carcinoma which presented like a pedunculated polypoid swelling is discussed.

Case report

A 71 year old male reported to the out patient clinic of Oral Medicine and Radiology department, Dental College, Trivandrum,Kerala,India with a swelling in the right cheek of 3 months duration. The patient was a chronic pan chewer, alcoholic and smoker for the past 40 years. Clinical examination revealed a pedunculated vascular swelling of 1.5 cm in diameter on the right buccal mucosa, 3 cm from the commisure. Mucosa over the swelling was intact. There was a nonscrapable homogenous white plaque of 3cm diameter just anterior to the swelling. The swelling was soft on palpation. Based on the clinical pictures a tentative diagnosis of fibroepithelial polyp with adjacent leukoplakia was made. Routine blood investigations were within normal limits. Excision biopsy of the lesion was done under local anesthesia. A surprising histopathologic picture was observed which consisted of poorly differentiated anaplastic spindle shaped epithelial islands infiltrating deep into the underlying connective tissue. The stromal reaction was normal with atypical cells of spindle and squamoid differentiation. A keratin immuno-histochemical study revealed cells that were strongly positive for vimentin. Based on these findings a diagnosis of spindle cell carcinoma possibly of neural origin was arrived at. Patient was kept under observation and it was noticed that the biopsy site was not healing even after one month. Considering the possibility of early metastasis the patient was referred to the Regional Cancer Centre where he was treated with radiotherapy. One year follow up evaluation revealed uneventful healing of the lesional site.

Discussion

The term spindle cell carcinoma was first applied to a pseudosarcomatous carcinoma of the tongue by Shervin et al[3]. In 1957 Lane reported cases of polipoid biphasic tumours on larynx fauces and mouth and proposed that sarcoma like tissues in these lesions were bizarre but nonneoplastic reactive connective tissue responses to overlying squamous cell carcinomas. He used the term "pseudocarcinoma" for such tumours[4]. Since then this type of carcinoma has been described using various terms including spindle cell squamous cell carcinoma, sarcomatoid squamous cell carcinoma[5], carcinosarcoma[6], pseudosarcoma, collition tumour, pleomorphic carcinoma[7] and lane tumour[8].

Spindle cell carcinoma has been reported to occur in various organs. Most common involvement is the upper aerodigestive tract such as oral cavity, esophagus and vocal cords.[9,10] A series of cases from larynx and esophagus have been reported, but only a small number of oral mucosal lesions have been reported[11].

This neoplastic disease occurs predominantly in older age people with mean age of 57 years. There is a definite male predilection, with a male female ratio of 2:1. Lower lip is the most frequent intraoral site followed by tongue, alveolar ridge and gingiva.[9] The lesion is mostly asymptomatic but when present, pain and swelling are the most common symptoms. There may be history of looseness of teeth and hemorrhage. When it occurs in upper aerodigestive tract it can cause dysphagia and hoarseness of voice. Usually there will be a history of sudden rapid increase in size of the tumour. On the lip most tumours have an endophytic growth configuration, while in other locations most lesions have a polypoid and exophytic nature[9]. Surface of the polypoid swelling is generally ulcerated and covered with a necrotic layer[10]. No significant findings are related to personal habits such as alcoholism[9].

Histologically polypoid tumours are composed of surface epithelial cells with changes varying from mild epithelial dysplasia to invasive carcinoma in association with an abundant dysplastic appearing spindle cell component. Proliferation and dropping off of basal cells to spindle cell elements is a common phenomenon.

The bimorphic nature of the tumour has been the subject of considerable controversy[1,9]. Immuno-histochemical characterization of tumour cells using antibodies to keratin, vimentin, glial fibrillary acidic protein and S-100 protein is very helpful in differentiating spindle cell carcinoma from malignant myoepithelioma and melanoma[10,13]. Vimentin reactivity is proved to be a consistent feature in spindle cell carcinoma but keratin reactivity was more variable. Keratin positivity in the spindle cell tumour substantiates its carcinomatous nature but it does not rule out a diagnosis of spindle cell carcinoma[1,6,14]. Recent immunohistochemical studies

Fig. 1 Intraoral photograph showing pedunculated exophytic lesion arising from the right buccal mucosa.

Fig. 2 Excised lesion measuring about 1.5×1 cm diameter.

Fig. 3 Nonhealed biopsy site after one month.

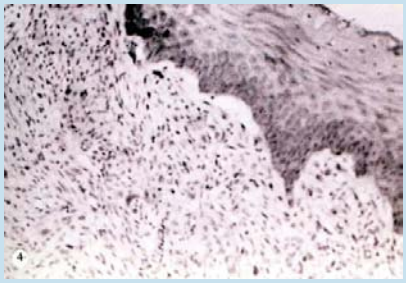

Fig. 4 Immunohistochemical examination showing presence of cytokeratin confined to epithelium.

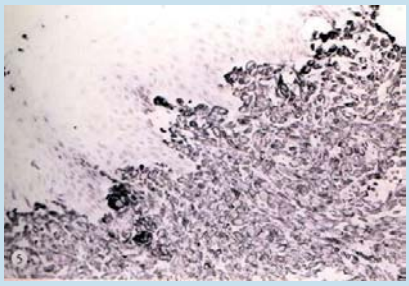

Fig. 5 Immunohistochemical examination showing vimenting positive malignant cells.

and electron microscopic studies have suggested that carcinosarcoma, and pseudosarcoma are single pathologic entity and their clinical behavior are also same.[12]

Surgical removal of the tumour with or without radical neck dissection alone or in combination with radiation therapy or radiation therapy alone has been used in the treatment of this disease.[8,15] Spindle cell carcinoma arising in any oral location has a poor prognosis. Overall death rate is around 40%. Death rate is not influenced by tumour size and gross configuration of the lesion.[9]

Acknowledgement

We thank Dr. Jayasree, Prof. Dept of Cytopathology, RCC Trivandrum, and Dr. Ramdas and Dr. Aswin, Dept of Radiotherapy, RCC, Trivandrum for their extended support.

References

1. Slootweg PJ, Roholl PJ, Muller H, Lubson H (1989) Spindle cell carcinoma of the oral cavity and larynx. Immuno histochemical aspects. J Cranio maxillofac surg, 17(5): 234-6.
2. Ellis G L. Corio R L (1980) Spindle cell carcinoma of the oral cavity. A clinicopathologic assessment of 59 cases. Oral surg Oral med Oral pathol, 50(6): 523-33.
3. Sherwin R P, Strong M S, Vauge Jr C W (1963) Polypoid and junctional squmous cell carcinoma pharynx with spindle cell carcinoma ("pseudosarcoma"). Cancer, 16: 51-60.
4. Lane N (1957)Pseudosarcoma(polypoid sarcoma like masses)associated with squamous cell carcinoma of the mouth, fauces, and larynx: Report of 10 cases. Cancer, 10: 19-41.
5. Leventon G S, Evans H L (1981) Sarcomatoid squamous cell carcinoma of the mucous membranes of the head and neck: a clinicopathologic study of 20 cases. Cancer,48: 994-1003.
6. Minckler D S, Meligro C H et al (1970) Carcinosarcoma of the larynx. Case report with metastases of epidermoid and sarcomatous elements. Cancer, 26: 195-200.
7. Fishback N F, Travis W D. et al (1994) Pleomorphic (spindle giant cell) carcinoma of the lung. A clinicopathologic correlation of 78 cases. Cancer,73:2936-45.
8. Shafer,Hine, Levy(1983) A text book of oral pathology. 4th edn. Prism, 130-31
9. Gary L E, Russel l C (1980) Spindle cell carcinoma of the oral cavity. A clinicopathologic assessment of 59 cases. Oral surg Oral med Oral pathol, 50(6): 523-33.
10. Barnes l, Gnepp D R (1985) Surgical pathology of the head and neck. New York: Dekker, 177-80.
11. El-mofty S K, Shannon M T, Mustoe T A(1991) Lymph node metastasis in spindle cell carcinoma arising in odontogenic cyst. Report of a case. Oral surg oral med oral pathol, 71(2): 209-13.
12. Iascone C. Barreca M (1999) Carcinosarcoma and pseudosarcoma of the esophagus: two names, one disease-comprehensive review of the literature. World J Surg, 23(2): 153-7.
13. Takata T, Ito H, Ogawai, MiyauchI M, Ijuhin N, Nikai H (1991) Spindle cell squamous cell carcinoma of the oral region. An immunohistochemical and ultrastructural study on the histogenesis and differential diagnosis with a clinicopathological analysis of six cases. Virchows arch A, 419: 177-82.
14. Battifora H (1976) Spindle cell carcinoma: ultrastructural evidence of squmous origin and collagen production by the tumour cells. Cancer,37: 2275-82.
15. Someren A, Karcioglu Z, Clairmont A A (1976) Polypoid spindle cell carcinoma (pleomorphic carcinoma): Report of a case occurring on tongue and review of literature. Oral surg, 42: 274-489.

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Aromatherapy in dentistry

* Manikandan G.R., ** Anita Balan

Abstract

Aromatherapy is one of the emerging vistas in the science of healing. Recent trends focuses on going back to natural modalities of treatment. Aromatherapy has found to work wonders in different aspects of dentistry. The various applications of aromatherapy in dentistry has been overviewed.

"The body cannot be cured without regard for the soul"-*Socrates*

Aromatherapy is a system of healing which involves the use of pure essential oils. These fragrant oils are distilled from various parts of plants, flowers, herbs & trees, each of which have different therapeutic properties. These oils are volatile and consists of powerful constituents and should therefore be treated with care and used in very small amounts. Colours vary from virtual colorless to light green (bergamot), red brown (patchouli) and inky blue (German chamomile)

How does aromatherapy works?

Aromatherapy as its name suggests works partly through our sense of smell. However essences also enter body through skin in aromatherapy massage. Aromas when inhaled reach the upper nasal cavity where olfactory receptor cells are located under a thin layer of mucus. Latest theory is that different aromatic molecules may fits into different places on the receptors which cover these hairs according to these shapes. When an inhaled aromatic molecule fits into the right receptor a message or recognition is sent through the olfactory nerve directly intro the limbic system in brain. This causes an immediate response of like or dislike as well as being able to smell the odour. Besides affecting the nervous & hormonal systems different aromas can also trigger immediate positive or negative feelings. The versatile nature of essential oils enables them to be used to improve general sense of well being as well as to treat a wide range of more physical common ailments.

History

There is evidence in the Bible of oils being used for anointing, & ancient Indian & Chinese texts detail their medical uses. Fragrant cosmetics, temple incenses and perfumes were made using essences like myrhh, frankincense, cedarwood and juniper. The Greek civilization produced great holistic physicians who also recognized the healing power of plants. Hippocrates' observations lead him to recommend aromatic baths and massages to maintain good health. Another, Dioscorides collated and wrote down about medicinal plants in a vast *'Materia Medica"*. An Arab physician Avicenna is credited with steam distillation a process to produce essential oils which is still used today. In 1920, it was Rene Maurice Gattefosse who coined the word *Aromatherapie* and by 1928 he had published a book of same name. In 1964, Dr. Jean Valnet who was a French army surgeon published a book *Aromatherapie* which can be considered as Bible of Aromatherapy. In 1977 Robert Tisserand published a book *The Art of Aromatherapy*.

Applications in dentistry

Complementary alternative medicine is a group of diverse medical and health care systems, practices and products that are not considered to be part of conventional medicine. New modalities of treatment have been now practiced widely in the field of dentistry. Aromatherapy is one such modality which comes under alternative medicine.

1. Dental abscess

Use one drop of tea tree or dilute one drop of clove oil in a teaspoon of sweet almond oil and apply directly to the gum using a cotton bud. Make a hot compress by adding 2 drops of chamomile to small bowl of hot water, swirl the water so the oil disperses evenly. Place a clean cloth on surface of water so it picks up oil and then apply to affected area. This will help to relieve pain and help to draw out pus. Also mix one drop of chamomile and two drops of tea tree in a teaspoon of sweet almond oil and apply three times a day to the outside of affected cheek or jaw.

2. Toothache

Dilute one drop clove oil in 5 ml (one teaspoon) of sweet almond oil and rub directly on to the gum. Tincture of myrrh is also helpful when applied to the gum surrounding the painful tooth. Clove oil and myrrh shouldn't be used by pregnant women. It should not be swallowed.

3. Gingivitis

Mouthwash can be prepared by adding 5 drops of lemon, 5 drops of myrrh, and 15 drops of peppermint to a bottle containing 100 ml of vodka. Shake well before use and add 3 teaspoons of mixture to a glass of warm water then rinse the mouth well. Use regularly after brushing & flossing.

4. Halitosis

Mouthwash:-5 drops of sweet fennel + 5 drops of myrrh +15 drops of peppermint to 100 ml vodka. Shake well before using and add 3 spoon of mouthwash to a glass of warm water and rinse the mouth thoroughly. Fennel oil should be avoided by people with epilepsy so lemon oil can be used instead.

5. Herpes cold sores

As soon as eruption is suspected apply one drop of tea tree or geranium on a cotton bud to the area. Massage the glands just under jaw with blend of five drops bergamot, five drops lavender and six drops of tea tree in 25 ml sweet almond oil.

6. Aphthous ulcers

Tea tree oil mouth rinses are helpful. A drop or two of tea tree oil may be added to toothpaste before brushing. Red raspberry tea which contains flavaniods can also be used.

7. Cellulitis

Anti-cellulite massage oil can be prepared by mixing six drops of grapefruit,8 drops of juniper and 6 drops of cypress or 8 drops of rosemary oil in 50 ml sweet Almond oil. Apply the massage oil with firm upward kneading and stroking movements to the affected areas. Rosemary oil should be avoided by people with high blood pressure, so cypress oil can be used instead.

8. Teething

Mix one drop of chamomile and one drop of lavender oil in 50 ml of sweet almond oil. Shake well and stroke a small amount along your baby's jaw and around his ear area. This will soothe the pain, calm him and induce sleep. Be aware that oils must be kept out of eyes and must not be swallowed.

Aromatherapy in dental office

Aromatherapy may work wonders on how we feel, which is why it can be so wonderful to use within the environment of a dentist's office. The use of an atomized spray that is injected into the air of office with various scents which are designed to put people in a relaxed calm mood. Commonly used scent is lavender which has a psychological effect of calming individuals, helping soothe them so that they are less fearful. Heated vibrating massage chairs are being available. All Dental Prodx has developed a list of products which is designed to bring comfort to the patients and to help shape their perceptions as they enter the dental office. Pure scents are recommended.

Spa gloves: A way to pamper and treat the hands of every patient while helping them to relax and to keep their hands away from the face during dental procedure. Spa gloves contain a serum that is activated by body heat, allowing the serum to permeate the top three layers of the skin. Gloves are to stay on for 20 mins and easily disposable after use.

#Lip satin: Formulated with vanilla scented lip conditioner. Lip satin contain no mineral oil or waxes and leaves no film. It soothes and conditions naturally and is a nice take away gift for the patient.

Comfort pillow: Designed with soft foam with a hidden central articulating linkage to form easily and support and it can be rearranged for maximum comfort and support.

Special natural mouthrinses

Minty flavor mouth rinse can be made using spring water, Echinacea, goldenseal, aloe, calendula, bloodroot, grapefruit seed extract and essential oils for flavoring and citric acid.

An *Aloe Vera mouth rinse* is available containing aloe vera, Vit.K, grape fruit seed extract, tea tree oil, horse chestnut, Indian pennywort, peppermint oil and menthol.

Conclusion

Recent trends focuses on the rejuvenation of ancient holistic idea of treating a patient's mind, body and emotions. There has been a general resurgence of interest in all things natural including aromatherapy and other forms of complementary medicine. WHO has identified more than 300 alternative therapies. The Dental Surgeons should not try these treatments on their own, but may collaborate with different specialists like aroma therapist and a joint venture may really work wonders in the field of dentistry.

References

1. Aromatherapy: A practical guide to essential oils and aromassage by Jan Balkam.
2. Massimei, Jerry "Aromatherapy and Dentistry." Aromatherapy and Dentistry. 13 December 2009 EzineArticles.com<http://ezinearticles.com/?Aromatherapy--and--Dentistry&id=3418631>.
3. Spa dentistry: Where prophylaxis meets aromatherapy,-An inside look into spa dentistry and how you can turn your practice into more than just a dental office by Lauren Bryant
4. Complementary and Alternative Medicine: Emerging Vistas in Healing by Sunitha Amruthesh, Prasannakumar, Bailoor DN-Textbook of Oral Medicine by Durgesh N Bailoor & K S Nagesh.(1st Edition)
5. www.alldentalprodx.com

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Case Report

All ceramic crowns supported by fiber reinforced post and core system

* Anand Kumar

Abstract

20 year old female patient reported with a fractured right central incisor. Aesthetics was the prime concern hence the conventional post and miracle mix combination was eliminated and Dentsply's trans-luminous fiber reinforced post and core system was used to achieve improved aesthetics with support of metal free crowns.

Removal of tooth structure is greater with custom made posts when compared to that of prefabricated posts. Moreover it requires more time both in the laboratory and in the clinic. Metal prefabricated posts were once considered to be stronger than the Glass fiber-reinforced resin-based composite posts. Christensen[1] evaluated the relative strength of endodontically treated teeth that received metal posts made of either titanium alloy or stainless steel, and glass fiber-reinforced resin-based composite posts. Strength was measured and found that both were of equal strength. The results reported by Novais V.R.[2], are significant, because in terms of flexural strength glass fiber-reinforced resin-based composite posts is similar to dentine structure hence fracture chances are low. Wiskott HW et al,[3] proved fatigue resistance of fiber posts are truly high. Composite fiber posts have compatible color and hence do not impart a gray colour to the remaining tooth which is quite common with metallic posts.

Fiber-reinforced resin-based post

It is tapered[4] to mimic the root configuration, they have parallel arranged glass fibers to prevent fracture, its radio opaque, and High translucency facilitates light curing, giving better control over cement and bonding.

A study was conducted[5] by M. I. Reill, M. Rosentritt et al to determine the influence of direct placement core materials on the fracture strength and marginal adaptation of root filled maxillary central incisors restored with fiber-reinforced posts, various core materials and all-ceramic crowns. The result of the study identified that crowns with dedicated core materials had a significantly higher fracture resistance than crowns with a conventional restorative material.

Case report

A 20 year old female patient reported with history of trauma and restoration with conventional post and core and ceramic crown on maxillary right central incisor. She was not happy with the existing crowns because of the dull shade of metal and black gingival discolouration around the margin of the crown. (fig1)

The decision was to change her conventional post and core and ceramic crown to fiber reinforced post and metal free ceramic crown.

The ceramic crown and conventional post was removed and re treatment of the root was done

Clinical steps

1. After endodontic therapy, the post channel was made with maillefer largo peeso reamer (blue) using rotary hand piece. Length of the canal was limited to 3 millimeters short of the apex of the root.
2. Glass post (blue -1.67 mm) was selected and the length was determined.
3. Ferrule was prepared with 1mm wide contra bevel at the root-core junction using a conventional hand-piece with a chamfer diamond bur. (fig 2)
4. The internal surface of the post channel was made rough with a slowly rotating diamond (Mani – diamond bur) to enhance mechanical retention.
5. Etch the canal with the etchant for 15 sec.
6. Mix the Dentsply X-bond and Activator for 5sec and coat the canal and cure with light for 20 sec.
7. The fiber post was seated in the canal using Dentsply Core X flow cement allowing a thin layer of the cement to cover the coronal portion of the tooth.
8. The portion of the dual-cure cement was light cured.
9. Immediately resin-based Fluro core 2 was placed to build-up the core part and wait a few minutes and light cure the dual-cure cement and/or build-up material to set. Dentsply Fluro core 2 is a fluoride releasing core built up material available in 2 shades (tooth colour and blue).
10. Prepare the core for the subsequent restoration with hand piece and diamond bur, tissue isolation is made and final impression recorded. (fig 3)
11. All ceramic crown (IVOCLAR e-max) was the final prosthesis of correct shade and contour. It was placed and luted using GC resin cement. (fig 4)

Summary

The basic principle for using these materials is that it gives required strength, shade, and light transmition ideal for all ceramic crown for aesthetics.

Fig 1 Black gingival discolouration around the margin

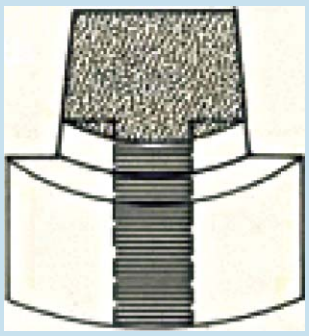

Fig 2 Ferrule with 1mm wide contra bevel

Fig 3 Post and Core

Fig 4 Final Prosthesis

Fig 5 Dentsply coreX dual core and Flurocore 2

Use of post-and-core restorations has changed markedly in the past several decades. Current use and research supports techniques using tooth-colored, fiber-reinforced posts cemented with resin cement, followed by All ceramic crowns. Although fiber-reinforced resin-based composite posts appear to be very promising, long-term clinical observation is however needed. In my case I used Dentsply coreX dual core and Flurocore 2 as the post and core material (fig 5).

References

1. Christensen GJ. Posts and cores: State of the art. JADA. 1998;129:96–97.
2. Novais VR, Quagliatto PS, Bona AD, Flexural modulus, flexural strength, and stiffness of fiber-reinforced posts. Indian J Dent Res. 2009 Jul-Sep;20(3):277-81
3. Wiskott, HW, Meyer, M, Perriard, J, Scherrer, SS. Rotational fatigue-resistance of seven post types anchored on natural teeth. Dent Mater. J 2007 Jan 29; [E pub ahead of print]
4. Dentspy post and core system broucher-2009
5. M. I. Reill, M. Rosentritt & G. Handel : Influence of core material on fracture resistance and marginal adaptation of restored root filled teeth. Published Online 18 Mar 2008 International Endodontic journal.
6. Annet Kutesa-Mutebi and Yusuf I Osman: Effect of the ferrule on fracture resistance of teeth restored with prefabricted posts and composite cores. Afr Health Sci. 2004.
7. Al-Hazaimeh N, Gutteridge DL. An in-vitro study into the effect of the ferrule preparation on the fracture resistance of crowned teeth incorporating prefabricated post and composite core restorations. Int Endod J. 2001

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Case Report

Castable attachment

*** Dheeraj Kumar Koli, ** Gilsa K. Vasunni, *** Pramod Kumar A.V.**

Abstract

Attachments are esthetic alternative to conventional clasp retained prosthesis. A precision attachment consists of two functional unit, a primary part, incorporated into the abutment construction and a secondary part, built into removable appliance. Their advantages are ease of placement, no display of visible clasp arm and minimal transfer of harmful forces to the abutment. They are structurally more sophisticated with better transmission of occlusal loading and adequate replacement of lost masticatory functions. This presentation will emphasis newer advances in field of cast RPD with help of a case reports of castable attachment

Introduction

The goal of successful prosthodontics rehabilitation is to provide function, esthetic and comfort for the patient. A thorough knowledge of distribution of force to the oral tissues, and how this is influenced by denture design, is a prerequisite to successful treatment planning.[10] The support of occlusal loading of a distal extension removable partial denture comes from the edentulous ridges, with soft tissue coverage[4]. The metal clasps in the design of RPDs often compromise esthetics, especially when the abutment teeth for clasp are anterior teeth[4].

Attachments are esthetic alternative to conventional clasp retained prosthesis. They are structurally more sophisticated with better transmission of occlusal loading and adequate replacement of lost masticatory functions. By the end of 1970s precision attachment were playing an increasing role in Prosthodontics. These small elegant devices were able to connect removable prosthesis to their abutments, unite components of fixed prosthesis, or provide a variety of other application[3].

Historic perspective

An attachment is mechanical device, other than clasp assembly, that function as a direct retainer.Attachment are categorized as precision and semi precision, depend upon method of fabrication: internal or external, according to location on abutment tooth; and rigid or resilient, as determined by the amount of movement allowed between the component part (*DR Burns, JE Ward*) [9]. Although added preparation skills are required to provide precision attachment removable partial dentures, more favorable esthetics and load distribution may outweigh the disadvantages (*RB Coyb)* [8]. The intra-coronal attachment is suggested to be applied in some cases that the periodontal condition of distal abutment was good, and the extra-coronal attachment is suggested to be used in some cases that the condition of the edentulous alveolar crest is fairly good, while the periodontal condition of the distal abutment was relatively weak *(Wang Yet al)*[12]. Extra coronal attachments may be useful in distal extension cases compared with the conventional clasp assemblies. Extra coronal attachments provide superior retention and esthetics (*Charkawi et al)* [11]. However, the use of these attachments has certain limitations. One of these limitations is the excessive torque applied to the most distal abutment. This may necessitate splinting of the abutments [11].

The article describe a case report of distal extension partial denture by using Rhein 83 Extra coronal OT CAP castable attachments and vertical OT STRATEGY (Fig 1 & Fig 2) castable attachment.

Case report

A 57 year old lady reported in department of prosthodontics, govt. dental college Calicut with intention of replacing her missing teeth in lower arch and refabrication of upper complete denture. Patient's medical history was non contributory. Period of edentulism was 4 years of maxillary arch and 2 years of mandibular arch. Patient was wearing ill fitting acrylic maxillary denture. Oral examination revealed presence of all mandibular incisors, and left mandibular canine (Fig 3). Different treatment option like implant supported overdenture, conventional RPD and attachment retained RPD etc were explained to the patient. Patient opted for an attachment retained removable prosthesis in mandibular arch and a metal base maxillary complete denture. Mandibular anteriors were planned to prepare for metal ceramic crowns with castable attachments on left mandibular canine and right mandibular lateral incisor.

After Endodontic therapy for 33, 32,31,42,41 teeth were prepared to receive metal ceramic crown (Fig 4). A putty wash impression was made with polyvinyl siloxane impression material (*Reprosil- Dentsply*) and poured in type IV die stone (*Ultra Rock Kala Bhai, India*). Provisional crowns fabricated and cemented with non eugenol cement (*RelyX™ 3M ESPE, US*). Maxillary master cast was duplicated to make refractory cast to

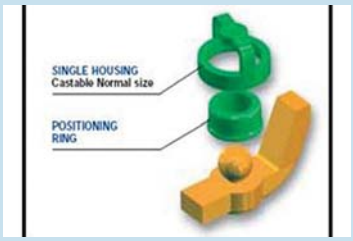

Fig 1. OT CAP castable attachments

Fig 2 Vertical OT STRATEGY castable attachment

Fig 3 Preoperative view

Fig 4 Intraoral view after teeth prepations

Fig 5 Anterior metal ceramic FPD with castable attachment

Fig 6 Try – in

Fig 7 Final prosthesis

fabricate metal base for denture in cobalt chromium alloy. A tentative jaw relation was made with upper metal base bite rim and lower posterior bite rim in shellac base plate. Upper anterior teeth were set according to esthetics and phonetic principles, and transferred back to articulator for fabrication of mandibular metal ceramic restoration. After preparation of wax coping castable attachment was attached to mandibular left canine (*Extra coronal OT CAP castable attachments (normal))*and right lateral incisor (*Vertical OT STRATEGY castable attachment)* with the help of milling machine (*Bego Germany*) wax copings were joined with each other to form joined crown for splinting effect. After casting the wax pattern, ceramic layering was done (Fig 5). During try in temporary crown were removed and, metal ceramic crown were seated and checked for esthetics and fit (Fig 6). A pick up impression was made with putty wash single impression technique. Auto polymerizing acrylic resin was poured inside the metal coping up to gingival level. A curved ½ round dowel pin was placed in each crown, to get better retention of acrylic die in the stone cast. The remaining part was poured with type IV gypsum (*Ultra Rock Kala bhai, India).*

After blocking out of undercut, a spacer was placed in the edentulous area of master cast. Nylon retentive cap was placed over the ball attachment. Cast along with the nylon cap was duplicated with silicon duplicating material (*Wivosil, Bego Germany*)and poured in *Wiro Fine* investment material (*Bego, Germany*). Secondary wax pattern was prepared on the refractory cast. Wax pattern was invested and cast with Cr- Co alloy. After finishing and polishing, secondary framework tried along with metal ceramic crown and peripheral border molding was done and secondary impression made. Lower master cast was sectioned for altered cast technique and poured in type III stone (*Kala bhai, India*). After posterior teeth setting. Try-in was done to check esthetics, phonetics and occlusion. Trial Dentures were waxed up and acrylized in heat cure acrylic (SR Triplex Hot- Ivoclar) (Fig 7).

White cap standard retention was inserted on housing adjacent to 33 and pink cap retention was inserted into housing adjacent to 42 with the help of insertion tool (Fig 8). Anterior metal ceramic crown was cemented with type I Glass ionomer cement (*GC FUJI, Japan*) (Fig 9) and the upper complete denture and lower RPD inserted (Fig 10). Occlusal discrepancies were checked in centric and eccentric movement and corrected (Fig 11). Patient was instructed about removal and insertion of the mandibular prosthesis. Patient was fully satisfied by esthetic appearance and fit of the removable prosthesis. Follow up were done after every 3 months.

Discussion

The objective of prosthodontics treatment listed by McGiney et al supply a scientific basis on which to provide care. (1) the elimination of disease (2) the preservation of the health and relationship of the teeth and and the health of remaining oral tissue, which will enhance the removable partial design and (3) the selected replacement of lost teeth, and the restoration of function in an esthetically pleasing manner[7].

Extra coronal attachment not only provides an esthetic outcome without visible conventional clasps but also provide excellent retention. It also reduces food impaction, plaque & caries on abutment tooth. These attachments improve patients comfort and chewing efficiency along with better control on occlusal forces.

Fig 8 Retention cap inserted in mandibular RPD.

Fig 9 Anterior FPD cemented

Fig 10 Intraoral view of final prosthesis

Fig 11 Checked for occlusion

One of the major benefits of attachments are the versatility they can add to treatment planning and design of a case[11]. One of the limitations is the excessive torque applied to the most distal abutment. This may necessitate splinting of the abutments. Splinting may minimize the hazardous effects of excessively loading the abutments. However, the prefered number of splinted teeth is debatable[11]. *Preiskel*[13] reported the need for splinting all of the anterior teeth when an extra coronal attachment is used, whereas *Kratochvil et al* [14] suggested that fewer teeth need splinting. Splinting of abutments often necessitates reduction of sound tooth structure. In the above case all anterior abutment were splinted to form metal ceramic restoration to reduce excessive load to the abutment. Metal clasp were replaced by extra coronal attachment to provide esthetically acceptable prosthesis. The potential moment for loads well away from the retainers highlight the difficulty of preventing distortion of flexible retentions tips unless some additional stabilizing component is incorporated. In the above case use ball attachment prosthesis will function with cushion effect, like a shock absorber, due to the flattened head of the sphere and retentive elastic caps. In addition the movement allowed by the attachment is sufficient to act as a stress breaker between abutment and denture. Different color cap with different degree of retention can be selected according to need of the situation.

Technical consideration

Insufficient space for the attachment is a common problem. While hardly technical, it is a problem that may first become apparent in laboratory. Measurement of vertical and Buccolingual space should have been part of preliminary treatment planning. In the above case a vertical OT Strategy type attachment of selected in 42 to region due to in availability of sufficient space. The wax up of the trial denture insertion and then the position of the anterior artificial teeth has been recorded with silicone mask and is subsequently replaced at same position. If insufficient room is available smaller attachment is selected. Where the space problem do not allow this approach, the treatment plan may need to be reviewed, as raising the occlusal plane or pushing forward the neck of the anterior teeth as at last minute attempts to position the attachment, seldom succeed. The path of insertion of the attachment prosthesis should be consistent with the guiding planes of the other abutments. The parallel seating tool should be used.

Conclusion

Precision attachments have always valuable tools in the armamentarium of the prosthodontics. The design of distal extension RPD incorporating elastic attachment can achieve both function and esthetics. The occlusal loading is placed on the soft tissue, thus reducing the occlusal loading for abutments of distal extension RPDs. With proper case selection the use attachment can benefits many patients. In conclusion, the advantages of RPD with attachment are esthetic and convenience in changing new attachments.

References

1. Preiskel HW. Precision attachment in dentistry 2nd edn. The CV Mosby company
2. Rosensenstiel S, Land M, Fujimoto L, contemporary fixed prosthodontics, 3rd Edn, Harcourt (india) private limited
3. Preiskel HW precision attachment for 21st century, dental updates 2009,36, 221-227
4. Yen- Chu Ku, Yu Fu Shen, Extra coronal resilient attachemtn in distal – extension removable partial dentures.
5. Beaumont AJ, an overview of esthetics with removable partial dentures – quintessence international 2002, 33, 747-755
6. Applegate OC, essential of removable partial denture prosthesis 3rd edn, saunders 1965
7. Mc Givney GP, Carr AB, Mc Cracken WL, McCracken's removable partial denture prosthodontics, 11th edition st Louis; Mosby year book
8. RB Coyb precision attachment removable partial denture, WV Dental J. Jul ;67 (1) : 6-14.
9. DR Burn, JE Ward – review of attachment for removable partial denture design : International Journal of prosthodontics 1990 Jan Feb 3(1) : 98-102
10. Zinner et al, semi precision attachment in removable partial dentures; the dental clinics of north America, January 1985 (29) page-67
11. Charkawi HG, Wakad MT. Effect of splinting on load distribution of extracoronal attachment with distal extension prosthesis in vitro. J Prosthet Dent. 1996 Sep;76(3):315-20.
12. Wang Y, Mi N, Qing F, Liu F, Chen J. Surface stress analysis of distal extension removable partial denture retained with two types of semi-precision attachments; Hua Xi Kou Qiang Yi Xue Za Zhi. 2001 Oct;19(5):283-6.
13. Preiskel H, Precision retainers for free end saddle prosthesis, British dental journal 1969;127:462-8.
14. Kratochvil FJ, Thompson WD, Cap&o AA. Photoelastic analysis o of stress patterns on teeth and bone with attachment retainers for removable partial dentures. J Prosthet Dent 1981;46:21-8.

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INFUSE® Bone Graft

* Rajeev Chitguppi

Introduction

The development of new medical formulations (NMF) for reconstructive therapies has considerably improved the available treatment options for individuals requiring periodontal repair or oral implant rehabilitation. Progress in tissue engineering and regenerative medicine modalities strongly depends on validated pre-clinical research. Pre-clinical testing has contributed to the recent approval of NMF such as GEM 21S and INFUSE bone grafts for periodontal and oral regenerative therapies.

INFUSE® Bone Graft consists of two parts - a solution containing rhBMP-2 (recombinant human bone morphogenetic protein 2) and the ACS (absorbable collagen sponge). The protein is a genetically engineered version of a natural protein normally found in small quantities in the body. The purpose of the protein is to stimulate bone formation.

History

More than 40 years ago, orthopedic surgeons determined that the protein extracts required for bone to heal, or regenerate, in the body were contained within the bone itself. In 1979, Dr. Marshall Urist, a professor in the Department of Orthopaedic Surgery at the University of California at Los Angeles School of Medicine, coined the term "bone morphogenetic protein" (BMP) to describe these proteins.

Approximately 20 BMPs with different amino acid structures have been isolated to date, but only six appear capable of initiating bone growth. Of these, BMP-2 has demonstrated the potential to form bone.

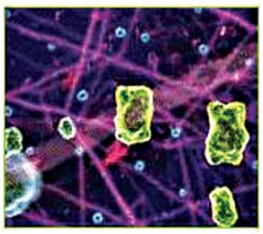
Dr. Urist determined that bone contains only trace amounts of naturally occurring BMP, and that isolating enough BMP to be clinically useful would require hundreds of kilograms of donor (cadaveric) bone. Therefore, scientists concluded that producing a recombinant version of BMP was the only practical option for using BMP in routine medical procedures for endochondral bone formation.

To produce a practical version of BMP, scientists isolated one protein (BMP-2) from the bone tissue and used recombinant DNA technology to create genetically engineered cells, which they called recombinant human BMP-2 (rhBMP-2). Through this process, they determined that the cells they created could produce pure, natural human BMP-2 protein, a substance capable of initiating bone growth.

rhBMP-2 is a bone morphogenetic protein that stimulates the patient's own stem cells to grow or regenerate their own new bone. This has shown great potential in periodontal regeneration.

Recent studies

A recent study, published in the September, 2009 issue of the Journal of Oral and Maxillofacial Surgery, the INFUSE® Bone Graft Sinus Lift Augmentation Pivotal Study results part of the pre-market approval (PMA) submission to the U.S. Food and Drug Administration (FDA) that led to the March 2007 approval of INFUSE® Bone Graft in certain oral maxillofacial and dental regenerative uses.



INFUSE® Bone Graft was shown to have very similar rates of effectiveness to autogenous bone graft, the standard of care, for sinus lifts, which is a common dental surgical procedure. The advantage of using INFUSE® Bone Graft is that it avoids harvesting autogenous bone (bone from the patient) and the associated morbidity, cost, and increased surgical time. The study provided actual human histological evidence that the bone generated by INFUSE® Bone Graft is normal, mature, 100-percent viable bone with no residual graft material, as evidenced by core samples taken at the time of dental implant placement.

Non - Dental Application and Off-label marketing and the lawsuit

The Infuse Bone Graft, manufactured by Medtronic, Inc. was originally approved for the use in lumbar spine procedures, however in recently filed whistleblower and separate individual injury lawsuits the company has been accused of marketing the product for use in the cervical spine (neck) procedures, which is an "off-label" use and not approved by the FDA.

When the Infuse Bone Graft is used in an off-label procedure, it has the potential to cause life threatening injuries, complications and/or deaths.

The FDA issued a safety alert regarding the complications from the off-label use of Infuse in the neck, or cervical area of the spine. These complications, which can be life threatening, include:

- swelling of the neck
- difficulty swallowing, breathing and speaking
- Compression of the Airway
- Respiratory Depression
- Nerve damage
- Death

Several patients that were recipients of the Medtronic Infuse Bone Graft in off-label procedures required emergency treatment, including tracheotomies and the insertion of feeding tubes.

*** Consulting Periodontist & Implantologist**
www.perioindia.com

A simple technique of fabricating customized palatal rugae contours in complete dentures for enhancing phonetics

* Meenu Merry C. Paul

Abstract

Our aim is to produce dentures that are mechanically functional, aesthetically pleasing and permit normal speech. Palatal rugae contours have a very important role in phonetics. The production of palato–lingual group of sound involve the contact between tongue and the palate. A simple technique is described here, for making individual palatal rugae patterns that are custom-made for each patient using self cure acrylic resin.

Duplicating palatal rugae contours in dentures

When a smooth, thick artificial denture palate covers the rugae, difficulty is encountered with speech. Copying of rugae on palatal surface of denture reduces this problem. Artificial duplication can be done using corrugated metal palate, plastic palate forms, free hand wax carving of anatomic palate etc. These artificial rugae can cause interference with speech, if they are made too prominent.

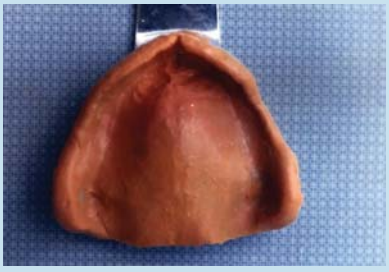


Fig 1

Fig 2

Fig 3

Fig 4

Fig 5

An alternative method is to duplicate the patient's own (natural) palatal contour. In this article, a customized palatal rugae pattern is made using autopolymerizing resin.

Procedure for duplication

1. After try-in of the complete denture is done, take a full arch impression (preferably using rubber base) of the patient's maxillary arch using a stock tray. (Fig. 1)
2. Add monomer and polymer (autopolymerizing resin) using sprinkle- on technique to the rugae area of the impression to form an acrylic resin shell of <1 mm thickness. (Fig. 2) Retreive it from the impression and trim off any excess resin from the borders. (Fig. 3)
3. Cut off the rugae portion from the palatal area of the trial denture placed on the master cast. (Fig. 4)
4. Check the fit of the acrylic shell in this area.
5. Attach the acrylic shell to that area using modeling wax. (Fig. 5) See that the edges of the shell is flushing with the edges of the trial denture.
6. Trial denture is then flasked, the wax and pattern are eliminated during dewaxing. The denture is processed the usual way.

[This was presented at the 53rd IDA National Conference, Bangalore]

*** Professor and HOD, Department of Prosthodontics, Indira Gandhi Institute of Dental Science and Research, Nellikuzhi P.O., Kothamangalam, Ernakulam**

Research Findings

*** Bindu R. Nayar**

Cavity Fighting Candy

Oral Biologists use Chemistry to Formulate Cavity Fighting Mints

November 1, 2008 — Oral biologists formulated a mint that fights cavities with an ingredient called Cavistat. Cavistat contains two main components that protect the teeth. First, the amino acid arginine metabolizes certain bacteria, which neutralizes the acid generated by sugars. This raises the pH to help prevent damage to teeth. Cavistat also introduces other chemical compounds that protect against the dissolving of the minerals of the teeth.

Tooth decay in kids has increased 28 percent in the past eight years. Experts believe too many sugary, processed foods and not enough brushing are to blame. A key factor in fighting cavities is found in your mouth."Saliva is the great protector against cavities. The candy is fluoride-free and protects teeth in two ways. First, it raises pH levels to neutralize more acid than saliva alone. Second, it protects the minerals in tooth enamel. Arginine, an amino acid, combines with calcium in Cavistat, the candy's main ingredient, and sticks to teeth -- leaving behind a layer of protection. Kids who ate two mints twice a day for one year had 68 percent fewer cavities in their molars than children who didn't chew the mints.

3D Dental Implants

Prosthodontists Devise Technique To Insert Dental Implants In A Single Surgery

October 1, 2007 — Researchers find that by imaging the mouth with a 3-D CT scan, they are able to create and insert a complete dental implant in one day. Instead of waiting for six months between placing the implant and the crown, this imaging technique allows the surgeon to locate the exact spot to place the implant. As important is the technique of immersing the surface of the implant in an acid bath, followed by an anodic electronic charge, to create a porous surface, hastening the fixation of the implant to the bone.

Digitial Dentist

3D Images From Hand-held Scanner Offer Precise Fit In Dental Work

August 1, 2007 — Prosthodontists use a new digital technology that creates a 3D image of patients' teeth, eliminating the need for messy molds. A hand-held scanner takes digital pictures of a patient's damaged and surrounding teeth. The three-dimensional images are then displayed on a screen, and then sent electronically to a lab that creates a final, more precise fitting crown

A hand-held scanner takes digital pictures of a patient's damaged and surrounding teeth. The three-dimensional images are then displayed on a screen, and then sent electronically to a lab that creates a final, more precise fitting crown.

New Tool To Improve Oral Hygiene Developed

ScienceDaily (Jan. 14, 2009) — Scientists at the University of Liverpool have developed a new dental product to identify plaque build-up in the mouth before it is visible to the human eye.toothbrush-sized product has a blue light at its tip, which, when shown around the mouth and viewed through yellow glasses with a red filter, allows plaque to be seen easily as a red glow. Dentists currently use disclosing agents in tablet form to uncover tooth decay and plaque but these often stain the mouth and taste unpleasant. The new product, known as Inspektor TC, will be particularly useful for those who are vulnerable to dental diseases such as children and the elderly. “Early stage plaque is invisible, and so this device will show people the parts of the mouth that they are neglecting when they brush their teeth, enabling them to remove plaque before it becomes a problem.“Inspektor TC is designed so that people can easily incorporate it into their daily dental hygiene routine at home.

Designer Nano Luggage to Carry Drugs to Diseased Cells

ScienceDaily (Mar. 14, 2010) — For the first time, scientists have succeeded in growing empty particles derived from a plant virus and have made them carry useful chemicals. he external surface of these nano containers could be decorated with molecules that guide them to where they are needed in the body, before the chemical load is discharged to exert its effect on diseased cells. The containers are particles of the Cowpea mosaic virus, which is ideally suited for designing biomaterial at the nanoscale."Scientists have previously tried to empty virus particles of their genetic material using irradiation or chemical treatment. Though successful in rendering the particles non-infectious, these methods have not fully emptied the particles.

One application could be in cancer treatment. Integrins are molecules that appear on cancer cells. The virus particles could be coated externally with peptides that bind to integrins. This would mean the particles seek out cancer cells to the exclusion of healthy cells. Once bound to the cancer cell, the virus particle would release an anti-cancer agent that has been carried as an internal cargo.Some current drugs damage healthy cells as well as the cancer, leading to hair loss and other side effects. This technology could deliver the drug in a more targeted way."The potential for developing Cowpea mosaic virus as a targeted delivery agent of therapeutics is now a reality.

Space-Age Technology At The Dentist

Biomedical Engineers Improve Dental Imaging And Care

June 1, 2008 — Biomedical engineers used advanced cone beam imaging technology take a series of two dimensional x-rays, which enabled them to create a detailed three dimensional picture of the patient’s mouth. Better images allow dentists to increase their understanding of the patient’s mouth and predict the outcome of procedures with improved accuracy.

space-age technology, biomedical engineering and computer science -- they're all coming soon to your dentist's office near you. It's revolutionary science that could help give you a healthier smile.. Beyond diagnosis, researchers are developing ways to use the 3-D imaging for fabrication of bridges and other restorations that used to be made by hand. Even the materials are revolutionary. Researchers have discovered that the same high strength ceramic used for the tiles on the space shuttle can work better than metal in permanent dental

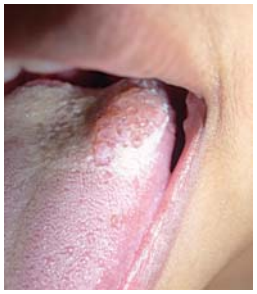
Source: Journal of Medical Microbiology, February 2010

*** Professor, Dept of Periodontics, Govt. Dental College, Thiruvananthapuram**

Quiz

*** Nityasri V., ** Anita Balan**

1. A 9 year old girl presented with an asymptomatic lesion on her tongue which was accidentally noticed by her parents. Examination revealed a pebbly surfaced lesion on the left side of dorsum of tongue. The likely diagnosis is:



a. Focal epithelial hyperplasia
b. Bullous pemphigoid
c. Lymphangioma d. Foliate papillitis

2. The anomaly indicated in the radiograph of the lower anterior teeth is:

a. Gemination
b. Fusion
c. Ghost tooth
d. Dens in dente

3. The most probable diagnosis for this slow growing lesion in the right lateral border of tongue is:

a. Viral wart
b. Verrucous leukoplakia
c. Squamous Papilloma
d. Carcinoma tongue

4. All of the following conditions are associated with multiple impacted supernumerary teeth except:

a. Hypohidrotic ectodermal dysplasia
b. Cleft Palate and lip
c. Cleiodocranial dysplasia
d. Gardner syndrome

5. A 14 yr old girl presented with an asymptomatic lesion on the right buccal mucosa of 1 day duration. Routine blood and urine investigations did not reveal any abnormality. The probable diagnosis is:

a. Nevus b. Hemangioma
c. Purpura d. Angina bullosa hemorrhagica

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

6. The incidence of salivary gland calculus is highest in:

a. Parotid gland
b. Submandibular gland
c. Sublingual gland
d. Minor salivary glands

7. A 35 year old man presented with a long standing white patch of his tongue. There were numerous hyperpigmented macules all over his body, atrophy of nails and scanty body hair. His platelet count was very low and he gave history of two of his siblings with similar clinical presentation who died of Carcinoma tongue. The diagnosis of this syndrome complex is:

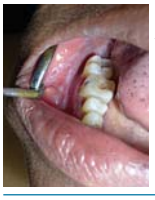
a. Pachynonychia congenita b. Dyskeratosis congenita
c. Hereditary benign intraepithelial dyskeratosis
d. Canon's disease

8. A 7 year old girl presented with the lesion depicted in the picture since one month. Examination revealed hemispherical skin colored dome shaped papules with central depressed core. The most likely diagnosis is:

a. Chicken pox b. Measles
c. Molluscum contagiosum
d. Herpes zoster infection

9. A 60 year old denture wearer presented with the growth in the lower anterior gums. It was non tender and soft in consistency. The possible diagnosis is:

a. Denture stomatitis b. Ca lower gingiva
c. Epulis fissuratum
d. Minor salivary gland tumor



10. All of the following are vesiculobullous lesions except:

a. Linear IgA disease
b. Dermatitis herpetiformis
c. Pityriasis rosea
d. Benign mucous membrane pemphigoid

*** P.G. Student, ** Professor, Dept. of Oral Medicine and Radiology, Govt. Dental College, Trivandrum**

Secretary's Report and Association News

Secretary's Message

For the past few months the IDA state office was bubbling with activities. For the first time Dentist's Day was celebrated as a national level programme at Hotel Beach Orchid, Kollam. IDA National leaders Dr. L. Krishnaprasad (National President), Dr. Ashok Dhoble (IDA Hon. Secretary General), Bhakthi Agaskar (Chair person, IDA Women's Dental Council) was the luminaries present. Sri. N. K. Premachandran (Minister for water resources) inaugurated the programme. The function also witnessed the launch of the Womens Dental Wing of IDA Kerala State. Conjunction with the Dentists day celebrations almost all the branches conducted mega dental camps under the common caption ''Smile Kerala'', an unique programme which attracts much media coverage. The State level CDE programme hosted by IDA Thiruvalla branch was exemplary in many ways, the participation was record breaking, the arrangements meticulously planned, the faculty studious and the programme as a whole bravura. The sincere effort of caring the needy was exhibited at the pain and palliative care workshop at Aluva. The activities of CDE and CDH wings will be elucidated in the respective conveners reports. I am trying to reach each and every one of you through sms, breaking the hot news around because I believe fast and better communication is the back bone of any organization to thrive. Promising a change –a change you can believe in.

Yours in IDA

Dr. Shibu Rajagopal

Kollam
15-4-2010

CDE REPORT

Dr. Jaibin George
CDE Convener

As a part of the learning and updating process for dental surgeons, IDA Kerala State has organized many Continuing Dental Education programs during the last few months.

The **2nd IDA Kerala State Organised CDE** was held on the 6th & 7th of February 2010 at Hotel T & U Munnar. The program was on Fixed Orthodontics which covered all major fields of modern orthodontics with special emphasis on Pre-adjusted Edgewise Appliance (Straight Wire). There were also Lectures on Lingual orthodontics, Clear aligners and Orthodontic mini implants. The Speakers were Dr Sumeet Ghonmode, Dr Rakesh Mahode, Mr. Rajesh Bhojwani and Dr. P.S. Dinesh and Dr Benoy Ambookkan.

IDA Kerala State President Dr. Samuel K. Ninan inaugurated the programme. The programme was of 12hrs of lectures and 3 hrs of hands-on including placement of orthodontic implants in sheep bone. 103 dental surgeons attended the programme. It was an 'Edutainment' programme with banquet and musical night on the 6th evening. Many dentists attended the programme with their families. The programme was supported by IDA Green valley and Malanadu branches.

IDA Kerala state organized its **3rd state level CDE programme** on 14th March 2010 at Macfast Auditorium Thiruvalla

hosted by IDA Thiruvalla branch. It was Inaugurated by Kerala Dental Council President Dr Mathew Joseph Vayalil. The faculty was Dr Aqueel Sajjad Reshamvala renowned Prosthodontist and the topic was 'Full Mouth rehabilitation'. It was a free CDE for IDA members. 507 dental surgeons attended the programme. The programme was of 8 hours of lecture and also had a live demonstration of measuring Jaw relation and face-bow transfer.

The **4th State Level CDE programme** was on 'Pain and palliative care' organized in association with CDH wing of IDA Kerala state and Indian Association of Palliative Care. It was a two day programme held on March 20th and 21st at YMCA camp centre Aluva. Programme was inaugurated by Mr. Praveen G. and hosted by IDA Nedumbassery branch. 36 dental surgeons attended the programme. The faculties were Dr Suresh Kumar, Dr Rajagopal, Dr Matews Nambeli, Dr Abdul Latheef K. H., Mrs. Sheeba and Mr. Praveen G.

Inter-branch and branch level CDE programmes

14 inter-branch and 17 branch level programmes were conducted till date with the approval of the state CDE wing.

A clinical club was formed by the Alleppey branch.

CDH REPORT

Dr. Joseph C.C.
CDH Convenor

IDA PALLIATIVE CARE – ASHAKIRAN WORKSHOP

MARCH 20TH & 21ST 2010, YMCA – ALUVA

First time in the history of IDA Kerala State, we have conducted a beautiful 2 days workshop in Palliative Care on March 20th & 21st 2010 at YMCA Aluva. The Indian Association of Palliative Care(IAPC), Secretary Mr. Praveen inaugurated the function. Dr. Joseph C.C. State CDH Convenor presided over the function. Dr. Jaibin Gerorge State CDE Convenor explained this combined programme of State CDE & CDH. The President of IDA Nedumbassery welcomed the gathering and the State Co-ordinator of ASHAKIRAN Project Dr. Abdul Latheef delivered the vote of thanks.

The active involvement of Indian Association of Palliative care (IAPC) and Indian Dental Association (IDA) members has made the first step of Asha Kiran a grand success. We could see the sincere effort of the value based human beings turning up into a golden land mark in the history of IDA. The depth of the seminar, the simplicity of the faculty and the sincerity of the delegates made it memorable.

Delegates from all over Kerala participated in the workshop. Dr. Suresh Kumar Director of Institute of Palliative Care, Calicut; Dr. Rajagopal, Director of Pallium India, Trivandrum; & Dr. Mathew Nambely, Project Officer NRHM, Idukki District, conducted classes

on various topics. Demonstration class on Home Care was conducted by Sheeba. A self-improvement session was conducted under the leading 'SUCCESS' by Dr. Abdul Latheef.

The ASHAKIRAN Edu Care Scheme for the dependants of Palliative Care patients was explained. Three working groups on Xerostomia, Oral Candidiasis, Pre & Post Radiation Therapy Maxillofacial prosthesis were formed to address the lacunae present in the available literatures, Datas, Clinical expertise and research works. The information given by Dr. Suresh Kumar about the role of Dental Surgeons in Palliative Care was an eye opener to the delegates.

Our working plan in academics, clinical and research level is going to be another milestone in the history of dentistry and palliative care. The proposal of 15 days community dentistry posting for house surgeons in palliative care clinics have to be brought to effect as early as possible. Senior most professors, academicians, clinicians, and research fellows of our country will be called in for this project of Asha Kiran.

Research studies are aimed at eliminating this lacunae observed in the data rating and guide lines in the management of these topics which will be addressed by learned men based on the clinical data available in our country. In a way this will help for proper follow up and correlation of the data available which will pave the path for better continuity in research works in our country.

Dr. Joseph C.C.
CDH convener,
IDA Kerala state

The New Indian Express

Kochi, Tuesday, 23 March, 2010

IDA launches Ashakiran

In an attempt to bring in more dentists to the aid of patients under palliation, the Indian Dental Association Kerala chapter has launched a project 'Ashakiran' to train dentists to help patients. A two-day workshop was held at Aluva by the IDA in collaboration with the Indian Association of Palliative Care. About 60 dentists from all over the state participated in the workshop which had experts speak on pain management, radiation effects and other issues related to oral cancer.

"There are several problems related to radiation therapy especially in the mouth. It is not just for oral cancer but every patient undergoing radiation reports of several inconveniences. Hence our effort is to ensure that at least one doctor is associated with a palliative centre," said Dr C C Joseph, convener, IDA public health division.

Oral complications include salivary gland dysfunction, which leads to dry mouth, rampant dental decay and mouth sores which are painful, diminish the quality of life and can lead to significant compliance problems. Oncologists suggest seeing a dentist at least two weeks before starting radiation. This visit can help prevent serious mouth problems. Side-effects often happen because a person's mouth is not healthy before radiation starts. With Ashakiran, the IDA hopes to reach the maximum population of palliative patients who are looking for help.

CHALAKUDY

Date March 6th 2010
Time 2pm-5pm
Venue Madonna Institution for mentally retarded, Potta, Chalakudy
Event Smile Kerala programme
Chairman of the meeting Dr. Jolly Ambookan (Branch President)
Chief Guest Sr. Rubeena Director Madona

Dentist day was observed on March 6th 2010. Public meeting was held at the Madonna Institution for the mentally retarded children. The Smile Kerala programme was conducted on the Dentist day by organising a free treatment camp for the inmates. Our charter President presented to the director of the institution, a donation of Rs. 10,000/- collected from the members.

Date March 7th 2010
Venue Madonna Institution for mentally retarded,Potta
Event Inauguration of Out-Reach Clinic - 2
Chairman of the meeting Dr. Jolly Ambooken (Branch President)
Chief Guest Dr Joseph C C, (State Convenor CDH)
Our 2nd Out-Reach Clinic at Madonna, an institution for the mentally retarded was inaugurated by the State CDH Convenor Dr Joseph C. C in a public meeting called at their premises.

MALANADU

IDA Malanadu Branch celebrates Dentist's Day on March 6th at Taluk Head Quarters Hospital, Thodupuzha, by conducting a Denture Screening Camp. Around 400 patients were screened, and nearly 101 patients were selected. Inauguration of the programme is by the Municipal Chairperson, Prof. Jessy Antony, in the presence of Ward Councillor, Sri. Shahul Hameed, Education & Health Standing Committee Chairperson, Smt. Vijayakumari. An awareness class on Oral Cancer was taken by Dr. Anandakuttan, BDS,MS (Oral Medicine).

Inauguration of Dental Unit at Govt. L.P. School Perumbavoor sponsord by Dr. John Joseph (past President)

Dr. John Joseph and Dr. Jolly Joseph examined the first patient of adopted school.

The Govt. L.P. School provided a Room in the School; Dr. John Joseph Installed Dental Chair; weekly twice he will do oral check up for the students and will provide treatment at his clinic fully free of cost.

An overview of the patients who were attending the camp

KOCHI

2nd State Executive Committee Meeting IDA Kerala State IDA Kochi hosted the second state executive committee meeting at IMA House, Kaloor on the 21st of February 2010. There were 138 members who attended the program. The minutes and details of the program could be collected from the Hon. State Secretary.

Dentist Day and Indian Dental Association- IDA Kochi Branch World over Dentist Day is celebrated every year on March 6. The objective behind the celebrations is to create greater awareness about oral and dental health, launch new projects which would help better awareness on various diseases, helps prevention and there by improve general health and bring better smiles on every face.

The awareness about dentist day and the celebrations on this day are in the early stages in India. And the Indian Dental Association is trying to use this day as an opportunity to bring awareness on the importance of oral health- barometer for general health to the society.

Dr. Vinod Mathew & Dr. Arun Babu of IDA Kochi was involved in a dental awareness class and dental check up program with distribution of pastes and brushes to the differently abled children of Cottelingo Special School, Fort Kochi today morning. In addition, we are celebrating the dentist day along with Freshers day of Al Azhar Dental College Thodupuzha with a dentist day message by our immediate past president Dr. V. A Afzal and a drawing and quiz competition. The Students of Al Azhar Dental College are members of IDA Kochi.

This year IDA Kochi branch intends to run their services for

differently abled children and to the children of various orphanages. We have already committed our services to the Shilpa School which is also a special school for children. We will be working with various other organizations such as Rotary, YMCA etc and having dental check up and awareness programs at various orphanages. We will also be having awareness class, highlighting the importance of stopping smoking, using betel nuts, paan etc along with oral cancer awareness programmes and dental check up for the public.

2nd Intra Branch CDE Program – IDA Kochi 2010 : I D A Kochi branch had its second intra branch CDE program with the recognition of State CDE wing and Kerala Dental Council on the 10th of January 2010 at IMA House, Kaloor. It was a full day lecture program sponsored by 3M.

QUILON

National Dentist Day Celebrations at Quilon, Kerala

On march 5 th one press conference was done at kollam press club, Kollam. Dr Shibu rajagopal, state secretary, Dr Deepak babu, Quilon branch president, Dr Biju kumar SD, Quilon branch secretary, Dr Anil kumar, state tressurer were present. All the dailies and cable tv, Kollam cable & Asianet cable tv coverd the press conference about dentist day.

Dental camp "SMILE KERALA"

Dental camp conducted at FDCP hall Pallitthottam,Kollam with Rotary club of Quilon west end, IDA Quilon branch and Azeezia dental college. Dental camp inaugural meeting start at 10 am. Welcome speech by Mr. Ajith kumar, Rotary club of Quilon west end. Presidential address by Mr Ajith ashok, president Rotary club of Quilon west end.

Dental camp inauguration by Dr Deepak babu, president IDA Quilon branch. Felicitations by Father Paulson, Mr Praveen S Dev,Rotary assistant governor, Mr Varkey Jacob,Rotary community director and Dr. Deepu Mohandas, Azeezia, Dental College representative. Vote of thanks by Dr Biju kumar SD, Secretary IDA Quilon branch.

Dental camp SMILE KERALA started at 10.30 am. 10students and 3 doctors from azzeessia dental college, Dr T C Prathap,Dr Deepu Mohandas, Dr Jayanth a cwere attended.

From IDA Quilon branch Dr Deepak babu, Dr Biju kumar, Dr Shibu rajagopal,Dr Anilkumar,Dr Nikhil s rajan,Dr Joseph Edward, DrAnil rodrigus and Dr Nizamudeen are attended. Well attended camp, 268 patients treated. Drugs, tooth paste,mouth wash are given to patients. Dental camp ended at 1.45 pm. Thereafter lunch given by IDA to all doctors and rotary who are present there.

National Dentist Day Celebrations

Past presidents council started at 4.45 pm at Hotel Prasanthi conference hall, Kollam. Dr Krishna Prasad national president, Dr Ashok Dhoble HSG, state president Dr Samuval K Ninan, state

secretary Dr Shibu Rajagopal and former presidents are attended.

Dr Ashok dhoble was inter viewed by the Hindu reporter Mr Ignatious Perira at hotel Prasanthi, Kollam and the interview was published in march 07 daily.

8 pm meeting started at Beach Orchid, Kollam State minister Mr N K Premachandran inaugurated the meeting.

National President Dr Krishna Prasad, HSG, Dr Ashok Dhoble, Womans council secretary Dr Bhakthi, State President Dr Samuel K. Ninan, State Secretary Dr Shibu Rajagopal, State CDH Convenor Dr C C Joseph and many other dignitaries are present.

IDA awards given in the meeting.

TII (Tobacco intervention initiative pragrame was inaugurated. Vote of thanks by Dr. Joseph cc.

ATTENDENCE OF THE DENTIST DAY

152 IDA members and 74 family members are present.

Meeting followed by cultural programes and ended at 12 mid night.

CENTRAL KERALA KOTTAYAM

EXECUTIVE COMMITTEE MEETING: The 2nd executive committee meeting of the branch was held on January 19th 2010 at Kottayam club. All the executive members participated in the meeting.

CDH ACTIVITIES: ASHA KIRAN: The pain and palliative care day was observed on January 15th 2010 under the name "ASHA KIRAN" at Atmata kendram, Changanacherry. Oral hygiene and Dental awareness class for HIV infected people was taken by Dr Baby James MDS, Prof and HOD, Dept of Conservative Dentisry, Amrita Institute of Dental Science, Kochi. More than 80 HIV infected people participated in the programme and interacted with the faculty. President of IDA Central Kerala Kottayam branch presided over the meeting. Fr Thomas kochelechomkalam, Director, Atmata Kendram welcomed the gathering. One of the participants proposed the vote of thanks.

DENTAL CAMP: A dental awareness, screening and treatment camp was organized at St George Church Parish Hall, Kaipuzha on January 30th 2010 in association with kottayam Social service society. 110 patients were screened and necessary treatment was provided.

INSTALLATION CEREMONY: Installation ceremony of the branch was held on January 3rd 2010 at Hotel Orchid Residency, Kottayam. Past president Dr Eapen Thomas welcomed the gathering. HSG Dr Ashok Dhoble was the chief guest for the day and he inaugurated the branch activities. Dr Samuel K Ninan, our State President and Dr Shibu Rajagopal, our Hon State secretary were the guest of honours. Dr Pratap Kumar, IPP Kerala state, Dr Santosh Sreedhar, State President elect, Dr Mathew Joseph, President Kerala dental council, Dr M C Mohan, past National president, Dr Binny Oommen past State president and Dr Antony Thomas past State sec graced the occasion.

Appreciation awards were presented to all the state level award winners and the Dr Thomas Philip award for the outstanding young dentist of the branch was presented to Dr Bobby Emmanuel.

State president Dr Samuel K Ninan installed the new President of the branch Dr Augustine J C and the new President installed his team of office bearers. Office beares from coastal Malabar, North Malabar, Tellicherry, Wayanadu,Thiruvalla, Mavelikara and Alapuzha branches also graced the occasion.

FAMILY MEET: The installation ceremony was followed by the first family meet of the year which included entertainment programmes, game show for children by JCI trainer Deepak Sebastian, sumptuous dinner and fellowship.The lucky dip holiday package sponsored by M/s Fortune holidays was won by Dr Baby K Antony.

NATIONAL CONFERENCE: 10 Members from the branch attended the 63rd IDA National conference at Chennai on February 12th, 13th and 14th.

BEST SCIENTIFIC PAPER PRESENTATION AWARD: Dr. Tony Kurien's, (MDS) scientific paper presentation on "Management of Periodontal – Endodontic lesion by guided tissue degeneration technique" was awarded the best scientific paper presentation at the national conference held at Chennai on February 12th, 13th and 14th.

ALAPPUZHA

CDE REPORT

Topic of the CDE programme: "Basics in Patient management in Dental Practice"

Date of CDE programme:March 7, 2010

Venue: Hotel Royale Park, Alappuzha

Duration of Course: 2 hours

Name, qualification and Address of faculty: Dr. Oommen Aju Jacob MDS

Principal, Pushpagiri College of Dental Sciences, Tiruvalla

Name, address and contact of Secretary: Dr.S.Rupesh Vaikunt, PalaceWard,Alappuzha

Total No of participants: 29

CDH Activity report – IDA Alappuzha

Dr.S.Rupesh (Hon.Sec., IDA Alappuzha) participated as faculty in the school teachers' training program and gave a lecture on Importance of oral health in school children as part of Bright Smiles Bright Futures National oral health programme in association with colgate Palmolive at Pushpagiri College of Dental Sciences on February 1st 2010.

ENDORSEMENT OF THE DENTAL CLINICS OWNED BY THE MEMBERS OF INDIAN DENTAL ASSOCIATION- ALAPPUZHA RATIONALE

To standardize the dental practice of the members of our association and also to make the public known about those who indulge in unhealthy and unethical practices. The formation of an ethics committee has also been suggested at the EOGM.

The proposed criteria for getting endorsed are:

1. Stick to the minimum treatment rates announced by the association.
2. Follow ethics in dental practice.
3. Participate actively in all the events of the association especially,

● CDH ● CDE ● CAMPS.

4. Proper instument sterilization in the clinics by steam under pressure
5. Whereever possible, use disposable materials
6. Avoid any fake/ unethical treatment methods, maintain diginity and decorum osf our profession.

THE CLINICAL CLUB OF IDA- ALAPPUZHA

The "Clinical Club" is a platform for the members of the branch to present interesting cases they have encountered in their practice, clear doubts and have a general discussion among them on the topic. Unlike a CDE where there is less interaction the Clinical Club offers an avenue for greater interaction and kindles a scientific temperament. The presentation is moderated by experts in the concerned specialty and expenses are borne by the participants.

The inaugural session of the Clinical Club took place on the 22nd of February at 8 p.m. the venue being Hotel Royale Park. The session was inaugurated by Dr. Jaibin George, CDE Convener Kerala State by lighting the traditional lamp. The presentation was by Dr. G.Venugopal on Exodontia, Dr. Oommen Aju Jacob MDS, Oral Surgeon and Principal of Pushpagiri College of Dental Sciences was the moderator. The clinical club was attended by 20 members and there was a lively interactive session wherein Dr. Oommen Aju cleared doubts and gave invaluable tips. This was the first such venture in IDA, Kerala State and IDA Alappuzha was commended by Dr. Jaibin George for taking this initiative. The Clinical Club is the brain child of President Dr. Arun Babu and more such meetings are on the anvil. Dr. S. Rupesh, Secretary, IDA Alappuzha proposed the vote of thanks, this was followed by dinner.

KASARAGOD

Executive committee meeting: An exercutive committee meeting was held on 11th Feb. 2010 at KIMS Hospital, Kasaragod. Discussion about Dentist's day celebration, future CDE programmes and sponsorers for pragrammes were done.

CDH activity: Conducted a dental camp at Satya Sai Abhay Niketan on 7th March 2010. Inaugaration of the camp was done by Dr.Ganapathy Bhat, Organizers of the Abhay Niketan and Office bearers of IDA.

Awareness talk to the public was given by Dr. Naveen Krishna. Check-up and extractions were done to the patients. Free medicines and tooth pastes were distributed.

Family-get-together meeting: As part of the Dentist's day celebration, a family get together meeting was held on 13th March 2010. Dr. Sharada was honoured for her 34 years of meritorious service to the society. Entertainment and games were conducted followed by dinner.

COASTAL MALABAR

FAMILY PICNIC: IDA CMB conducted a family picnic and get together on 7th February at Oyster Opera Padanna.

Oyster Opera – Promoted by the natural award winning farmer, G S Gul Muhamed. This is Kerala's only tourist resort with oyster farming as its theme. The theme village is unique with huts and restaurant both on land water and tree top built with locally available materials causing absolutely no damage to the rich habitation of this virgin land.

This programme started at 11.00 am with many games and fun for the children and family. Musical chair, passing the hat, sari wearing competition for men, sari folding competition for women etc. Had a delicious lunch which includes plenty special fish dishes and payasam too. After lunch comes the main highlight of the whole programme, "Boat Cruise" and the programme come to an end with a photograph of all members enjoyed the sunshine, back water and Cruise

2ND CDE PROGRAMME : Second CDE programme of IDA CMB held on 24.02.2010 by Dr. Anand Raj S about the pulp therapy in primary teeth at hotel food palace Payyanur. Function started at 8'o clock with the welcome speech by Dr. T.P. Gireesh Kumar. Dr. P.K. Jayakrishnan introduced the faculty.

The talk was very informative for the daily private practice. About 60 members attended the lecture. Dr. Sanjith Saimon presented the memento to the faculty and vote of thanks proposed by Dr. Sreekumar C. The whole programme was sponsored by Colgate Palmolive India Pvt. Ltd

RELEASING OF OFFICIAL PUBLICATION "MIRROR": The fist issue of our official publication "MIRROR" was released by Dr. S. Ananda Raj on 24.02.2010. The first copy handed over to past president of IDA CMB Dr. Vimala Suresh.

"DENTIST DAY CELEBRATIONS": IDA CMB observed Dentist Day by Conducting a School Dental Check up camp at 2 PM at

Rotary Special School Kanhangad. More than 60 mentally & Physically handicapped children are studying in this school which runs by Rotary Club Kanhangad. The Programe started with the inaugural function presided by Dr. T.P. Gireesh Kumar, Dr. Sureshan Dist RCH Officer inaugurated our pogramme by lightening the traditional lamp. School principal Sister Beena welcomed the gathering ad Dr. Santhosh Kumar P. facilitated during the function. All the student were examined and further treatment were made free for them. Free toothpaste, brushes and medicines were distributed. Dr. Santhosh Kumar, Dr. T.P. Gireesh Kumar Dr. P.K. Jayakrishnan, Dr. Jyothi, Dr. Sharmila Balraj, Dr. Sushma Kumar, and Dr. Vishwambaran actively participated in the function.

TRIVANDRUM

21 February:- Official release of **Probe** 2010 volume 8, Issue 1, during state executive meeting at IMA hall Kochi by Dr Samuel K Nainan, the state president of IDA Kerala. Dr Nainan released the first copy and presented the copy to the IDA state secretary Dr Shibu Rajagopal. Copies of the probe were distributed to the executive committee members.

9 th February:- The second clinical club meeting for the year 2010, Dr Suvy Manuel on "Complications in exodontia.

Dr KG Nair was honoured by the IDA Kerala state for his outstanding contributions to dentistry in the state. A senior member of IDA Trivandrum branch, responsible for the formation of Kerala state branch of the IDA, and organizing the dental surgeons in Kerala under IDA, Dr KG Nair has the distinction of being the first keralite to be the national president of the Indian Dental Association. It was under his leadership as the President of IDA, that a world dental congress was organized successfully at New Delhi. Dr Balakrishnan Nair handed over the award to Dr KG Nair in a function organized along with the endodontic symposium, held to celebrate the World Dentists Day by the IDA Trivandrum branch at Trivandrum Club on the 7th March 2010.

7 March 2010 : IDA Trivandrum branch celebrated the World dentists day the 7 th of march 2010, as the members of the branch were invited and had to participate in the world dentists day program arranged at Kollam by the Kerala State Branch of Indian Dental Association on the 6 th of March. The Trivandrum branch programs started off at six o clock in the evening at the Trivandrum club. The clinical club program normally held on the second Tuesday of every month was preponed to make it a part of celebrations. The clinical program was held as an Endodontic symposium, where four eminent endodontists spoke on the different aspects of endodontic procedures. After the endodontic symposium, which was well attended and appreciated, a formal general body meeting was also held.

Endodontic symposium: 7 March:- In connection with the World dentists day celebrations, the clinical club of IDA Trivandrum branch Symbiosis presented an endodontic symposium. The four eminent endodontists presented various aspects of endodontic practice. The faculty of the program were Dr Rajesh Pillai who spoke on the diagnosis and treatment planning; Dr Lekshmy S Devi who spoke on the endodontic cavity preparations; Dr Gibi Paul who spoke on the various obturation techniques in endodontics; and Dr Rajesh Gopal who discussed the challenges faced by practitioners while practicing endodontics. Since all the faculty were into academics and practice, they succeeded in touching upon both the frontiers as well as practical aspects of endodontic practice. Several senior members like Dr Balakrishnan Nair, Dr KG Nair, Dr Velayudhan Nair, Dr Nandakumar, Dr Subramoniam attended the symposium

Dr Nandakumar, senior member of IDA Trivandrum branch and the Chief Editor of the Kerala Dental Journal (KDJ) received the national award for the best Dental Journal, instituted by IDA. Ever since Dr Nandakumar took over as the editor there was a paradigm shift in the out look of the KDJ, its appearance and its scientific contents, which made it grab the prestigious award. The award was handed over to Dr Nandakumar by Dr Velayudhan Nair in a program held as part of the general body meeting at Trivandrum club on the 7th March.

CDH program: Dr Arun at dental camp held at Govt UPS, Fort High School, in collaboration with Organisation of retired bank officers in Trivandrum

DR. ASHOK DHOBLE
IDA National Secretary General

Indian Dental Association

N E W S

DR. L. KRISHNAPRASAD
IDA National President

IDA LAUNCHES CHILD TASK FORCE

A unique and noble initiative to curb dental caries among children

The Indian Dental Association on Sunday, February 28, 2010, launched its prestigious project "Child Task Force" at the hands of Shri Harman Baweja, the celebrated up and coming bollywood star, at a glittering star studded function organized at the Taj Lands End, Bandra, a Mumbai suburb. Mr Himesh Reshammiya, the popular playback singer, was the Chief Guest at the function.He inaugurated the proceedings and set the ball rolling on an eventful day. Among those present at the function were Ms Nagma, the national award winning actress for her sterling performance in a Bhojpuri film and Mr Aftab Shivdasani, another young bollywood star.

Consistent with its long-standing commitment to improving oral health among school children, IDA announced today, at the launch of the Child Task Force, the establishment of a Child Dental Center for prevention of dental caries among children. This Center will undertake, besides oral check up programmes of school children, the correct method of brushing, teacher and parent education programmes to create dental awareness, provision of critically needed preventive dental services through promotion of sealants and fluoride gells for prevention of dental caries through school based oral health programmes. The Child Task Force, an IDA initiative to pioneering prevention of dental caries, aims at intercepting and eradicating dental caries among children in the country. It is the principal body and the driving force behind the Child Dental Centre armed with implementation of the strategy of pioneering prevention. It aims at creating awareness about oral healthcare among children with a view to improving the general health index in the country. Almost 80 per cent of the child population in the country suffers from dental caries, one of the commonest of dental problems.

IDA plans to initiate preventive programmes to intercept and treat dental caries among children with the singular aim of significantly improving child dental health in the country. To begin with, The Child Task Force plans to undertake dental check up of school children in 86000 primary schools in Maharashtra State in an attempt to prevent dental caries and help the school maintain oral health records of children who will be provided with IDA cards showing their dental health status.

Speaking on the occasion, Shri Harman Baweja appreciated the laudable aims and objects of IDA and hoped that it would continue to serve the community through its umbrella organization, the Child Task Force. Each one of the celebrities who spoke were unanimous in their adulation of IDA's commitment to the society and expressed their desire to get involved in all future endeavours of IDA for such noble causes.

Oral health is passing through a rapid transition phase consistent with the changing scenario of medical and scientific knowledge. In order to effectively meet the challenges posed by these changes, policy makers need the information, capacity and tools to assess and monitor health needs, choose intervention strategies and design policy options appropriate to the given situations. The findings of the school dental check-ups under the IDA Child Dental Center, it is felt, would go a long way in improving the oral health scenario of school children in the country and thus the health of the nation.

The occasion was also used to launch the new IDA Website and to release ORAL HEALTH publication. While Mr Aftab Shivdasani launched the IDA Website, Ms Nagma, released the publication on Oral Health. It indeed was a star studded event reminiscent of the festive day, the colourful Holi.

Dr Twinkle Sanghvi entertained the large gathering assembled with her excellent compering and her varied lyrical addresses in adulation of the celebrities.

IDA LAUNCHES ITS UNIQUE WEBSITE

The largest website, a connoisseur's delight, ever to be uploaded in the world

28 February 2010 was important for more reasons than the celebration of the launch of the Child Task Force, the agency set up to prevent dental caries among children. It also marked the 65th birth anniversary of IDA and to commemorate the occasion IDA presented its members with an extraordinary gift, the launch of its new WEBSITE. Shri Aftab Shivdasani, the rising star of bollywood, launched the new website amidst thunderous applause from the large assemblage of members and invited guests from leading oral care product manufacturers and dental profession.

A thoroughly redesigned, improved and expanded site, the pride of IDA and the envy of many, the website covers a large number of modules and specialities of great significance, both to the dental profession and the community. In addition to improving the IDA Home Page, several significant sections of special importance, consistent with the changing face of dentistry, have been supplemented in a rare and remarkable coverage of topics that makes the IDA Website one of the best sites in the world of web firmament. Conceived, developed and designed exclusively inhouse by a group of dedicated personnel over a period of a little over three years, it stands testimony to what coordinated and tenacious team effort can achieve. Specific mention must be made of the modules on Oral Cancer Foundation and the two healthcare management tools under its banner, the SPOT and the TII Centres; IDA Membership; Educational Programmes; IDA Publications; IDA Accreditation Programmes; Dental Technology; The Child Task Force and its driving force, the Child Dental Centre, etc., to name only a few. The whole spectrum of website thus has witnessed considerable changes in content, design and presentation and provision of appropriate links for the avid and interested browser to gain more knowledge and information.

It provides valuable information on the organization and its activities, besides offering its members an easy access to its vast treasure of database. The devising of the website has enabled IDA to enter the global mainstream and IDA can proudly claim the website to be unique and one of the best in the world. It is now possible for any member to visit the site, for example, on Tobacco Intervention Initiative Centre (TII Centre) and register to open a TII Centre at his or her clinic. The patient can also visit the website for suitable solutions and counselling as also for information about the nearest cessation centre. The module of Authors' Guidelines on submission of articles is another section that does away with the practice of sending articles through the electronic medium. Instead, articles can now be presented online and automated acknowledgements and other communications are effected online.

With the revision and expansion of the IDA website, a huge database has been created which in a way provides the key to the gateway to a world of dental exploration. So, welcome to the exceptionally special site and let your journeys into the hitherto unexplored world of exciting dental discoveries begin. We have it for you all under one roof, the unparalleled and spectacular world of IDA WEBSITE!

When one looks at the number of projects (9), modules (365) and links provided (8500) and the efforts put in by the inhouse staff in assembling what the text describes in nearly 7500 pages, the time taken to design a 35 GB site pales into insignificance. It is one of the unparalleled creations IDA can be proud of.

DENT FEST 2010

24 & 25 April 2010 | Venue – Loyola School Sreekaryam, Trivandrum

inauguration function

On 24th April 2010 the IDA Kerala State students conference hosted by IDA Trivandrum branch on behalf of the Kerala State IDA named DENTFEST 2010 was declared open by the chief guest of the day Mr.Senkumar, IG of Police. The inaugural ceremony at Loyola school Sreekaryam marked the beginning of two days of scientific, and cultural events for the dental students of Kerala state. The function was presided over by Dr Samuel K Nainan, President IDA Kerala State. Dr Sangeeth K Cherian (Organizing Chairman of DENTFEST 2010 & President IDA Trivandrum branch) gave the welcome address. Dr Mathew Joseph, President Kerala Dental Council, Dr Pratap Kumar (Immediate past President, IDA Kerala), Dr Renjith CK(Vice President, IDA Kerala, and Dr Jose Paul(Students Co-ordinator, IDA Kerala) offered felicitations. Dr Shibu Rajagopal (Secretary, IDA Kerala) gave the vote of thanks.

As soon as the inaugural ceremony was over the festivities that can rival any school yuvajanotsavam started off. There were 2 stages for performing arts one venue for literary events and a stage each for scientific sessions and poster presentations. The students had registered for both scientific and cultural activities.

More than 800 students from 20 colleges from all over the state participated in the grand gala program. Several students could be seen rushing enthusiastically from one stage to the other for participating in multiple events. The organizing secretary and his team had scheduled the programs and competitions with surgical precision. The hall mark of the meticulously planned program was the well thought out flexibility incorporated to accommodate last minute changes.

Royal Dental College bagged the overall championship with 90 points, followed by Educare Institute of Dental Sciences and Kannur Dental College with 48 points each. The third place was shared by MarBaselios Dental College and Pariyaram Dental College with 41 points each. The cultural events were marked by an exemplary display of talent, camaraderie and sportsmanship. M/s Jishnu Sajayakumar of PMS Dental College and Arunima of Kannur Dental College were declared kalaprathibha and kalathilakam of Dentfest 2010 respectively.

Cine actor Mr Nedumudi Venu addressed the students on the 25th evening while the cultural events were going on.

The evening of 25th April saw the closing ceremony afterl two days action and fun filled festivities of Dentfest 2010. In the meeting presided over by Dr Samuel K Nainan, the president of IDA Kerala state, Dr L. Krishna Prasad IDA national President was the chief guest of the day, and Dr Asok Dhoble,Honourary Secretary General,IDA Head office was the guest of honour.The guests were treated to a ceremonial welcome with Panchavadyam and Talapoli.

The formal meeting opened with a silent prayer. Dr. Sangeeth K. Cherian welcomed the huge gathering of students ,teachers and practitioners. Dr Krishna Prasad spoke on the important role of IDA in life of a dental surgeon and tried to convince the students on the necessity for being a part of the organisation intended for the betterment of the dental surgeons. Dr Asok Dhoble also spoke on the association and its various activities in the national level. Dr Alias Thomas Vice president IDA national branch and Dr Shibu Rajagopal gave power packed, inspiring speeches. Dr P.S Thaha, Chairman of PMS College of Dental Science was honoured by IDA Trivandrum in appreciation of his invaluable contribution of Pioneering Dental Education in private sector in Kerala.

The Prizes were given away to the prize winners of various competitions held. Royal Dental College, Chalissery bagged the Overall championship. The enthusiasm and joy of the champions was infective, and was reflected in the gathering. The senior members of IDA Trivandrum branch like Dr Balakrishnan Nair, Dr KG Nair, Dr Nandakumar Editor KDJ were present during the function.

Dr Benoy Stanly, organizing secretary gave the vote of thanks.Whatwas noteworthy in the whole event was the prescence of State Office bearers,Kerala Dental council members and the active cooperation and support extended by Pvt dental college Managements and their staff. Colgate Palmolive was the Principal sponsor while Oral Care Foundation an initiative of IDA Trivandrum branch was the Co-Sponsor other ponsors where Reddys Laborotories,Thyke Technologies and PMS Dental College.

The students convention organized by the IDA Trivandrum branch on behalf of the IDA Kerala state was rated as a well organized successful grand gala event that would be cherished by many in years to come.