Index Copernicus ID 5385

ISSN No. 0972-396X

KDJ

Kerala Dental Journal

Vol 41 | No. 3
July 2018

Quarterly Publication of Indian Dental Association, Kerala State Branch

kdj.idakerala.com

SIS Index ID 833

editorkdj2018@gmail.com

www.idakerala.com

Kerala Dental Journal
Vol. 41 | No. 3 | July 2018

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Ultimate perfection: 3D Tooth printing

One of the most exciting innovations in Dentistry is 3D tooth printing which has poised to offer a revolution in re creation of teeth and supporting structures to an exact natural standard. Time will overcome the cost barriers as with any newer technology. Fabrication of 3D teeth with anti microbial properties is also being explored. 3D Printing is a natural progression from computer aided design (CAD) and computer aided manufacture (CAM). 3D Printing would have solutions not only for prosthetic and cosmetic needs, but also for orthodontic and maxillofacial applications. The three dimensional printing starts with a special scanner to scan the patient's mouth using contact or non contact scanning technology creating a super accurate patient specific digital image of the scanned surfaces, that can be saved and translated into 3D digital representations or a physical model thus replacing conventional impressions, models or even CAD CAM. The complete digital image is transferred to a milling machine which would carve a new physical model from a block of restorative material. By going digital patient information is stored indefinitely and soon patients can have these procedures performed at prices comparable to traditional methods.

Edited by: **Dr. Anjana G,** Hon. Editor • Published By: **Dr. Suresh Kumar G.** Hon Secretary • **For IDA, Kerala State Branch** • Design and concept: **Suman Graphics,** sumangfx@gmail.com • Printed at: **Printout Villa,** Mukkom

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Editorial

Dr. Anjana G.

Updation: key to futuristic Dental Practice

Technological advances in Dentistry and the fact that public is now aware that having unsightly teeth, is not just a matter of vanity but a very important factor contributing to one's confidence level, behaviour, self assurance and general health makes one realise that, this branch of Medicine and Science, will only be more sought out in the coming years contrary to the concerns about its future. The challenge to Dental professionals is to keep oneself updated with the progress in technology and upgradation of the skills to satisfy the newer demands and keep pace with advances in technology. To achieve this Dental teaching institutions and individual practitioners should be willing to invest a fund allocated to such needs to install the necessary armamentarium for newer advances to train the students better and to provide optimum and advanced care to the patients. Institutions should also think about providing research facilities to try and test newer advances and materials so as to facilitate ongoing research projects.

Dr Anjana G
Editor, KDJ

Message from the President

Dr. Ciju A Paulose

My dearest colleagues,

As always it is an honour to write a few words to you readers as you prepare to browse through this volume of Kerala Dental Journal.

It is gratifying to know that these words are being read by those who are sincere about their quest for knowledge. I personally find it commendable, that despite the particularly harrowing set of circumstances that we faced in the recent months, you my dear readers, have not let your search for knowledge take the backseat; as is evident by the fact that you hold this journal in your hands.

Before going any further, I would firstly like to extend my felicitations to all the members of all the branches of the Indian Dental Association for their enthusiastic participation and involvement in all the event and activities that have been held this year. In an earlier address to you, in a previous issue, I had stressed the importance of functioning as a unit and the need to reach out to new members of our profession. I am immensely pleased to say that your response has exceeded my expectations and IDA Kerala State can indeed be looked up to as a model association. Every program, every activity has been a roaring success thanks to your sense of collaboration and comradeship as well as your willingness to guide the members to our fold.

This sense of community and brotherhood has was tested in recent months by the disaster that beset our state. The degree of damage that the recent floods inflicted has no precedent. Countless people lost much more than just their homes as disaster struck in the blink of an eye. Even now, society has only just begun to pick up the pieces and get back to a semblance of normalcy.

But despite the vast destruction and loss that affected us, we persevered. Instead of playing the 'blame game' and alleging mismanagement by others, we sought to focus on putting things right.

This mentality, I'm proud to say, existed not only in a few but all branches of our association. Once the floods receded our members sprang into a flurry of activity, reaching out to those in need and getting aid as fast as possible to areas that needed it most. The drive and unparalleled generosity exhibited by our members in this time of distress will become a gold standard for the coming generations. My deepest and most heartfelt gratitude to each and everyone of you for your selflessness and sincere efforts in helping our society to get back on its feet. Without you the flood relief would never have become a success.

I would like to express my special appreciation for the countless hours of labour put in by our Hon. Secretary, Dr. Suresh Kumar G., who ensured the smooth functioning of our association through the year especially during these troubled times.

Last but not least, my commendation to the Editor, Dr. Anjana G. and her team for real easing out issue after issue that were consistent in quality and content despite the challenging odds.

Before I sign off, I once again express my sincere gratitude to all of you for your immeasurable help and support.

Thanking you

JAI IDA!

Dr. Ciju A Paulose
President, IDA Kerala State

Message from the Secretary

Dr. Suresh Kumar G

Dear IDA members,

It brings me immense pleasure to inform you all that the preparations for the 51st state conference, MILAN is progressing as planned and really well. I take this opportunity to request all the members to register for the conference and make it a grand success. The arts fiesta for IDA members and family CHILAMBOLI is going to be hosted by coastal Malabar branch, and we expect the members to participate with family from all branches to make the event colourful and memorable. IDA has been in the fore front of all activities beneficial for the Dental fraternity be it scientific, cultural, academic, athletic or professional. Whole hearted support from office bearers and members made it possible for the state office to conduct the office in a successful manner. Kindly continue the support for all our endeavours. I express my sincere gratitude to one and all for the support rendered. We in IDA believe in unity and well being of all its members and will function with the best interests of all its members.

Thank you

Jai IDA

Dr. Suresh Kumar G.
Secretary, IDA Kerala State

Autotransplantation of an impacted premolar in a 14 year old boy – a case report

*Reshmi Raghuvaran, **Sobha Kuriakose, ***Firoz A, ****Soumya Rajan

Abstract

Autotransplantation is an effective treatment option for missing teeth in young patients, when a suitable donor tooth is available. This involves the transfer of impacted, embedded, or erupted teeth into extraction sites or into surgically prepared sockets in the same individual. This clinical case reports the utilization of a horizontally impacted lower right second premolar for space closure of lower arch in a 14 year old young patient, by autotransplantation technique. This case report aims to provide a clinical contribution to the autogenous dental transplant technique, which can represent an alternative to the traditional prostheses.

Key words: Autotransplantation, autogenous dental transplant technique

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► Introduction

Autotransplantation is defined as the transplantation of embedded, impacted or erupted teeth from one site into extraction sites or surgically prepared sockets in the same person. Autotransplantation of teeth ensures maintenance of alveolar bone volume by physiological stimulation of the periodontal ligament. It has an important role in replacement of missing teeth of young patients due to contraindication of osseograted implants for them[1]. As per literature, the first author to describe replantation of teeth, was Ambrose Pare in 1562[2].

Indications for tooth autotransplantation include impacted or ectopic teeth, premature and/or traumatic tooth loss, loss of teeth because of tumors or on iatrogenic grounds, congenitally missing teeth in one arch in combination with arch length discrepancy or clinical signs of tooth crowding on the opposing arch, replacement of teeth with bad prognosis, and/or developmental dental anomalies[3].

Autotransplantation of developing premolars[4] is a treatment modality that has received increasing attention in recent years. Autotransplanted teeth also have the capacity for functional adaptation[5,6] and preservation of the alveolar ridge[7,8] which is advantageous in comparison to osseointegrated implants that are stationary and do not erupt resulting in infraocclusion. The best age for transplantation is determined by the stage of tooth development. The best results are obtained well before the apex of the root closes. Andreason was the one who first set the ideal time as that at three-quarter root completion, as early as in 1970[9].

The purpose of this case report is to provide a clinical contribution to the Autogenous dental transplant technique, which can represent an alternative to the traditional prostheses..

► Case report

A fourteen year old male patient, Mohammed Adhil, visited the Department of Pedodontics and Preventive Dentistry of Sri Sankara Dental College with the complaint of missing lower back tooth of right region. The medical and dental histories were non-contributory. On clinical examination, the second premolar was found missing. Radiographic examination revealed horizontal impaction of the second premolar of the right region.

A diagnosis of horizontal impaction of 45, was made. The treatment options were considered. Considering the age of the patient and the availability of space in the arch, autotransplantation of the impacted tooth, was considered after obtaining approval from the patient.

The patient was treated with antibiotics for one day before and four days after the intervention. The area was anesthetised

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and buccal mucoperiosteum was reflected and buccal cortical bone exposed. A window was cut on the buccal cortical plate and the segment of bone overlying the coronal region of impacted premolar, was removed. The crown was exposed and a coronal delivery of the tooth, was done with an intact follicle. The root of the extracted tooth, appeared to be curved distally.

As an increase in extraoral time would decrease the viability of the periodontal cells, the extracted tooth was immediately placed, in the recipient site. The buccal segment of bone, that was removed during the procedure, was crushed with bone rongeur and placed in the recipient site as autogenous graft. Sutures were placed, the tooth was stabilised with wire and composite and a surgical dressing was given with Coe-Pack.

The patient was recalled after one week for suture removal. The splint came off, along with the Coe-Pack and so the tooth was splinted using Perio-fibre as the transplant was mobile and would require flexible splinting for its stabilisation. Tooth vitality testing was done and a negative response was elicited.

Fig (1) Intra-oral photograph of missing 45

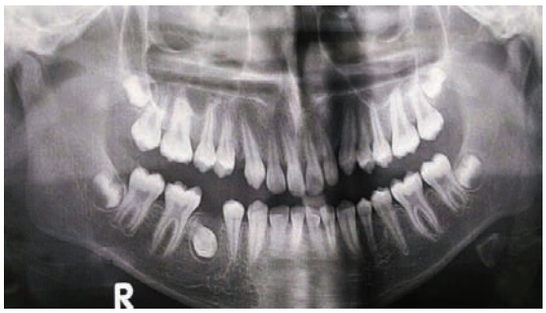

Fig (2) OPG showing horizontal impaction of 45

Fig (3) Coronal portion of 45, exposed

Fig (4) Sutures placed and splinting done

Fig (5) Surgical dressing given

Fig (6) Splinting done with Perio-fibre

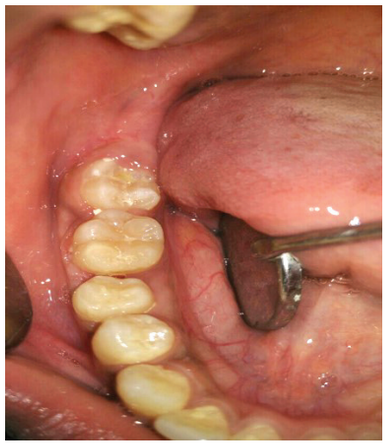

Fig (7) 45 after removal of the splint

Fig (8) IOPAR of 45 after 1 week

Fig (9) IOPAR of 45 after 2 months

The tooth was further periodically evaluated and the splint was removed after 2 months and when the vitality test was done then, it gave a positive response. The case is being evaluated since then and now, after about one year, the tooth is clinically asymptomatic and healthy with no mobility. The radiographs show gradual apical closure and regeneration of the missing periodontium.

► Discussion

Autotransplantation is a simple and effective treatment option for missing teeth when a suitable donor tooth is available[10]. Studies on this procedure shows that there are various factors that influence the success of autotransplantation like the age of the patient, the stage of root development, the number of roots present, oral hygiene etc. It is found to be more successful in young patients with immature roots due to greater chances of revascularisation.

In the present case, the right lower second premolar was seen impacted in the fourteen year old boy. The age of the patient was favourable for the procedure but the stage of root formation couldn't be made sure by the radiographic method, as the tooth was horizontally impacted. The strongest incentive to attempt the autotransplantation in this case was the property of developing increased alveolar bone in the areas of diminished alveolus as the most important benefit from a transplant is its osteogenic potential. Even if the transplant fails, it preserves the alveolar bone volume to receive an eventual implant.

Andreasen has reported that most critical aspect in determination of success is the care taken during the procedure[11]. Preparation of the recipient site prior to the procedure is usually indicated to minimize the amount of time the transplant remains outside of the extraction socket. Extraoral time of transplant significantly affects the viability of the periodontal ligament cells and subsequent root resorption. In this case prior preparation of the recipient site could not be done as the donor site and the recipient site were almost the same. The donor is required to fit in the recipient site loosely, avoiding contact with adjacent bone and providing atleast 1mm space to the adjacent roots[12]. The donor tooth in this case is fitted passively at the recipient site so no further manipulation of the alveolus was required. To reduce the extraoral time of the transplant - the direct delivery method was followed ie as soon as the transplant was removed from the donor site it was directly placed into the recipient site.

The best age for transplantation is determined by the stage of tooth development. The best results are obtained before the apex of the root closes as there are chances for revascularization to occur. After transplantation, initially the neurovascular components necrotize, but an infiltration of new capillaries marks revascularization of pulp chamber during the first four weeks[13]. Considering the chance for revascularisation, Andreasen set the ideal time as that at three-quarter root completion. In the present case, prior to the procedure the stage of development of the root was not confirmed but on removal of the tooth from the socket, it was seen that the root was three-quarter formed with open apex. So revascularisation was expected and the tooth, transplanted. But the root of the tooth was curved so doubts did exist about the success of the procedure.

Ideally extraction should be carried out in a very delicate manner, carefully dissecting the surrounding bone so that no

Fig (10) IOPAR of 45 after 6 months

Fig (11) IOPAR of 45 after one year

damage is done to the root sheath or its components. In this case since the tooth was horizontally impacted, a more aggressive removal of the adjacent buccal cortical plate was required, to allow a coronal delivery of the tooth with an intact follicle. Intact follicle was required as periodontal healing depended on the number of viable cells preserved on the root surface[14]. A window was cut in the buccal cortical plate and the section of bone was removed to expose the occlusal aspect of the impacted tooth. This section of bone was later crushed and placed in the recipient site as autogenous graft.

As per Andreason, transplants that are placed in occlusion did not survive. According to the studies done by Monsour and Adkins, transplants that responded the best were those with partially completed roots and placed submerged. If the transplant survives the procedure, the root will continue to grow in length and occlusion be established. So in this case the tooth was first splinted in infraocclusion.

As per literature tooth should be adequately stabilized for 2 weeks to 2 moths, depending upon the mobility of the transplant. In this case since a portion of the buccal cortical bone had to be sacrificed to facilitate removal of the impacted premolar without fracture, the transplant showed increased mobility. In cases where the transplant is not stable with suture splinting, splinting is done with wire or adhesive resin splints. So in this case immediately after the procedure, adhesive resin splint was given which got dislodged after one week and so flexible splinting was done with Perio-fiber for a period of two months. Due to the prolonged spinting, concerns regarding the possibility of replacement resorption/ankylosis did exist but the clinical and radiographic examination of the tooth done after one year postoperatively suggested normal healing without replacement resorption. After one year, the radiographic picture of the healed periapical region of 45 showed PDL space and an intact lamina dura. The pulp chamber and root canal was seen constricted but the tooth and the surrounding tissue remains healthy and asymptomatic.

► Conclusion

Autotransplantation has a key role in the replacement of young patient's missing teeth as it improves esthetics, arch form and favours dentofacial development. The outcome of this procedure depends on careful case selection and an understanding of the biological principles. In growing patients when space closure with fixed bridges or implants seems an undesirable option, the transplant of a tooth with incomplete root formation may be an alternative solution because both alveolar growth and root development will be favoured by this procedure. Even if the transplant fails, it preserves the alveolar bone volume to receive an eventual implant.

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Cemento-osseous dysplasia associated with complex odontome: A case report

* Nripan T., **R. Rathy, ***Joseph Edward, **** Jayanthi P., *****Harish R.K.

Abstract

Odontomas are the most common odontogenic tumors with a frequency ranging from 4.2% to 73.8%. Cemento-osseous dysplasias are the commonest group of fibro-osseous lesions of the jaws. The simultaneous occurrence of cemento-osseous dysplasia and composite odontome in the same jaw is a rare situation. Here we report a case of simultaneous occurrence of cemento-osseous dysplasia and complex odontome in the mandible of a 31 year old female.

Key words: Cemento-osseous dysplasia, odontome, mandible

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► Introduction

Cemento-osseous dysplasias are the commonest group of fibro-osseous lesions of the jaws in which excessive cementum like mineralized matrix is formed. WHO classifies it into three sub categories: a) focal cement-osseous dysplasia b) periapical cemento-osseous dysplasia and c) florid cement-osseous dysplasia.[1]

The most common odontogenic tumours of the jaws are odontomas. However, many authors consider odontomas as odontogenic hamartomas rather than true neoplasms. The frequency of odontomas varies between 4.2% to 73.8%.[2,3]

Even though these two entities are common among their own categories, the simultaneous occurrence of them in the same jaw is a rare process. In this paper we present a case report of a cemento-osseous dysplasia associated with a complex odontome and provide comprehensive review of the literature in order to gain additional insights into its clinical and pathologic features.

► Case report

A 31 year old female patient reported with mild discomfort on the left mandibular region. There is no pain, swelling or pus discharge from the site.

Orthopantamograph showed a mixed radiolucenct area with a central roughly round radiopacity in relation to the lower left mandibular region. The tooth 36 was missing (Figure 1). A provisional diagnosis of composite odontome was made. The radiograph also showed an irregular shaped radiopaque lesion on the right mandibular third molar region. An excisional biopsy was performed from the left mandibular region and the specimen was submitted for histopathological examination.

The submitted specimen consisted of multiple hard and soft tissues (Figure 2). The tooth like hard tissues, greyish white

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color, 7x6x4 mm size was ground sectioned. Smaller tooth like hard tissue of size 3x3x1 mm was decalcified in 10% formic acid. Soft tissue bits were processed by routine histotechniques and stained with hematoxylin and eosin stains.

The microscopic examination of the ground section revealed enamel, dentin and cementum arranged in a disorganized manner (Figure 3). The H and E stained sections under the microscope consisted of hypocellular connective tissue with thick trabeculae of woven bone which showed osteoblastic rimming (Figure 4). A final diagnosis of cemento-osseous dysplasia (COD) associated with a complex odontome was made.

► Discussion

Fibro-osseous lesions (FOL) are a group of diverse processes in which the normal bone is replaced by connective tissue matrix. FOL is not a specific entity but describes the disease process only. Fibrous dysplasia, cemento osseous dysplasia and ossifying fibroma are the three commonly encountered FOLs of the jaws.[4] FOLs are poorly defined entities and significant overlap exists between the histological features of them. For a definitive diagnosis of these lesions, the clinical, radiographic and histopathological correlation is necessary.[5]

While considering the journey of WHO histological typing of odontogenic tumors, cemento-osseous dysplasia is always a controversial entity. With every new edition some change occurs for this particular entity. In the 1st edition of WHO classification published in 1971, this group of lesions was represented by 'periapical cemental dysplasia' and 'gigantiform cementoma'. The 2nd edition published in 1992 unified the two entities to a single entity named cemento-osseous dysplasia. This category was consisted with three subtypes, namely: periapical COD, florid COD and other CODs. The 3rd edition published in 2005 dropped the prefix "cemento" from COD because the amount of cementum or bone deposited is negligible and indistinguishable from each other. The recent edition of WHO classification published in 2017 however reverts back to the older concept and the prefix "cemento" reintroduced. This was based on the fact that they originate from the periodontal ligament.[6]

Cemento-osseous dysplasias occur predominantly in females with a male to female ratio of about 9:1. The most common location of CODs are the anterior region of mandible and the age of the patient is usually above 30 years. Below 20 years CODs are extremely rare.[3]

Radiography of CODs reveal three types of patterns according to the stage of the disease. The mineralization increases gradually when the stage of the disease advances.[7] Early stage showing complete radiolucency, intermediate stage showing a mixed radioluceny and radioopacity and late stage showing a radioopacity with well defined borders.[8] The present case shows a mixed radiographic pattern.

It is difficult to differentiate CODs and cemento-ossifying fibromas (COFs) histopathologically. A complete clinical, radiographic, intra-operative and histopathologic correlation is of utmost importance in diagnosing CODs. A useful clue to differentiate CODs from COF is that, COF can be removed as an intact lesion while CODs are always removed in multiple fragments. In present case also the lesion was removed in multiple fragments.[6]

The three clinical forms of CODs usually show similar clinical, radiographic and histopathological features. The location and number of lesions help to distinguish them from one another.

Table I: Summary of reported cases of cemento-osseous dysplasia along with odontoma and other lesions

No.	Authors & year	Age	Sex	Site	Diagnosis
1	Iida S et al(2006)[6]	37	F	Maxillary canine, third molar and mandibular third molar region	Multiple osseous dysplasia, dentigerous cyst and odontoma
2	Prodromidis IG et al (2011)[7]	36	F	Left mandibular molar region	COD like lesions associated with complex odontome
3	Hosseini AF et al (2011)[10]	46	F	Left and right mandibular region	Central ossifying fibroma, periapical cemento-osseous dysplasia and complex odontoma
4	Borghesi A et al(2017)[12]	50	F	Right mandibular region	Peripheral osteoma, compound odontoma, focal cemento-osseous dysplasia, and cemento-ossifying fibroma

Focal cemento-osseous dysplasia is a solitary lesion occurring in the posterior portion of the mandible, usually at a site of post extraction. It is relatively an asymptomatic condition and the size rarely exceed 2 cm.[5,8]

Periapical cemento-osseous dysplasia is a localized form of COD which is usually encountered in the periapical region of mandibular incisor teeth. The associated teeth are always vital and the radiographic findings vary from multiple radiolucencies in the initial stage which progressively become radiopacity. The maximum size of these lesions seldom exceeds 1 cm. It is also an asymptomatic condition and usually an incidental findings in radiographs taken for other purposes.[4,5,9]

Florid cemento-osseous dysplasias are the multifocal forms of CODs. It usually affects both sides of the lower jaw in a symmetrical fashion. Sometimes all the four quadrants may be affected. Multiple radiopaque lesions fuse together and attain larger sizes.[4,5]

The histopathological features of all the three types of CODs are similar and are dependent on the maturation stage of the lesion. Early lesions show more cellularity and immature woven bone production, osteoblastic rimming with cementum like calcifications (cementicles). In mature lesions both woven as well as lamellar bone can be seen. The cementicles may fuse together to form fused sclerotic masses of basophilic calcifications.[5]

Odontomas are hamartomatous malformations arising from both odontogenic epithelial and ectomesenchymal components with respective cells appearing normal in morphology, but deficient in structural arrangement.[2] Odontomas consists of more than one type of tooth tissues- enamel, dentin, pulp or cementum – thus called 'composite odontome'. Odontomas are divided into two types based on their similarity to the normal tooth. A compound composite odontome is one in which enamel and dentin are deposited in an orderly manner, thus having a similarity with natural tooth but smaller in size. A complex odontoma is one in which enamel and dentin are deposited simply as an irregular mass with no resemblance even to a rudimentary tooth.[2] In rare situations odontomas can grow into large size and may produce facial asymmetry.[10]

Fig 1: Orthopantamograph showing a radiolucent area with central round radiopacity in the left mandibular molar region

Fig 2: Gross specimen showing multiple hard and soft tissue bits including tooth like structures

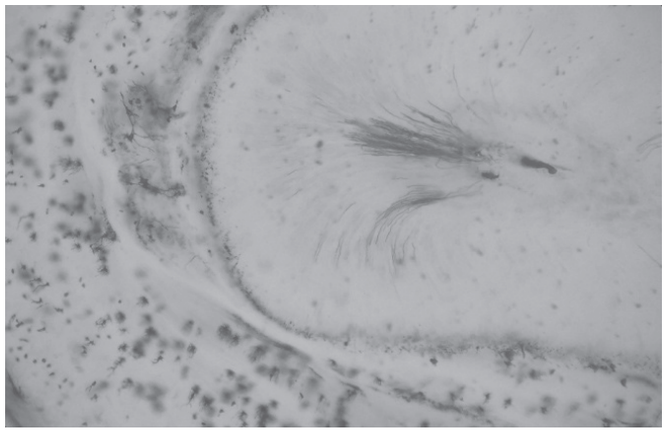

Fig 3: Enamel, dentin and cementum arranged in a disorganized manner (Ground section, 10X)

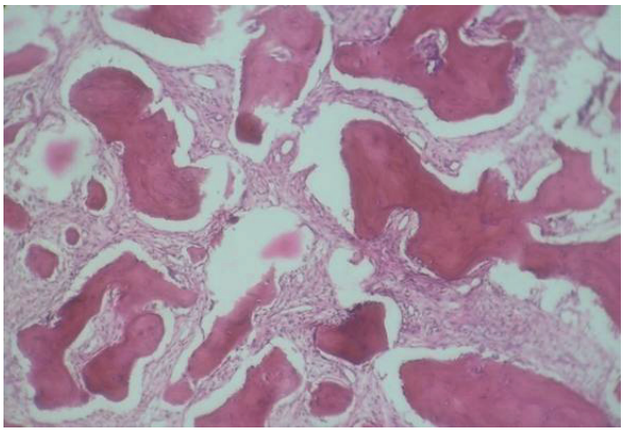

Fig 4: Hypocellular connective tissue with thick trabeculae of woven bone showing osteoblastic rimming (H and E, 10X)

Radiographic features of odontomas vary depending on their stage of development. In the first stage due to lack of mineralization the odontomas radiographically appear as radiolucent lesions. In the second stage we can observe partial calcifications and in the third and final stage odontomas appear completely radiopaque with a thin radiolucent zone covering the opacity.[2] There is not much difficulty in diagnosing composite odontomas and can be made from routine radiographic and histopathological examination. Odontomas are usually asymptomatic and they may get detected coincidently in the radiographic study for other diseases.[10]

Microscopically, complex odontoma shows a disordered mixture of dental tissues in a spherical shape. Cementum, cementum like substances admixed with dentinoid substances, small pulp like areas, enamel matrix, epithelial remnants, empty clefts as tissue processing artefacts are also present.

Simultaneous occurrence of FOLs of the jaws with simple bone cysts and aneurysmal bone cysts were reported previously. However, simultaneous occurrence between benign fibro-osseous lesions and complex composite odontoma is rare. The exact reason for the simultaneous occurrence of COD and odontoma is unknown. However, Prodromidis IG et al (2011) proposed three theories to explain the coexistence of them:[7]

(1) Presence of COD-like features in an odontoma

(2) Coincidental association of the two distinct lesions

(3) A common developmental origin for both the lesions

The simultaneous occurrence of the two different lesions in the same jaw is very rare. A thorough literature search revealed only one case in which the occurrence of these two lesions was reported. However, three other cases reported with the simultaneous occurrence of COD and odontoma along with other odontogenic tumors, cysts or fibroosseous lesions. (Table)

► Conclusion

The association of cemento-osseous dysplasia with odontome does not have any prognostic significance, but is only of academic interest. To the best knowledge of the authors this paper represents the second case of simultaneous occurrence of the two lesions alone in the same jaw. More case reports are needed to establish the exact relationship between the two entities.

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Comparative evaluation of structural wear of dental implant drills before and after multiple osteotomies- A scanning electron microscopic study

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Abstract

Purpose: The aim of this study was to evaluate wear of implant drills after multiple osteotomies.

Materials and methods: Bovine ribs with average cortical thickness of 4 mm were used. A handpiece running at 800-rpm was attached to a modified Dental Surveyor to provide vertical movement, constant pressure and a precise direction for the drills .13 mm Deep Preparations were carried out following sequential drilling. Drills were divided into 2 groups: Group I - drills before osteotomies. Group 2 – drills after 40 osteotomies. Scanning Electron Microscopic studies were performed.

Result: Within the limitations of the study, there was no significant structural wear to the cutting edges of the drills before and after 40 osteotomies.

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► Introduction

Reuse of implant drills for performing osteotomies is of wide practice now a days. Since manufacturers offer only vague guidelines as to the longevity of implant drills, the clinician has to subjectively evaluate the efficacy of the drill through a perceived increase in the force required to perform osteotomy.

Gentle drilling technique and preservation of healthy bone during osteotomy is one of the major prerequisites for osseiointegration of the implant[1]. However, an unavoidable necrotic bone margin will form next to the inserted implant which will usually be resorbed and substituted by viable tissue through a repair process[2]. Thickness of this necrotic margin mainly depends on numerous operatory factors, such as temperature, pressure, shape, size, cutting edge of the drill, type of irrigation, rotational speed, duration of osteotomy and density of the bone.[3]

Repeated use of drills can lead to wear which reduces their cutting efficiency, which results in the formation of mechanical friction, shearing force and thermal hike. If drills are used more than 40 times, there will be a greater chance of temperature rise beyond the acceptable range surrounding the osteotomy. The critical temperature threshold levels ranging from 44°C to 47°C during a drilling duration of over 1 minute was found to be the upper threshold for minimizing and avoiding thermal necrosis. If the temperature rises above 50°C, upto 30% resorption of adjacent bone can be observed[4]. Thus the primary stability of implant will be affected which will ultimately lead to implant failure because of reduced bone deposition during early stages of osseointegration[5].

Thus the aim of the present study is to evaluate deformation of implant drills after multiple osteotomies and to showcase when to stop using the drill which is a red signal for all dental surgeons.

► Materials and Methods

Bovine ribs with minimum cortical thickness of 6 mm were used because of the resemblance between the human alveolar bone and bovine bones, in terms of bone density and

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composition. Specimens with an average thickness of 15 mm were used in this study (fig. 1). Ribs were freshly collected one day after the death of specimen from a local butcher shop and kept frozen at -5°C until they were used[8]. All soft tissues were removed from the bone specimens using a scalpel and cleaned in running water.

The test apparatus comprised of a physiodispenser (Nakanishi inc (NSK), Japan) and a surgical handpiece (Nakanishi inc (NSK), Japan) driven by a motor with a speed of 800-rpm. External irrigation with isotonic saline at 15□C was used for all preparations. The flow rate of coolant was 86ml/minute and with the torque of 38Ncm. Osteotomy drills (Implant Genesis) were divided into two groups, Group- 1 comprised of unused (new) drills Group-2 comprised of corresponding drills that have been used 40 times(fig. 2). Scanning electron microscopic images of unused drills were taken (fig. 5).

The handpiece was attached to a modified dental surveyor to provide vertical movement, providing a constant pressure and precise direction of drills during osteotomies (fig. 3).

Initially, lance drills were used to disrupt the conical bone, 2.4-mm pilot drill was used and then surgical drill in the sequence of 2.8-mm, 3.4-mm, 3.8mm surgical drills were sequentially used to a constant depth of 13 mm. External irrigation was performed with isotonic saline during all preparations (fig. 4). Scanning electron microscopic evaluation was performed after 40 osteotomies (fig. 5).

► Result

SEM (Analytical Research & Metallurgical Laboratories

Fig 1. Bone specimen

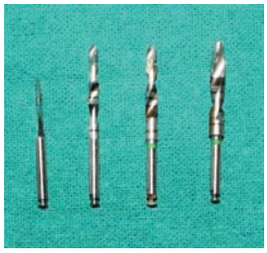

Fig 2. Surgical drill

Fig 3. Modified dental surveyor

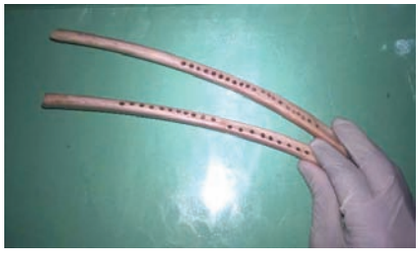

Fig 5. Specimen after 40 osteotomy

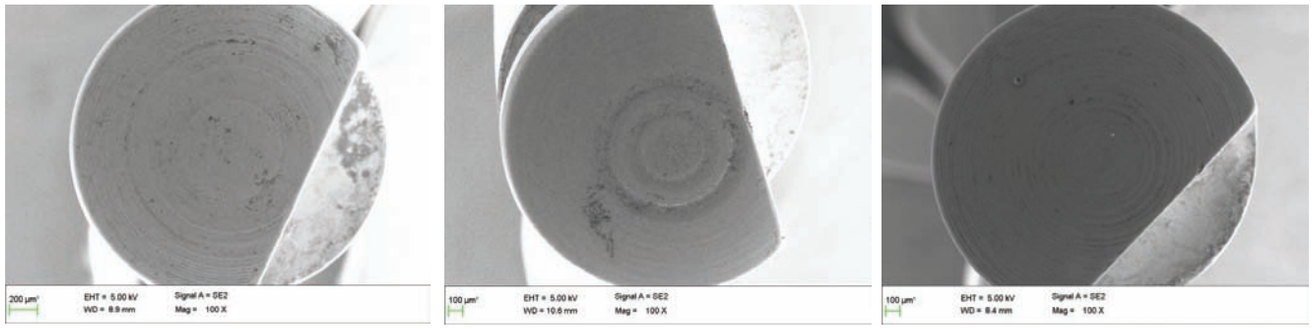

Fig 4. Sem images before osteotomy

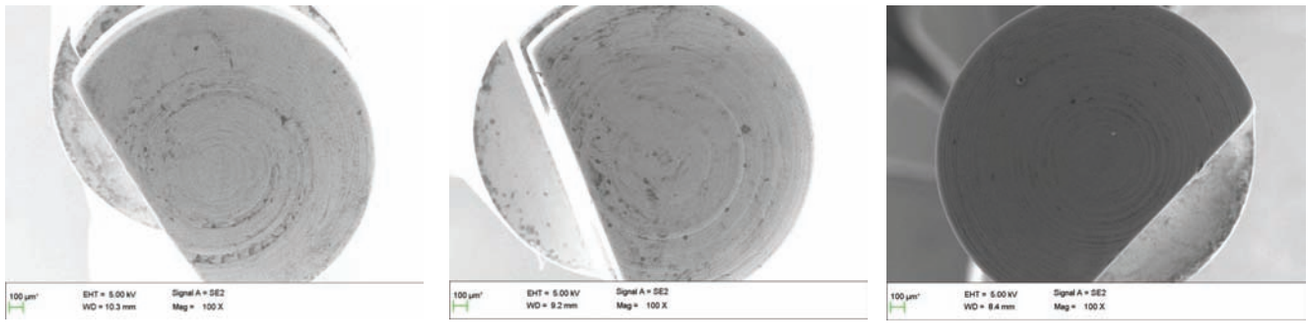

Fig 6. Sem images after 40 osteotomy

Pvt. Ltd., Bangalore) images of the drills were taken in the unused state and then after the 40 osteotomies. The gross images (100 x magnifications) were used to evaluate the wear, blunting and plastic deformation of the drills' cutting surfaces. Higher magnification images (500 X magnification)were used to determine surface corrosion of the drills. Qualitative analysis of Scanning electron microscopic images obtained with the magnification revealed that there was no significant structural wear to the cutting edges of the drills after 40 osteotomies.

Discussion

A variety of drilling materials have been used for former studies: rabbit mandible,pig maxilla and mandible bovine block cortical/medullary bone,polymeric material, porcine ribs,and bovine cortical bone[6]. In this study, bovine cortical bone was used to eliminate variability and make cortical thickness a constant factor. Previous results were remarkably consistent with the use of hand-held drilling, the present experiment ensured a constant drill load,with use of a modified dental surveyor. The results showed that there was no significant difference in wear between the unused and used drills. Images of the drills taken prior to the investigation provided a comparison for changes in the drills throughout the experiment. As only one cutting surface was imaged at each stage and was chosen randomly, depending on the orientation of the drill to the electron beam in the SEM, a comparison of the increasing wear on all cutting surfaces of each drill was not possible[6]. The drills could, however, be examined in the viewing field and it was concluded that none of the drills showed gross deformation of the cutting surface visible to the naked eye at any stage of the experiment. Jochum et al[7] concluded that disinfectant together with autoclave led to blunting of the cutting edges of titanium drills after 51 osteotomies. In this study the wear of the drills and its effect on its cutting efficiency and durability were assessed by direct drilling. According to manufacturer's specification the drill material were composed of alloys of carbide, the hardness of which may influence the wear of the drill. However further studies are required to substantiate it. The study had some limitations, no attempts were made to sterilize the drills before and after osteotomies and only one sample of drill was used which may not be appropriate to determine the performance of implant drills.

Conclusion

This was an in vitro experimental study which used testing apparatus to simulated the clinical setting which evaluated wear, cutting efficiency and durability of the drills. The results of the study revealed that, eventhough there is no significant change in heat generation after 40 osteotomies, it is better to discard the drill after 40 osteotomies so as to prevent heat generation in the surrounding bone which can lead to necrosis and bone degeneration.

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Syndrome Associated Oral Neurofibroma: A case report

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Abstract

Neurofibroma is one of the most uncommon soft tissue tumour of oral cavity. It can occur as a solitary lesion or present as a part of syndrome. The syndrome associated with neurofibroma is subdivided into Type I and Type II neurofibromatosis. This syndrome clinically presents as multiple neurofibromas, cafè-au-lait spots and tumours of central nervous system. Oral lesions are rare in type 1 neurofibromatosis, though occasionally they are painless slow growing lesions which are diagnosed only through histopathological examination and are confirmed by immunohistochemical staining with S-100 protein to detect the expression of Schwann cells. This article presents a case of an 81 year old male patient who reported with a swelling over the gums associated with pain since 2 weeks. On intra oral examination grossly decayed teeth were in relation to the swelling hence extraction of the grossly decayed teeth along with excisional biopsy of the lesion was done. Microscopic examination revealed features of neurofibroma which was confirmed by immunohistochemistry.

Key-words: Neurofibroma, Von Recklinghausen's disease, S-100.

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► Introduction

Neurofibroma is a benign peripheral nerve sheath soft tissue tumour which is occasionally seen in the head and neck region. Clinically these lesions can be pedunculated or sessile occurring either as a solitary lesion or in association with a syndrome[1]. The WHO has subdivided neurofibroma into two broad categories; dermal and plexiform. Dermal neurofibroma arises from single peripheral nerve, whereas plexiform neurofibroma is associated with multiple nerve bundles. Based on morphological features, neurofibroma is classified into major (plexiform, diffuse, pacinian) and minor variants (epitheliod, cellular, myxoid, glandular)[2]. There are two types of neurofibromatosis; type 1 and type 2 of which type 1 is more frequent (90%) than the other. Neurofibromatosis type I (NF1) is also known as Von Recklinghausen's disease. It is a neurodermal dysplasia which was first described by a pathologist Friedrich Daniel Von Recklinghausen in 1882. In Neurofibromatosis type II skin is generally less affected and bilateral acoustic neurinomas with or without tumours of central nervous system are the main features. Diagnosis of neurofibromatosis is based on clinical criteria[3]. Oral neurofibromas are present in about 25 % of neurofibromatosis patients. They are slow growing painless lesions which are diagnosed by histopathological examination and can be confirmed by immunohistochemical staining with S-100 protein which shows strong positivity for these lesions.

► Case history

An 81 year old male patient reported to a dental OPD with a chief complaint of pain in lower right front region of the jaw for the past 2 weeks. Dental history revealed that the patient had lost his posterior teeth in an accident 40 years ago. The present swelling was noticed about 3 weeks ago which was associated with pain and pus discharge. On intraoral examination there was a large oval shaped swelling which was soft in consistency, sessile base, red in colour, measuring about 2x1cm in diameter and extending from the distal part of 43 to 45 merging with the alveolar sulcus (Fig 1).

Incision and drainage done and medications were given and the patient reported after a week with a painless swelling. The lesion was provisionally diagnosed as irritational fibroma. Extraction of root stumps in 44 and 45 tooth region followed by excisional biopsy of the swelling was done under local anaesthesia and the specimen was sent to the department of oral pathology for histopathological examination in 10% formalin fixative. The specimen was sectioned and sent for

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routine hematoxylin and eosin staining.

Microscopic examination of the hematoxylin and eosin stained sections revealed fibrous connective tissue stroma composed of interlacing bundles of elongated spindle shaped cells with wavy nuclei. The cells were associated with delicate collagen fibres and small amounts of myxoid matrix. The stroma was highly vascular and also showed moderate amount of inflammatory infiltrate consisting of lymphocytes and mast cells. The overlying epithelium was parakeratinized stratified squamous epithelium showing hyperplasia at places (Fig 3). Histopathologically the lesion was diagnosed as neurofibroma. Confirmatory diagnosis was made by immunohistochemical staining with S-100 protein which was strongly expressed in the tissue specimen (Fig 4). To confirm the type of neurofibroma (solitary or syndrome associated) the patient was recalled and examined for skin lesions and other systemic manifestations. Multiple large soft nodules were seen over the skin of the face (Fig 2), hands and trunk region. The lesion was finally diagnosed as Type 1 neurofibromatosis (Von Recklinghausen's disease).

► Discussion:

A German pathologist Friedrich Daniel Von Recklinghausen was the first to clinically describe the diverse findings of neurofibromatosis type 1 in 1882, hence the disease was named after him. It refers to a group of genetic disorders that primarily affect the cell growth of neural tissues and it involves multiple systems in the body[4]. It is an autosomal dominant disorder caused due to alteration in the NF1 gene which encodes for neurofibromin protein which is expressed in neurons, Schwann cells, oligodentrocytes and leukocytes. They regulate several intracellular processes, like RAS-cyclic AMP pathway, ERK / MAP kinase cascade, adenylyl cyclase, and the cytoskeletal assembly. Von Recklinghausen's neurofibromatosis has got the highest rate of spontaneous mutation among all genetic disorders of human with an incidence of 1-2 cases per 2000 to 3000 populations and 1 in 200 of mentally retarded individuals[5].

Table 1 Clinical criteria for differentiation of type 1 and 2 neurofibromatosis

Type 1	Type 2
Six or more café-au- lait spots, >0.5 cm diameter in prepubertal age and >15mm diameter in postpubertal age	Bilateral neural tumors of the eighth cranial nerve
Two or more neurofibromas of any kind or a plexiform neurofibroma	OR
Axillary or inguinal freckles.	One relative in first degree with type 2 neurofibromatosis plus a unilateral neural tumor of the eighth cranial nerve or two of the following criteria
Optic glioma	Neurilemmoma
Two or more Lisch nodules	Glioma
Distinctive bone lesion, sphenoidal dysplasia or thinning of long bones cortical	Meningioma
Relatives in first degree with Neurofibromatosis	Juvenile cataract

On the basis of the most widely accepted classification, there are four recognized forms of neurofibromatosis: Von Recklinghausen's neurofibromatosis (NF1 or peripheral neurofibromatosis), bilateral acoustic neurofibromatosis (NF2 or central neurofibromatosis), segmental neurofibromatosis and cutaneous neurofibromatosis[6]. Riccardi suggested the presence of three additional forms; NF3 (mixed), NF4 (variant) and NF5 (late-onset). However, these may not represent as separate conditions[7]. Clinically the neurofibromatosis is diagnosed based on several clinical criteria's (Table 1) and at least two of these are essential to diagnose the condition as NF1 and for NF2 atleast one of these criteria should be present[3].

The most common manifestation of NF1 is pigmented lesions. These lesions usually appear during the first year of life or at birth, either as café-au-lait spots or as freckles. Café-au-lait spots are hyperpigmented macules that may vary in color from light brown to dark brown; their borders are mostly smooth (Coast line of California) in contrast to irregular (Coast line of Maine) which is frequently associated with fibrous dysplasia[8].

Multiple skin neurofibromas as well as angiomas are also characteristic features in NF1. They exist as two main clinical forms; localized or plexiform. Localized neurofibroma is the most frequent manifestation which increases with age. In the head and neck region scalp, cheek, neck and oral cavity are the most common sites of occurrence. About 21% of NF1 is plexiform type with poor prognosis due to their enormous growth rate which progress to attain a considerably larger size causing disfigurement and also due to increased malignant transformation potential (2-5%). Bone lesions may also be seen as a result of internal or external resorption caused due to the pressure created by the enlarging tumor. Iris hamartoma, acoustic neurinoma, central nervous system tumours (glioma, glioblastoma), macrocephaly and mental retardation (up to 40% of cases) are some of the other clinical manifestations in NF1[9].

The incidence of oral neurofibromas in NF1 is still controversial; some authors suggest that the incidence is 4-7%[10] while others opined about 66-72% of the cases[9]. According to Shapiro et al oral soft tissues lesions have a prevalence of upto 72% [11]. Some of the literatures confounds that neurofibromas of the oral cavity and oropharynx are extremely rare with a incidence of only 2-7%[12]. According to a survey study by Ambrosio D et al, 66% of his NF1 patients had at least one

intraoral manifestation of the disease and 58% presented with manifestations in the maxilla and mandible, which were detected on panoramic radiographs[5].

Though the prevalence of neurofibroma in oral cavity is uncommon, neurofibroma is the most common neural tumor of the head and neck region. The most common site in the oral cavity is the tongue followed by palate, buccal mucosa and gingiva[1]. The lesion manifests in the oral cavity as discrete nodular growth, the colour varies from pink to red and sometimes yellow. The lesions over the tongue may present as deep neurofibroma where the tongue appears enlarged (macroglossia) or superficial where it appears fissured (scrotal tongue). Neurofibroma may also occur within the periodontal membrane and cause pathological migration of the teeth[4].

Impacted, displaced or missing teeth, paresthesia, pain, and bleeding are infrequent manifestations that may occur in association with neurofibromas in the oral cavity. Early oral lesions may not be identified due to failure to focus attention on possible intraoral anatomical changes. Symptomatic lesions are more readily diagnosed when a patient complains of mass or other discomfort, which will guide the clinician to the primary lesion[10]. Javed et al. in 2014 did a comprehensive review on the oral manifestations of NF1 patients and reported that neurofibromas of oral and perioral soft tissues were associated with periodontitis, impacted and supernumerary teeth, enlarged alveolar process with dental spacing, morphological changes in teeth and class III molar relationship. They also have documented that the plexiform neurofibromas in both maxilla and mandible with evidence of malignant transformation in some cases. Association between dental caries and NF1 remains unclear[13]. In present case the lesion was over the gingiva which is often confused with periodontal or periapical lesion and was associated with a decayed tooth.

Radiological changes like widening of the mandibular canal, mandibular foramen, and mental foramen are seen in oral neurofibromas[5]. Microscopically, the tumor is composed of an irregular pattern of proliferative spindle cells, with a stroma of collagen fibers and mucoid masses[1]. Neurofibroma can also be of mesenchymal origin which derives itself from the Schwann

Fig 1 Intra-oral solitary neurofibroma

Fig 2 Multiple neurofibromas on the face

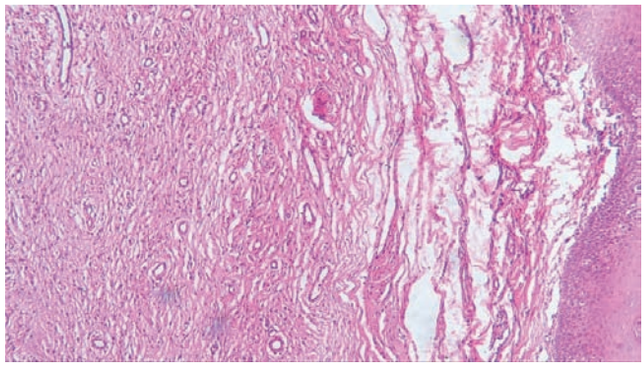

Fig 3 Histopathology showing spindle shaped cells with wavy nucleus (H & E stain; x100)

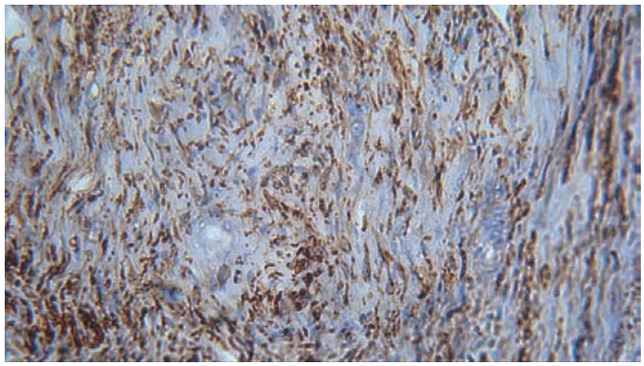

Fig 4 Immunohistochemistry showing positive for S-100 (IHC stain; x400)

cells and perineural fibroblasts, in that case neurofibromas are composed of a mixture of Schwann cells, perineural cells, and endoneural fibroblasts, and they are not encapsulated. Schwann cells constitute the predominant cellular type and they usually have widened nuclei with an undulated shape and sharp corners which can be highlighted with silver or acetylcholinesterase staining or with immunohistochemical techniques[5, 9]. The microscopic features and S-100 staining in the present case was in line with the established findings.

NF1 requires a multidisciplinary treatment approach due to multiple organ involvement. The management is usually aimed towards prevention and control of the complications. The malignant transformation rate of NF1 is low (3-5%), although these neoplasms can cause other clinical problems, including esthetic and functional discomfort. Surgical excision of the fibromas is not always a satisfactory management, as the complete removal of large and also multiple lesions are very difficult. Surgical intervention is indicated when the patient's function is impaired. Risk and possible complication, as a consequence of such procedures should be considered[5].

► Conclusion:

Though neurofibroma of the oral cavity is an uncommon lesion and that the dental surgeons have minimal role in diagnosis due to their early manifestation over the skin, few cases have been reported where oral manifestation have been a leading evidence to arrive at the diagnosis of neurofibroma. Oral manifestation of NF1 has got minimal effect on oral health status unless and until it affects the normal function of the oral cavity. More emphasis should be given on patient education and maintenance of oral hygiene and must be reviewed on a regular basis to prevent any further complications.

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Essential or minimum requirements of infection control for dental laboratory

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Abstract

Infection control (IC) is an essential part of dentistry. Implementing safe and realistic infection control will reduce occupational exposure to blood borne pathogens and other infectious diseases. Potential routes of transmission include direct contact with infected saliva or blood through cuts and abrasions, indirect accidental percutaneous exposure when using knives and improper handling of contaminated items, such as impressions, casts, and other prosthetic appliances, can result in cross-contamination and possible cross-infection to personnel.. This literature review deals with various methods and precautions to be taken towards infection control in the dental laboratory

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► Introduction

Infection control (IC) is an essential part of dentistry because dental professionals as they are exposed to wide variety of pathogens from blood and saliva of patients, it may cause various infectious disease such as tuberculosis, herpes, hepatitis-B and HIV etc. The use of effective infection control in both dental office and dental laboratory will prevent cross contamination. Hence essential coordination between lab and dental office is needed for handling proper methods &materials and decontaminating soiled incoming items. So that all contaminated incoming items should be cleaned and disinfected before being handled by lab personnel, and before being returned to the patient to avoid cross contamination. (fig.1)

● Barrier system is most effective, practical method for preventing cross-contamination. It is a series of physical cleaning procedures to reduce organic debris and microorganisms on intraorally soiled dental items. It can be accomplished through step-wise process of mechanical and chemical cleaning and disinfection. Results in a product that can safely be handled by lab personnel. Barriers include (A) Use of personal protective equipment (PPE) (B) Disinfection of operating area (C) Disinfection of all instruments and materials used in dental office or laboratory

(A) use of personal protective equipments

All dental professionals who have the potential for occupational exposure should have protective materials like gloves, facemasks, protective eye wear, laboratory coats and disinfectating material like handscrubs, cleaners and disinfectants. They should be vaccinated for hepatitis B.

HAND WASHING: Hand washing is the cornerstone of the 'patient – doctor – auxiliary staff' protection circle aiming at the prevention of cross infection. The dental personnel is obliged to wash their hands before and after coming in contact with the patient (or the instruments used). Hand washing must be performed meticulously so that every hand surface is adequately cleaned. Special attention must be paid to hand surfaces usually neglected when washed..

GLOVES: During patient examination always wear gloves when touching blood, saliva or mucous membranes,

I. Disposable gloves; Disposable gloves used when there is potential for direct hand contact with contaminated items to be delivered to dental office, unpacking items received from dental office like bites, waxrims, trays, repair dentures, trial dentures and fixed partial denture, metal trails etc. It should be changed and disposed of appropriately after completion of procedure. Before wearing gloves and after removing gloves. After each patient appointment, remove gloves and hands should

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be washed with an antimicrobial solution. Replace with a new pair of gloves before treating the next patient and any time a tear or hole is apparent

II. Utility gloves: Heavy rubber gloves used for cleaning instruments and environmental surfaces. It should be used when cleaning, disinfecting equipment and surfaces such as sinks, pumice pans, case pans, bench tops, ultrasonic cleaners, facebow transfers, articulators, mixing bowls, spatula, lathes, hand pieces, vibrators, retrieving immersed prosthesis or appliance from disinfection solution and disposing of potentially contaminated waste. Gloves can be autoclaved and reused; but they must be discarded if they are cracked, discolored or have punctures, tears or other evidences of deterioration. Puncture resistant utility gloves such as neoprene or polynitrile gloves are commonly used.

FACE MASK: Face masks must be worn to protect oral and nasal mucosa from spatter of blood and saliva. Contaminated masks should not be placed on forehead or worn under the chin. It should be changed between patients or if it gets wet.

Masks must be worn by the operator and the assistant during patient treatment. Must be used when there is potential for splashes, spray, spatter, or aerosols

- Examples: when operating lathes, model trimmers, and other rotary equipment

PROTECTIVE EYE WEAR: Safety glasses with side shields or face shields are to be used when splashing or spattering of blood and saliva is likely. All protective eyewear must be cleaned dried after each use. Protective eyewear must be worn by the patient, the operator, and the assistant during treatment.

Special eyewear is to be worn during the use of the curing light and lase.

LABORATORY COATS: Long sleeve, cuffed clinic jackets are worn to protect the user from injury and the spatter of body fluids. Change daily or more often if visibly soiled. Clinic jackets and lab coats used for patient treatment are not to be worn outside the clinical area.

(B) Disinfection of operating area:

Routinely clean with soap and water or an epa-registered detergent/hospital disinfectant routinely. Clean mops and cloths and allow to dry thoroughly before re-using. • Prepare FRESH CLEANING AND DISINFECTING SOLUTIONS daily and per manufacturer recommendations. Any surfaces, devices, electric switches, door handles, drawer knobs, taps, handles and device tubes not able to be sterilised or disinfected, should be meticulously covered with appropriate materials, such as special rollers and plasticized paper sheets, cellulose film, aluminium

TABLE – 1

MATERIAL	DISINFECTANT	TREATMENT
Alginate	Sodium Hypochloride	Sprayed
Polyether	Chlorine dioxide Phenolic or Iodophor compound	Sprayed
Polysulphide	Sodium hypochlorite Chlorine dioxide Phenolic compound	Immersed
Gypsum casts	Iodophor	Sprayed or Soaked for 10 minutes
Resin dentures	Sodium hypochlorite	Immersed
Noble alloys	Sodium hypochlorite	Immersed
Nonnoble alloys	Phenolic or Iodophor compound	Immersed
Wax records	Iodophor Sodium hypochlorite	Immersed

(Adapted from April 1991 D.C.N.A)

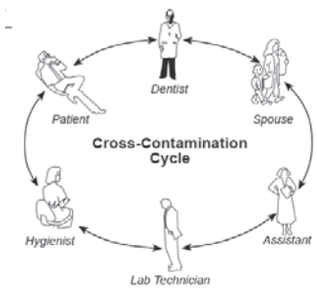

Figure 1

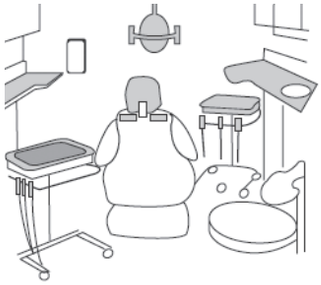

Figure 2

Figure 3

foil. These protective coverings should be replaced after every contact and every patient.

(C) Disinfection of all instruments and materials used in dental office or laboratory.

Any dental hand instrument used during a dental incident must undergo a cleaning and sterilization procedure.

Step 1. Right after the completion of the incident (examination, restoration, surgery) the instruments must be discarded in a special plastic container filled with an appropriate disinfectant solution or enzyme solution with a proteolytic action.

Figure 4

Step 2. After leaving the instruments within the solution for as long as the manufacturer recommends, they are transferred to the machine washer where they undergo thorough mechanical cleaning using the appropriate detergents. If dental materials (cements, pastes, oxides etc) have been fixed on the instruments, the latter must be cleaned with ultrasonic devices and appropriate solutions. Step 3. After the instruments have been cleaned, they are packaged in special bags or perforated cassettes and they are taken to the autoclaves to be sterilized

Disinfection of impression: The ADA first recommended disinfection of impressions in 1985.

Disinfection of prosthesis/ appliances:

The ADA recommends that removable prosthesis be sterilized by exposure to ethylene oxide or disinfected by immersion in iodophors or chlorine compounds. Prosthesis should never be stored in disinfectant before insertion. After disinfection and rinsing, acrylic or alloy items should be kept in mouth wash

TABLE 2: Sterilization/Disinfection of Prosthodontics Materials, Instruments and Polishing Agents

PROSTHODONTIC MATERIALS, INSTRUMENTS, POLISHING AGENTS	STERILIZATION / DISINFECTION METHOD
Articulators /Facebow Bowls / Water baths	Spray –Wipe-Spray
Stainless steel Rubber	Dry heat, chemical vapour, autoclave, Spray –Wipe-Spray
Burs	
Carbon steel	Dry heat, chemical vapour, ethylene oxide
Steel	Dry heat, chemical vapour, ethylene oxide, autoclave
Tungsten -carbide	Dry heat, chemical vapour, ethylene oxide, autoclave
Facebow forks	Autoclave, chemical vapour, ethylene oxide.
Impression Trays	Autoclave, chemical vapour, ethylene oxide, dry heat
Aluminium Chrome-plated	Autoclave, dry heat, chemical vapour, ethylene oxide, chemical sterilization/ disinfection
Custom acrylic resin	Discard,ethylene oxide, chemical sterilization/ disinfection
Polishing points, wheels, disks and brushes	
Garnet and cuttlefish	Discard, ethylene oxide
Rubber	Discard, ethylene oxide, autoclave
Rag	Auto-clave, ethylene oxide, chemical vapour
Brushes	Autoclave, ethylene oxide, chemical vapour
Shades guides	Chemical sterilization/disinfection, Spray-Wide-Spray
Spatula/Knives	Spray-Wide-Spray
Stones Diamond	Dry heat, Autoclave, chemical vapour, ethylene oxide
Abrasives (polishing)	Autoclave,chemical vapour, ethylene oxide, dry heat
Wax rims/ Wax bites	Spray-Wide-Spray

Adapted from American Dental Association Council on Dental Materials, Instruments, and Equipments, Council on Dental Therapeutics, Council on Dental Research, Council on Dental Research, Council on Dental Practice: Infection control recommendations for the dental office and dental laboratory

Conclusion

"PREVENTION IS BETTER THAN CURE"- a proverb well suited to infection control. Pervasive increases in serious transmissible disease over the last few decades have created global concern and impacted the treatment mode of all health care practitioners. Emphasis has now expanded to assuring and demonstrating to patients that they are well protected from risks of infectious disease. Infection control has helped to allay concerns of the health care personnel and in still confidence and in providing a safe environment for both patient and dentist.

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CBCT guided custom made surgical stent, precision made easy in implant dentistry- A case report

*Byju Paul Kurian, **Belmin Benjamin *** Manu Johns, ****Prisly Thomas

Abstract

The success of implant-supported restoration depends on the meticulous treatment planning and its execution through the surgical field. Advanced diagnostic aid such as Cone Beam Computerized Tomography has been developed for a comprehensive understanding of the three-dimensional anatomy of the bone and its associated structures. This technology is a useful tool in planning complex cases and rehabilitation with a flapless surgical procedure. It allows for virtual implant surgery prior to the placement of an implant surgically with the use of specific software programs. It helps in fabricating surgical guides and ultimately in the manufacturing of definitive final custom abutment prior to the surgery so that it can be delivered for an immediate non-functional restoration at the time of implant placement. This is a case report on placement of prosthetically driven implants in the maxillary and mandibular anterior region using CBCT as a tool in the fabrication of a guide.

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► Introduction

Implant Prosthodontics mainly deals with the selection, planning, development, placement, replacement of missing teeth and/or associated structures, and their maintenance.[1] The earliest innovation of endosseous dental implants was by the Mayan population roughly around 600AD, they implanted pieces of shells as mandibular teeth.[2] From there implant dentistry has had a long journey and now in dentistry, it has become the most sought-after field. Lately, people have become so conscious about the looks that they cannot accept slightest of partial edentulism. Soone can notice a trend towards implant prosthodontics, which has a major role in these situations. Patients have become very particular about aesthetics, so prosthetic rehabilitation with implants is gaining paramount importance because they can achieve fixed dental treatment without damaging the adjacent teeth.

Innovative analytical aids such as Cone Beam Computerized Tomography endows us with a wide-ranging understanding of the three-dimensional anatomy of the bone and its associated structures. CBCT is a useful tool in making proper treatment plans for complicated cases.

Guided implant surgery has changed implant dentistry from surgically and biologically driven to prosthetically driven implantology. It has improved the precision of implant placement. Advantages of guided implant surgery include: Planning and optimally placing dental implants according to the treatment plan, Locating and determining the vital anatomical structures, Measuring the width and height of bone available for placing implants without damaging the vital anatomical structures, Visualizing the bone contours, Preplanning the most suitable implant size and type, Optimizing the implant location and angulation, Reducing both the surgical time and stress to Implantologists.[3]

Sometimes implant placement becomes challenging when creating the exact parallelism in cases where there are two or more implants to be placed. Placing implants exactly between buccal and palatal cortical plates without damaging both cortical plates and prefabricating provisional prosthesis in the exact position is a task in itself.[4] In such a scenario, one can go for guided implant surgery which is a big boon in difficult situations. There are different types of surgical guides, according to their relation to the tissues, they can be bone supported,

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mucosa supported and teeth supported. According to their design, they can be classified as non-limiting, partially limiting and completely limiting design. Non-limiting design surgical templates include, removable partial or complete dentures, vacuum suction templates, and acrylic surgical guides. Partially limiting design includes an acrylic template made from the cast after bone mapping. Completely limiting guides includes stereolithographic surgical templates. Stereolithographic guides are more advantageous because it can guide complete drills and implants but due to its cost ineffectiveness one cannot afford stereolithographic surgical templates for all implant cases.[5, 6]

This is a case report on placement of prosthetically driven implants in anterior maxilla and mandible using CBCT as a tool in the fabrication of guide. In this case, a reversed guided implant surgical procedure was planned. Here a partially and completely limiting design was opted. CBCT was taken with the guides intraorally placed and the implant angulations were confirmed prior to the surgery. This technique is especially beneficial in economically constrained patients.

► Case report

A 25 year old male patient reported to the Department of Prosthodontics, Annoor dental college, Muvattupuzha with history of road traffic accident, who had lost his maxillary and mandibular anterior teeth one year back (Fig-1). He requested for an immediate solution. Subsequently, clinical and radiological evaluation was done which revealed adequate alveolar bone width and height in that region. His medical conditions was satisfactory for implant surgery. So an endosseous implant-supported fixed dental prosthesis in maxillary anterior region and two implants supported FPD in mandibular anterior region were planned.

Diagnostic impressions of maxillary and mandibular casts were made. Diagnostic wax up and an alginate impression of the cast was made for fabricating vacuum template. According to the angulation of the lateral incisor, a drill was placed in cingulum region of 11 and 21 using the surveyor (Fig-2).

The casts were drilled with 2.5 milling tool for placing prefabricated metal sleeves. Two metal sleeves were placed in that drilled holes of the cast with cyanoacrylate (Fig-3). The metal sleeves with an internal diameter of 2.25mm and length of 8mm were attached to the vacuum template with pattern resin. Then a channel was created with metal sleeve embedded in vaccum template to pass the pilot drill. Then it was placed in patients mouth (Fig-4).

Fig 1a: Preoperative extra oral view, 1b: Preoperative intra oral view

Fig 2 Angulations of implants decided with a surveyor

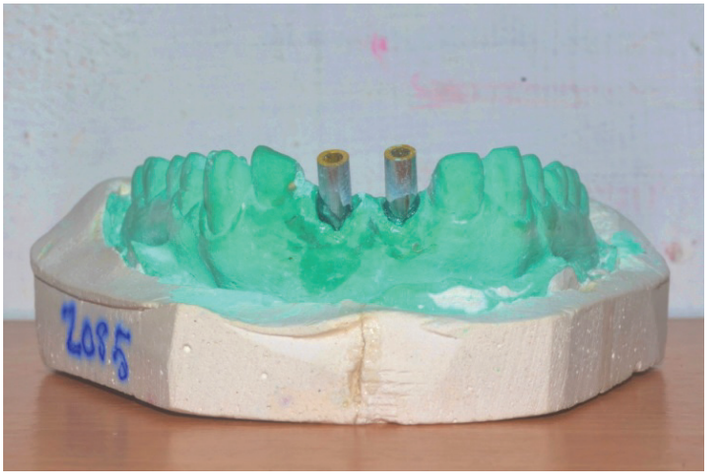

Fig 3 Metal sleeves attached to the cast with cyanoacrylate.

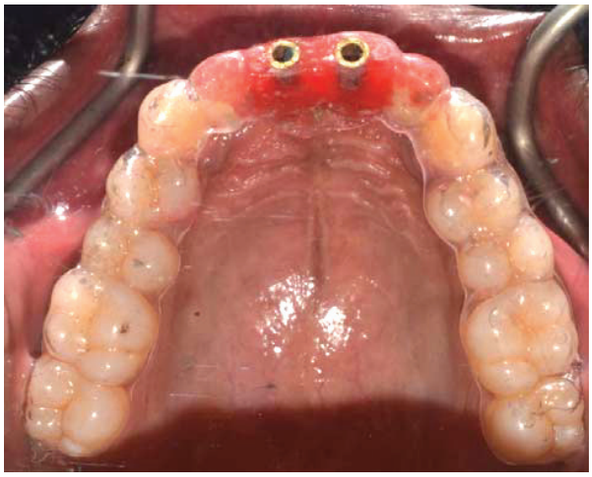

Fig 4 Vacuum template embedded with metal sleeves using pattern resin

The position of the metal sleeves were evaluated in the patients' mouth.CBCT was taken with the vacuum template and three dimensional planning was done (Fig-5). Virtual implants were placed (Fig-6).

Three dimensional evaluation of the CBCT revealed that the position of virtual implants were accurate and with that reverse guide implant surgery was planned. The vacuum splint/ template was placed in the patient's mouth and holes were drilled with a pilot drill. The parallelism of drilled holes were evaluated with parallel pins (Fig-7).

3.75 x 13mm implants were placed in 11 and 21 regions. A primary torque of 45 N was attained followed by placement of an immediate provisional restoration. Intra oral radiographs were taken and parallelism of the implants were evaluated (Fig-8). The parallelism were adequate.

The patient was extremely satisfied with the results. Therefore, a reversed guided implant surgical procedure was done using the surgical template. Postoperative photograph of the patient in Fig-9.

► Discussion

Flugge et al fabricated implant drilling guide with virtual planning tools. They combined intra oral optical impression, computer aided design & manufacturing and 3D printing for making surgical guide.[7] The advantage of combining intraoral optical impression with CADCAM was that virtual planning was directly transferred to the drilling guide without a loss of accuracy. During the first consultation data acquisition was done. Finally the operator hours for surgery reduced however economically backward patients cannot afford the additional cost of the surgical guide. In this case, we used reverse guided implant surgery in order to reduce the extra cost for the patient.

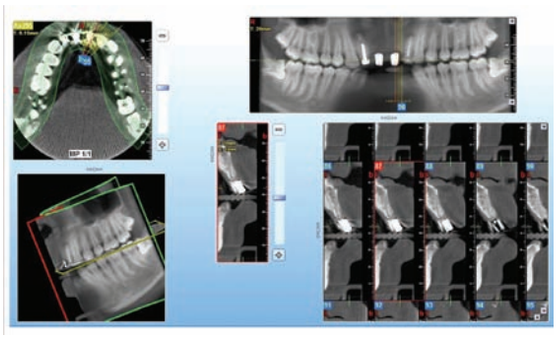

Fig-5: CBCT with vacuum template containing metal sleeves.

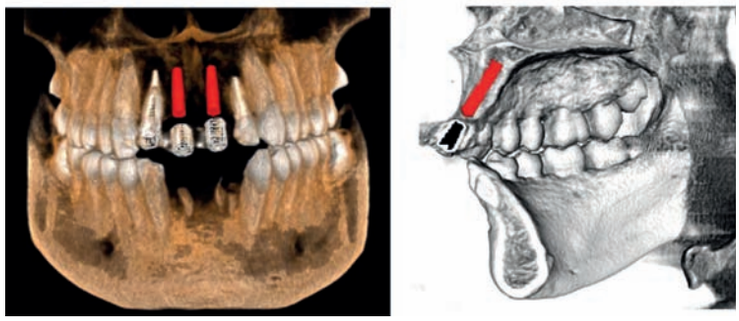

Fig 6: Virtual implant placement: Fig6a: Longitudinal view, Fig6b: Cross sectional view

Fig 7a: Pilot drilling of implant, 7b: Checking the parallelism of implant holes.

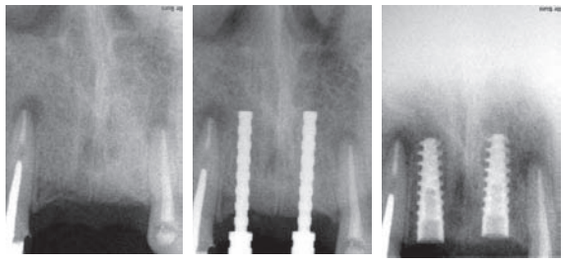

Fig 8a: Preoperative radiograph, 8b: Parallel pins, 8c: Postoperative radiograph

Fig 9a: Postoperative intra oral view of abutments, 9b: Postoperative intra oral view of prosthesis

Fig 9c: Extra oral view of the patient

Patterson described that there is a significant difference in the outcome of virtually planned implants' position and implants placed clinically without a surgical template. So for the successful surgical procedures, surgical guides have a major role.[8]Nickenig described that Reliability of implant placement after virtual planning of implant positions using cone beam CT data was excellent. They conducted a clinical study with 102 patients by virtual planning and fabrication of surgical templates. In all cases, critical anatomical structures were protected and no complications were noticed in postoperative panoramic radiographs.[9]

► Conclusion

Advanced diagnostic aids such as Cone Beam Computerized Tomography have been developed for a comprehensive understanding of the three-dimensional anatomy of the bone and its associated structures. It aids in the production of surgical guides and ultimately the manufacturing of a definitive final custom abutment prior to the surgery so that it can be delivered for an immediate non-functional restoration at the time of implant placement. Guided implant surgery changed implant dentistry from surgically and biologically driven implantology to prosthetically driven implantology. Here we used a partially and completely limiting design and implants were placed with flapless surgery. The cost was acceptable for the patient as and when compared to a stereolithographic surgical template.

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Effect of different metallurgical principles on the canal centering ability – an in-vitro study

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Abstract

Introduction: The aim of this study is to evaluate the effect of different metallurgical principles used in nickel titanium instruments on the canal centralization using cone beam computed tomography (CBCT).

Materials and methods: 30 mesial roots of mandibular first molars with curvatures between 30^0 and 60^0 were selected and divided into 5 experimental groups (n=6) according to the type of NiTi files used for their instrumentation namely, Wave One gold, Protaper, Protaper Gold, One Shape and Twisted files. CBCT imaging was performed before and after root canal preparation to evaluate canal centering ratio at 3mm and 6 mm from the apex. Data was analysed statistically using Anova test. The F value is 5.68 and P value 0.0022 (P< 5%).

Results: No group demonstrated perfect canal centering ability and there were significant differences between the 5 groups tested. However PROTAPER GOLD showed the maximum closer value to 1.

Conclusion: Within the limitations of this in vitro study it was concluded that protaper gold showed the best canal centering ability among the 5 groups tested.

Key words: Centering ratio, CBCT, Endodontics, Nickel-titanium Instrument

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► Introduction

Endodontic treatment success depends on proper cleaning, and shaping of the pulp space. Mechanical shaping includes both enlargement and shaping, and it is important to enhance the effectiveness of irrigants and antibacterial medicaments in eradicating bacteria and eliminating bacterial by-products, thus creating adequate space for three-dimensional obturation[1] Mechanical instrumentation in endodontics is aimed at the removal of infected soft and hard tissues from the pulp space, creating access for the delivery of irrigating solutions, and a sufficient taper for further filling. The introduction of nickel-titanium (NiTi) rotary instruments has improved the efficiency of endodontic practice in terms of working time, accuracy, and reduction of errors in shaping compared with the stainless steel hand files used previously. Despite this progress, instrumentation can still be a challenge in canals with severe curvature and complex morphology. Difficulty in preserving the original anatomy and fractures of rotary instruments either due to cyclical or torsional fatigue do make endodontics cumbersome.[2]

Several strategies have been developed to improve instrument flexibility and resistance, including various cross-sectional designs, improved manufacturing processes, and innovations in the dynamics of instrumentation. NiTi rotary files have progressive tapers and can therefore generate increased friction and stress when compared to hand files. Moreover, more severely curved canals may cause increased stress on rotary files and consequently lead to perforations, canal transportation, ledge and zip formation, and instrument fracture[3].

Instruments and instrumentation techniques should be chosen and combined based on their shaping ability, particularly in curved canals, and on the possibility to achieve faster preparations, without deviations. The various NiTi file systems commercially available have different characteristics in terms of their cross-sectional shape, rake angle, taper, depth of flutes, and number of spirals or flutes per unit length – all these conditions may affect file behaviour. The ProTaper family of instruments comprises NiTi files with a progressively

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tapered design. ProTaper Gold has a triangular cross section manufactured by proprietary metallurgy that delivers increased flexibility and resistance to cyclic fatigue.[4]

Root canals show variations in cross-sectional anatomy; the apical limit of instrumentation should be determined based on both anatomical aspects and endodontic instrument characteristics. Apical enlargement is beneficial to reduce the extrusion of debris and the presence of remaining bacteria. Conversely, a smaller canal size can reduce susceptibility to tooth fracture[5]. In fact, this aspect remains a very controversial topic in the literature: while Wu et al. suggested terminating instrumentation 2-3 mm and 0-2 mm short of the apex, depending on biological conditions, Souza recommended extending instrumentation to 1-2 mm beyond the foramen.

Three-dimensional cone-beam computed tomography (CBCT), in turn, can yield sequential axial images of root canals from the coronal to the apical region, or vice versa, and is extremely useful in determining the exact position of anatomic structures, revealing details of the internal root canal anatomy, and helping identify points of communication between root canals and the periodontal space.[6] Because of both its accuracy and the possibility to preserve the tooth structure, CBCT has been increasingly used to evaluate apical transportation and centralization. Considering the importance of correlating instrument characteristics and root canal anatomical aspects to ensure endodontic treatment success[7]. The aim of this study was to evaluate, using CBCT, transportation and centralization within the root canal of different NiTi rotary instruments, namely, Wave one gold, Protaper, Protaper gold, One shape & Twisted file.

► Materials & methods

In total, 30 separate mesio–lingual canals of mandibular molars with fully formed apices stored in saline were selected for this study. Furthermore, only canals with an angle of curvature in the mesial–distal plane between 30° and 60° were included in this study. The evaluation of angle and radius of curvature was performed according to the methodology of Pruett et al.

The cavities were accessed with Endo-Access and Endo-Z burs, and the working length was established under ×10 magnification using a clinical operating microscope by inserting a size 8 K file into the root canal until it was visible through the apex and subtracting 1 mm from this measure.

Specimens were divided into five experimental groups (n = 6 each), taking care to distribute the angle and radius of curvature equally. Then, the 5 different nickel titanium instruments were randomly assigned to each group ie; wave one gold, protaper, protaper gold, one shape & twisted file.

Root canal instrumentation

Canals were instrumented using X-SMART PLUS endomotor and a contra-angle hand piece. Before using the different rotary systems, as recommended by the manufacturer, a glide path was created using the respective files.

The canals were enlarged upto size F2 for all groups. Instrumentation was completed using a gentle in- and out-motion. Instruments were withdrawn from the canal, and dentinal debris was cleaned with gauze soaked in saline when resistance was felt in their progression.[8] Canal irrigation was performed in both groups with 2 mL of 5.25% NaOCl after the use of each file. Each instrument was used to prepare three canals and was then discarded.

Cone beam computed tomography analysis

CBCT scans were performed before and after instrumentation with the aim of analyzing changes in cross sections of the canals at 3mm and 6mm from the apex to calculate centering ability (Fig:I). Before the initial scan, coronal portions of the teeth were embedded in a radiolucent resin holder, leaving the roots-oriented upward and maintaining coronal access. This permanent and rigid support allowed each sample to be placed in the same position before and after instrumentation.

Samples were immersed in water and positioned on the CBCT scanner. Images were acquired with the following specifications: 90 kV, 6.3 mA, and an isotropic resolution of 90 µm. The field of view was 5 cm × 5 cm.

To obtain the cross-sectional images of the canal, CS 3D imaging software was used. Before the initial scan was performed on each sample, three grooves were made in the root surface perpendicular to the root canal at 3mm and 6 mm from the apex using a fine diamond disk (0.3 mm) mounted on a handpiece and under the control of a clinical operating microscope. These grooves facilitated the reproducibility of the root canal cross-sectional images obtained in the pre- and post-instrumentation scans.

Centering ratio evaluation

The instrument's ability to stay centered in the canal was calculated using the following formula: (A1–A2)/(B1–B2) or (B1–B2)/(A1–A2).

Where A1 represents the shortest distance from the mesial margin of the root to the mesial margin of the uninstrumented canal, A2 is the shortest distance from the mesial margin of the root to the mesial margin of the instrumented canal, B1 is the shortest distance from the distal margin of the root to the distal margin of the uninstrumented canal, and B2 is the shortest distance from the distal margin of the root to the distal

margin of the instrumented canal. (Fig: II)

Thus, a ratio was established in which the numerator was the smaller of the two numbers: (A1–A2) or (B1–B2). A result of 1 in this ratio would indicate perfect centering of the canal.[9]

Statistical analysis

The current experiment is related with measurement of 6mm pertinent to canal centering ability. Here also 5 files are used and each files were experimented for 6 observations. The mean value of the file Wave one gold is 0.563 ± 0.16 and the mean value of Protaper is 0.707 ± 0.13. The mean value of Protaper gold, One shape and Twisted files are 0.738 ± 0.12, 0.397 ± 0.123 and 0.697 ± 0.176 respectively.

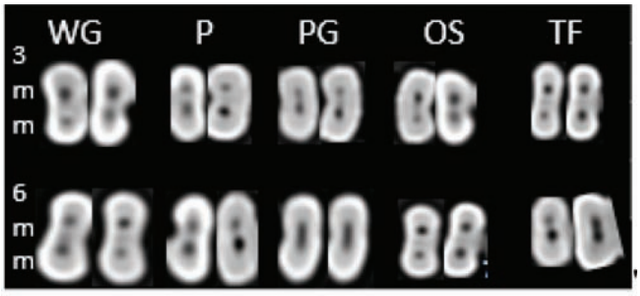

Figure I: Pre and post instrumentation CBCT images at 3mm and 6mm from apex
WG- wave one gold P-protaper
PG- protaper gold OS- one shape
TF-twisted file

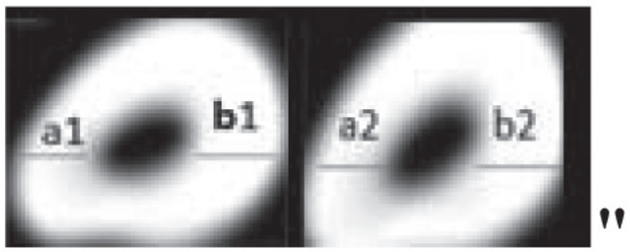

Figure II: Canal centering ratio

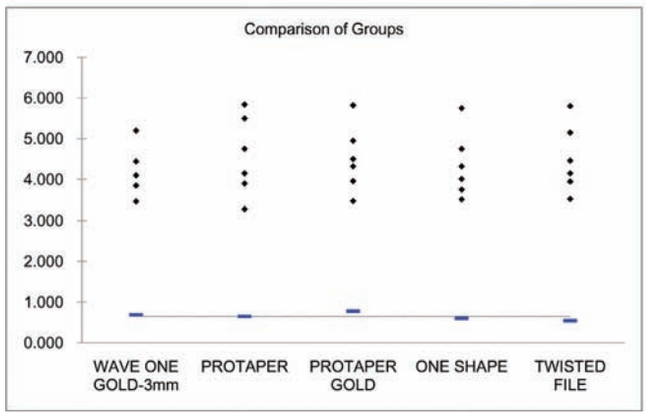

Figure III: Graphical representation of canal centering ability

The statistical significance of the file experimented was further intervened with the help of ANOVA test. The F value is 5.68 and P value 0.0022 (P<5%); shows significant difference. This implies there is difference among the files with reference to canal centering ability.

Since there is statistical difference among the group mean of the file, the reasons for the difference in canal centering ability was further tested with the help of Post Hoc Analysis. Pair wise t test was performed by the researcher. Accordingly there is statistical difference between Protaper gold with One shape (P value= 0.0004); Protaper Gold with Wave one gold (P value =0.0481). But no other difference was observed for Protaper gold while comparing with other files. Similarly, there is difference between Protaper with One shape (P value=0.0011) and Twisted files with One shape.(P=0.0015).

Unfortunately there were no difference among the files for their individual comparison. Thus it is very clear that, for comparing Protaper gold with One shape and Wave one Gold, the canal centering ability is better for Protaper gold in the group,but it has nothing to do with twisted files and protaper.

The same test was used to assess homogeneity between the groups in terms of angle and radius of curvature. Statistical significance was set at (P<5%).

Table I:One factor ANOVA-3mm

Mean	N	Sd	
0.688	6	0.1007	WAVE ONE GOLD
0.645	6	0.1596	PROTAPER
0.777	6	0.1515	PROTAPER GOLD
0.602	6	0.1541	ONE SHAPE
0.545	6	0.2096	TWISTED FILE
0.651	30	0.1678	Total

Table II : Anova table

ANOVA table					
Source	SS	df	MS	F	p-value
Treatment	0.1853	4	0.04634	1.84	.1536
Error	0.6312	25	0.02525		
Total	0.8165	29			

Results

No group showed perfect centering ability and there were significant differences between the 5 groups tested. However PROTAPER GOLD showed the maximum closer value to 1.

TABLE III: One factor ANOVA 6mm

One factor ANOVA-6 MM					
	Mean	n	Sd		
	0.563	6	0.1631	Wave one gold	
	0.707	6	0.1319	Protaper	
	0.738	6	0.1262	Protaper gold	
	0.397	6	0.1236	One shape	
	0.697	6	0.1765	Twisted file	
	0.620	30	0.1870	Total	
Anova table					
Source	SS	df	MS	F	p-value
Treatment	0.4829	4	0.12072	5.68	.0022
Error	0.5316	25	0.02126		
Total	1.0145	29			

Discussion

The goal of canal preparation is to widen the apical canal, however without weakening the root and thus increasing the risk of tooth fracture. The apical three millimeters of the root canal are considered a critical area, and the reference for apical enlargement to working length continues to be the use of a file three sizes greater than the first file fitting at the apex. Larger apical apertures can contribute to reduce the presence of microorganisms that may lead to and sustain apical periodontitis.[10] Complex root canal anatomy is a major challenge to successful endodontic therapy. Successful instrumentation depends on canal morphology, canal wall thickness, and on the size of the instrument used. In canals, such as that of mesial root of mandibular molars, instrumentation is more difficult because of the greater amount of curvature that has to be encountered to achieve the desired canal shape.

The methodology here employed was reproducible, precise and reliable. Moreover, the model used in this study with extracted natural teeth allows real test conditions. Simulated artificial canals are different in terms of microhardness when compared to root dentin, and the effects created by heat generation during instrumentation can affect the instruments's cutting blades. Ever since CBCT was introduced in dentistry, it has been widely recognized as an accurate, noninvasive tool that allows quantitative and qualitative three-dimensional evaluation of root canals[11]. In the present study, CBCT image technology was used to evaluate canal centering ability following root canal preparation with different rotary and reciprocating instruments. Scans of 0.110-mm/0.110-mm axial slices were obtained from the coronal to the apical and vice versa. This method allowed dynamic visualization and assessment of the specimens before

Table IV: Post hoc analysis

Post hoc analysis						
p-values for pair wise t-tests						
		One shape	Wave one gold	Twisted file	Protaper	Protaper gold
		0.397	0.563	0.697	0.707	0.738
One Shape	0.397					
Wave One Gold	0.563	.0589				
Twisted File	0.697	.0015*	.1258			
Protaper	0.707	.0011*	.1011	.9064		
Protaper Gold	0.738	.0004*	.0481*	.6250	.7100	

and after instrumentation using pre-established standards, without examiner interference[12].

The conventional WaveOne® system was manufactured from M-Wire technology. M-Wire is prepared by a special thermal process, claimed to increase flexibility and resistance to cyclic fatigue (Gambariniet al, 2008; Shen et al, 2013). WaveOne® Gold instruments are manufactured using a postmanufacturing thermal process whereby a new phase-transition point between martensite and austenite is identified to produce a file with super-elastic NiTi metal properties. This process gives the file a gold finish with improved mechanical characteristics. WaveOne® Gold files are characterized with a parallelogram (with two 85 degree cutting edges) offcentered, cross-section (Webber, 2015). According to Ruddle this design limits the engagement between the file and the dentin to only one or two contact points at any given cross-section. This will subsequently reduce taper lock and the screw-effect, improves safety and cutting efficiency and provides more space around the instrument to remove debriscoronally during canal preparation (Dentsply/Maillefer, 2014; Ruddle, 2016). The ProTaper family of instruments comprises NiTi files with a progressively tapered design. In cross section, Pro Taper shows a convex triangle with sharp cutting edges and no radial lands. The cross section of finishing files is slightly relieved for increased flexibility. ProTaper Gold has a triangular cross section manufactured by proprietary metallurgy that delivers increased flexibility and resistance to cyclic fatigue. The One Shape system (Micro Méga, Besançon, France) is another single-file system that was developed for use in continuous rotation and is characterized by variable pitch, a noncutting safety tip and three variations of cross-sections along its active length: a changing triangular or modified triangular cross-section with 3 sharp cutting edges in the apical and middle part and an S-shaped design with 2 cutting edges near the shaft. Twisted Files (TF)combines three proprietary processes to deliver unsurpassed strength and flexibility. Using R-Phase heat treatment technology, TF optimizes the strength and flexibility of NiTi, creating a highly durable and flexible file. TF cutting flutes are created by twisting the file, not grinding, eliminating micro fractures for greater strength. The advanced surface conditioning treatment finishes the twisted file surface while respecting the underlying grain structure.

With regard to centering ability, none of the instruments tested in the present study remained perfectly centralized within the root canal. Significant differences were observed among the instruments, but the values obtained with ProTaper Gold were closer to 1, suggesting better centering ability. These results can probably be explained by the noncutting tip design of ProTaper Gold, which functions as a guide to allow easy penetration with minimal apical pressure.[13] Also, ProTaper Gold is enhanced through a proprietary heat treatment technology.

In summary, this in vitro study showed that all the NiTi rotary systems investigated were safe to use, as they remained relatively centralized within the root canal. Further studies should be conducted to replicate these findings in real clinical situations.

► Conclusion

Within the limitations of this in vitro study it can be concluded that potaper gold showed the best canal centering ability among the 5 groups tested.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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REVIEW

KDJ – Kerala Dental Journal

Dental age estimation in children and adolescents-a review

* Aswathy K. Vijayan, **Gayatri S.

Abstract

Age plays an important factor in every aspect of life. Teeth are extremely useful in age estimation, as they are stable and durable and it is unique in its size, shape and pattern. Forensic odontology deals with dental identification procedures mainly by comparative and reconstructive identification. Reconstructive identification is of importance, if ante mortem records are not available, thus narrowing down the diagnosis towards correct possibility. Age estimation from dentition is one of the techniques in reconstructive identification. Of this age estimation in children and adolescents had gained importance due to its significant role to assess whether the child has attained the age of criminal responsibility such as rape, employment, adoption, marriage etc. Age estimation using teeth is important as teeth development is independent from maturation of other systems.

Keywords: Forensic Odontology, Chronological age, Dental age, Age estimation, Radiographic method

KDJ 2018 | Vol. 41 | No. 3 | Pg 158-161

► Introduction

Teeth are an important factor in age determination. The dentition is one of the physiologic developments which are less affected by nutritional, environmental and endocrinal factors.[1,2] Tooth maturity is comparatively least affected by any exogenous factors as compared to its eruption. Chronological age and biological age may vary, hence different other parameters such as dental, bone age and mental age can be considered as supportive indicator for biological age and body development.[1] The primary tooth germ begins to form at seven weeks in utero and the enamel formation of all deciduous teeth is usually complete by the first year. Mineralization of deciduous teeth begins about four months in utero and completion of permanent teeth is at approximately twenty five years of age.

Dental age may be measured by tooth eruption and tooth calcification. Dental calcification is considered better as it is not altered by local factors such as lack of space, systemic disorders and infection.[2]

Histological methods are used to assess the stage of tooth development during the premineralization period. Some of the histological methods can detect early mineralization 12 weeks before being detectable in the radiographs. Tooth 'eruption' (clinical emergence) is applicable more to the deciduous dentition whose eruption is under greater genetic control. However, the permanent tooth eruption is under considerable environmental influence and is less predictable. Calcification of deciduous and permanent teeth is useful in age estimation.

► History and relevance

Historically age estimation using teeth was first published by Edwin Saunders, when tooth eruption was first used as an indicator of age in England.[3] This all came into light when the factory act of 1837, prohibited a child without a second permanent molar from working in factories. Dental development is found to be a more reliable indicator by Rai and Smith.[4,5]

Dental age estimation methods:

Dental age estimation can be done using various techniques. These are divided into four categories.[6]

1. Clinical/visual methods
2. Radiographic method

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3. Histological methods
4. Physical and chemical methods.

Clinical Methods:

In this method physical characteristics and eruption status of teeth is considered. It can be done depending on the presence of teeth and comparing with chronological age chart given by Schour and Massler.[2]

Physical characteristics like mamelons helps in differentiating primary or permanent incisor teeth. Gorea et al. (2010) in a study concluded that mamelons present in the first decade of life decreases with increasing age.[7]

Dental colour is an important morphological feature in dental age estimation. Various studies had been done to correlate colour of enamel and dentin and to chronological age. The study conducted by Vivek et al. (2010) considered the colour of enamel of maxillary anteriors of 500 randomly selected patients and matched with a dental shade guide. The authors concluded that enamel colour was associated with chronological age.[7]

Physical and chemical Methods:

The biochemical methods are mainly based on amino acid racemisation. Amino acid is constantly used by all human beings, among which aspartic acid has a rapid rate of racemization, which increases with age. Racemization is seen in those proteins that are synthesized early in life like aspartic acid.[2] L-aspartic acids are converted to D-aspartic acids in human enamel, dentine and cementum.

Age estimation using aspartic acid racemization which is high in root dentin had been studied by many authors. Helfman and Beda (1975, 1976), Ritz et al. (1995) did studies that focused on racemization of amino acids and age estimation and concluded that there is a significant correlation between age and aspartic acid racemization.[2,8] Ritz et al. used dentinal biopsy specimens and this method emerged as an in-vivo technique.

Histological methods:

These methods can be used as in-vitro methods when it requires time for detailed microscopic examination. Boyde et al. (1963) did a study for age assessment by examination of the incremental pattern of tooth formation. The method involves counting the numbers of small incremental lines that cross the enamel prism up to the edge of the forming enamel front.[8] The study was based on the assumption that each increment represented one day's addition of enamel. These techniques are more appropriate for post mortem situations and estimation of age of early development of dentition. Further studies are required to establish the importance of these histological techniques.

Among all these methods of age estimation, radiographic method is more reliable in children and adolescents.

Various types of radiographic images like intraoral periapical radiographs, lateral oblique radiographs, cephalometric radiograph, panoramic radiographs and other advanced digital imaging techniques are used in age estimation in children and adolescents.

Radiographic methods are used to assess the appearance of tooth germ, beginning of mineralization, crown completion, eruption into the oral cavity, root completion, measurement of open apices, third molar development and also jaw bones.[8]

Age estimation using dentition can be grouped into three phases:

a) Age estimation in prenatal, neonatal and postnatal period
b) Age estimation in children and adolescents
c) Age estimation in adults.

Age estimation in children and adolescents:

Age estimation in children and adolescents is based on time of emergence of teeth in oral cavity and tooth calcification. However many studies have concluded that tooth calcification is more reliable indicator of dental maturity than emergence of teeth in oral cavity.[6,9,10]

Radiographic method is used in a developing dentition when there is no evidence of tooth emergence between two and half years to six years. Radiographic assessment of age is simple and non invasive method that can be employed both in living and unknown dead.

Radiographic methods of age estimation in children and adolescents

a) Schour and massler method
b) Nolla's method
c) Moorrees, Fanning and Hunt Method:
d) Gustafson and Koch method
e) Demerjian method
f) Cameriere's method using open apices
g) Third molar assessment

A) Schour and Massler method:

Schour and Massler (1941) studied dental age using deciduous and permanent teeth development. They described their findings in twenty one chronological stages from five months in utero to thirty five years of age.[11] Each diagram in their chart is an anatomical drawing showing whole teeth in their developmental position.

Smith (1991) reviewed and pointed out that the Schour and

Massler chart was probably based on Logan and Kronsfeld's anatomical and radiographic data of 26 or 29 autopsy specimens. However the demerit pointed out for Schour and Massler's chart was the unavailability for separate sex.[12]

Kahl and Schwarze (1988) updated Schour and Masslers atlas using 933 radiographs of children aged 5-24 years and produce charts for separate sex for each age.[12]

B) Nolla's method:

Nolla (1960) evaluated the development of deciduous and permanent teeth in ten stages. Stages are assessed based on presence or absence of crypt, crown formation, root formation and apical closure. This method is one of the reliable methods as both sexes are dealt separately.[1,2,8]

C) Moorrees, Fanning and Hunt Method:

In this method (1963), the authors studied age variation of formation stages for 10 permanent teeth. 14 arbitrarily selected stages of tooth development were considered. Dental development was determined by inspecting radiographs and assigning a rating according to consecutive stages for single-rooted and multi-rooted teeth.[1]

D) Gustafson and Koch method

Gustafson and Koch (1974) studied age estimation from prenatal to 16 years of age and constructed a schematic representation of tooth formation and eruption from 20 sources combining anatomical, radiographic and gingival eruption data.[12]

E) Demerjians method:

Demerjian et al. (1973) introduced a method for estimation of chronological age. This was based on development of seven teeth from left side of mandible. The study was based on radiographs of 1446 boys and 1482 girls of French Canadian parentage. Eight stages A to H had been used from first appearance of calcified points to closure of apex. A score was given to each stages based on the method of Tanner, Whitehouse and Healy for skeletal maturity and sum of all scores were taken to give a dental maturity score which was converted to dental age using the formula.[13]

Demerjian and Chaillet (2004) did a study on French subjects aged between two and eighteen years, where they added third molar in calculation of dental maturity score. The seven left mandibular teeth were rated on an eight stage scale from A to H. In this study the stages were converted to numbers (from 2 to 9). Moreover stage 0 and the stage 1, called the crypt stage were added. This stage represents the time when the bone crypt is visible without dental germ inside it. The tooth not yet calcified, corresponds to stage zero. Moreover, the revised method developed regression formulas for assessing age. They concluded that adding molar increased reliability and capacity of prediction up to 18 years of age but decreased mean accuracy which was explained by high variability of third molar.[14]

Acharya A B (2011) tested the 8-teeth method using 547 Indians (348 females, 199 males) aged 7–25 year and concluded that Demirjian's formulas resulted in inferior age prediction in Indians; therefore, India-specific regression formulas were developed, which gave better age estimates. The author suggested that Demirjian's 8-teeth method also needs adaptation prior to use in diverse populations.[15]

F) Age estimation using open apices:

Age estimation using open apices were studied by Camereire et al. (2006). Open apices of permanent mandibular teeth were used. The ratio of height of calcifying teeth and width of the open apex was measured, which was substituted as a formula to estimate age. The number of teeth with completed root development with apical ends completely closed was calculated as NO.[16]

Rai B et al. (2010) evaluated an Indian sample by Cameriere's European formula and formulated a linear regression formula for Indian population.

G) Age estimation using third molar:

The use of third molar in predicting age has got legal implications especially for status of maturity. Kohler et al. (1994) developed a system, in predicting age of juvenile by using third molar calcification. Kohler et al. adapted the grading of Gleiser and Hunt which specifically assessed third molar calcification. High success rates in predicting juvenile/adult status has been applied by several groups of researchers based in Belgium applying Kohler's grading.[17]

Acharya A B et al. (2014) in a study assessed the ability of third molars to correctly predict juvenile/adult status in Indians and also determined the level of predicted probability and concluded that it may be reliable for the judiciary to rule on the juvenile/adult status of an individual.[18]

Reporting

The forensic odontology report is a legal document. Report should include method used, validity of the method on the specific population, the nature and quality of the material used and finally the conclusion must be clear without any misunderstanding statements.

► Conclusion

Age estimation using human teeth is now considered a reliable method. Extensive studies have been done in this field. However all the studies revealed that it is important

to do population based study and generates a population specified formula for age estimation. Age estimation from human dentition is well recognized. Eruption and calcification of teeth is extensively used to assess maturity and predict age. This is an important diagnostic aid in diagnosis and treatment planning in clinical as well as in forensic dentistry. Studies have concluded that it is important to create a database for dental maturity for every population and compare it to others.[8] As more and more child and adolescent abuse cases have being reported it is very important in India. This can be applied in various conditions till Indian population specific studies are developed.

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Association News

CDE Report

Dr Anil Thunoli
Chairman CDE

Dear Colleagues,

With a couple of months to go we are almost in the fag end of another IDA year. As the CDE Chairman of IDA Kerala State I must admit that all branches have taken tremendous efforts in conducting CDE programs. Altogether around 100 CDE programs have been conducted so far. And I appreciate all the local branch office bearers for their efforts.

The most awaited CDE Programme of this year will be held at IMA House, Cochin on November 17th & 18th. " A JOURNEY THROUGH ORTHODONTICS", the two days National CDE Programme will enlighten us with Interdisciplinary Approach in Orthodontic Treatment Procedures. A panel of renowned International and National Orthodontic faculties including Dr Badri Thiruvenkatachari from UK, Dr Girish P.V, Dr Sridhar Premkumar, Dr Anup Kanase and Dr Joseph Varghese will be speaking the topic starting from Growth and Development of Cranio Facial Structures to Retention protocols. Dr Joby Peter and Dr Sony Jacob will also be sharing their knowledge about Preventive and Interceptive Orthodontics and Surgical Orthodontics respectively.

The third state CDE was held at Wynd Valley Resorts, Kalpetta on 29-7-2018. This was hosted by IDA Wayanad Branch. Dr Joby Peter Professor and Head. of Dept of Pedodontics, Malabar Dental College was the faculty and he took class on the topic Watching The Change-Early Prevention of Malocclusion and Guiding the Dentition.

Fourth state was hosted by IDA North Malabar and Tellichery Branches on 9-9-2018 at Hotel Malabar Residency, Kannur. Dr M. Raveendranath, CDE Chairman IDA HO inaugurated the programme. Dr Joby Peter took the class on the topic Changing Trends in Interceptive Orthodontic Practice.

Fifth state was held at Hotel Raj Residency,Kanhangad on 30-9-2018. Dr Santhosh Sreedhar past national vice-president IDA HO was the chief guest of the day. Dr Rajeeve S Pillai was the faculty and the topic was Rubberdamology-The Art of Isolation. IDA Coastal Malabar and IDA Kasargod branches jointly hosted this programme.

The sixth state CDE of this was jointly hosted by IDA Malabar, Malapuram and Vadakara branches on 7-10-2018 at Hotel Maharani, Kozhikode. The topic was " Successful Dental Practice". Morning session was taken by Dr Mili James on the topic Sterilisation and Disinfection in Dental College. Post lunch session was taken By Dr Eappen Thomas, HOD, Dept of OMFS, Pushpagiri Dental College about the topic "An update on Management of Medically Compromised patients and Medical Emergencies in Dental Practice.

Thanking You
Dr Anil Thunoli

Dr Anil Thunoli

CDH Report

Dr.Joby J Parappuram
Chairman, Council on Dental Health

Dear IDA Members,

It is of great news that our new editor, Dr.Anjana is coming up with the new edition of KDJ. Going through the previous issues; we can make sure of a thing, it is in the right hands.

We are approaching the end of another year. When we started we were focusing on Public image build up and attracting more Dental surgeons to the association.

Through different media attracting programs I think we could achieve the first part of our vision. Now to get rooted into the dental colleges, as we planned, we are coming up with two Awards.

1. Rafiuddin Ahmed Award – for the best male and female dentist from each dental college in Kerala
2. Promising Dentist Award – for the best male and female outgoing students from each dental college

Hope this will be announced in the next executive meeting and will be declared on December 24, on national dentist day and will be distributed during the conference.

Coming to the activities after the last edition we have observed the International Day for elderly, October 1, at Payyannur hosted by IDA coastal Malabar. Congratulations to the team behind: Dr.Santhosh Sreedhar, Dr. Madhusoothanan, Dr.Sreejan, Dr.Nidhin. And a special appreciation for Dr.K P Suresh for his valuable presence.

Another important date to remember is November 14 – The state level program will be hosted by IDA Kollam.

The theme for the Day in "More Smiles per miles" and we will be conducting a road show in connection with the schools.

Thank you all for the support and prayers..

Jai IDA
Regards.
Dr.Joby J. Parappuram
Chairman, Council on Dental Health,
IDA KSB

Dr Susha C N
WDC chairperson

WDC Report

Dr Anney George
WDC secretary

REPORTS OF WDC IDA KSB (JULY- AUGUST-SEPTEMBER 2018)

WDC NORTH MALABAR

On 3rd July, dental camp at "Ryan International Montessori School" for 250 students.

WDC TRIPUNITHURA

On 18 & 19th August, flood relief donations at relief centre - Bhaskaran Community,Irumpanam

On 1st& 2nd September, provided food & sanitary necessities for flood relief.

WDC PALAKKAD

On 4th August, Breast Feeding awareness session by Dr Dhanya & distribution of awareness pamphlets.

On 1st September,donated toys to flood affected aganwady,Andimadam,Palakkad

On 15th September,an awareness class at Govt.Higher Secondary School, by Dr Shabeena Sheikh on " Work smarter- not harder"

WDC CKK

On 15TH July, "Snehasparsham" programme at "Boys Town",Pala. Raised rs12,500, provided 48 Tee shirts to boys, followed by entertainment sessions by the inmates & members of IDA CKK.

WDC QUILON

On 11th July, seminar by Dr R Reena on "FAQs in Family Planning" at Fathima Mata National College.

On 27th July, doc. present. & seed distrib. at SN Trusts School .

On 1st August, talk on" breast feeding: foundation for life" at PHC Kilikoloor

On 23rd August, donation of flood relief materials at TM Memorial Varghese Hall worth rs 10,000.

On 29th September, ppt. by Dr Aswathy S on " Updates in Contemporary Dentistry" at SN College for Women.

WDC MALANADU

28-07-2018: Executive meeting of WDC of IDA Malanadu was held at edathottil dental clinic, kurumpady, perumbavoor

08-09-2018: Executive meeting of WDC of IDA Malanadu was held at hotel kabani, muvattupuzha

16-9-2018: Meeting of WDC of IDA Malanadu was held at dent care hall, muvattupuzha with the presence of Dr Susha, WDC Chairperson, IDA KSB.

16.9.18: conducted a state programme: "REBUILD 2018"-a flood relief activity, at Muvattupuzha. Usable clothes, household items and utensils were collected from members of IDA Malanadu worth almost Rs 1,00,000 and distributed to flood affected areas of Idukki and kuttanad.

. 16.9.18: Rs 50,000 was handed over to Dr.Susha WDC Chairperson,IDA KSB as part of REBUILD 2018.

WDC NORTH MALABAR: Dental camp at Ryan International Montessori School

WDC TRIPUNITHURA: Flood relief donations at Bhaskaran Community,Irumpanam

WDC PALAKKAD: Breast Feeding awareness session

WDC CKK: Snehasparsham programme at "Boys Town

WDC QUILON: FAQs in Family Planning

WDC MALANADU: "REBUILD 2018 "

Attingal Branch

CDE: On July 1st conducted our fourth CDE programme. Topic ENDURING ENDODONTICS, faculty Dr Gopikrishnan, venue Hotel Karthika Park. 94 members attended the programme. Dr Gopikrishnan explained the step by step procedure for a successful root canal treatment.

CDH: Observed National Oral Hygiene Day at Lotus Edudrops Pukayilathoppu, Attingal. 111 students and 10 teachers attended the programme.

On September 29th World Heart Day observed at an old age home in Kilimanoor.

IDA Relief Fund: IDA KSB started IDA RELIEF FUND to help our fellow dentists whose clinics and houses submerged in recent flood. IDA Attingal Branch was the first branch which donate Rs 1,00,000/- as initial contribution. We are trying to contribute more to support our own fraternity.

General Body Meeting: Conducted on September 9th. President

Elect IDA KSB Dr Abhilash GS presented the tragic situations in the flood affected areas where he visited along with Dr Suresh, Hon: Secretary,IDA KSB.

Malappuram Branch

The 5th cde on UPGRADE YOUR PRACTICE WITH 3D IMAGING(CBCT) BY DR ANU SUSANTH A at MIMS auditorium Kottakkal on 15th July

The 6th cde programme LECTURE AND HANDS-ON ON SMILE DESIGNING WITH COMPOSITES AND VENEERS by DR R.S MOHANKUMAR AT RYDGES INN KOTTAKKAL on 9th September

STATE ORAL HYGIENE DAY CELEBRATION

State oral hygiene day celebration by IDA KSB for the year 2018 was conducted by ida malappuram branch on Aug 1st at Govt higher secondary school, Athavanad Mattummal. The programme was inaugurated by the IDA KSB state branch vice president Dr Sreekanth

IDA MALAPPURAM started a one month long dental awareness campaign FREEDOM FROM DENTAL CARIES Conducted 9 dental awareness class for school childrens. Free hepatitis B vaccination programme was conduced for the members

4TH EXECUTIVE COMMITTEE MEETING of ida malappuram branch for the year 2018 was conducted on 24th July 2018 at hotel Rydgess Inn, Kottakkal. 18 members attended the executive meeting

5th executive committee meeting of IDA Malappuram branch conducted at Rydgess Inn, Kottakkal on 10/9/2018.10 members attended the executive

Kodungalur Branch

CDH REPORT:-

From August 1st to October 15.

IDA Kodungallur conducted 23 camps; screened 2600 students, awareness class and dental kit distribution were carried out to all. In two schools, conducted smiling competition and handed over prizes to the victories. 1st (Rs 300), 2nd (Rs 200) 3rd (Rs 100) respectively. We adopted 3 destitute homes. In Assisi Bhavan, we done extractions and gave free medicines and assured free scaling, complete dentures, removable partial dentures in future for the needy. We also visited a special school in Irinjalakuda (Pradeekshbhavan), screened 190 inmates and handed over two boxes of biscuits and one box milk powder. During the flood,we visited different rescue camps and handed over medicines, pastes, soaps etc.

Name of schools, venue and number of students on respective days as follows:-

1)Aug 1st - CMS LPS Irinjalakuda, 30 students

2)Aug 3rd - SNBS LPS, Avitathur, 462 students

3)Aug 6th - LBS LPS Avitathur, 270 Students

4) Aug 8th -Holy Family LPS Avitathur, 170

5) Aug 14th -SN School Irinjalakuda, 130

6) Sept 5th -National LPS, Irinjalakuda, 110

7) Sept 7th -PK Chathen Master LPS,Mapranam, 208.

8) Sept 13th -St.Albana LPS, Kara, 154 students

9) Sept 14th - LF LPS, Irinjalakuda, 385 students.

10) Sept 18th - Govt. LPS, Nadavarambu, 204 students.

11) Sept 19th -Pradeekshabhavan, special school, Irinjalakuda, 190

12) Sept 23rd - Public camp at Edavilangu, 60 patients.

13) Sept 26th -Vidyodaya English medium school, Irinjalakuda. 132 students

14) Oct 3rd - Vadakkumkaragovt LPS, Kalparamb, 98 students.

15) Oct 5th - St. Thomas nursery school, Nadavarambu, 20 students.

16) Oct 9th -Holy cross convent,Kalparamb, 160 students.

17) Oct 10th - Govt.Girls School, Kodungallur, 250 students.

18) Oct 11th - St.Francis Assisi English medium, Moothakunnam, 180 students.

19) Oct 12th -Mahatma LPS, porathissery, 300 students.

Thiruvalla Branch

IDA Thiruvalla conducted two Executive Committee meetings during this period.

IDA THIRUVALLA FLOOD RELIEF FUND.

Pathanamthitta district was one of the worst affected places during this years floods. Even though many of our members were affected,Ida Thiruvalla rose up to the occasion but conducting 5 camps in and around Thiruvalla. Mostly all the doctors in Thiruvalla town took part in the camps. Clothes, Food items, Provisions, Brushes, Pastes etc were distributed to all the camps. Our Heartfelt thanks to Dr Akilesh, Dr K.N. Thomas, Dr Rinosh, Dr Lanu, Dr Pratap kumar, Dr Benley, Dr Sujith,Dr Mary Sujith, Dr Sherine, Dr Minimol,Dr John Itty, Dr Reji who contributed and participated in the camps which was conducted on August 16th, 17th and 18th when it was needed the most. Many other Doctors were also actively involved in rescue and relief work during this time.

CHARITY CONTRIBUTION

IDA Thiruvalla has been doing charity work since many years,This year also we handed over a Cheque to District Hospital Kozhencherry To Help Diaylsis Patients. We also collected a flood relief fund to help the affected people.

Wayanad Branch

First CDE of IDA Wayanad branch was conducted on April 8, 2018 at Wynd valley resorts Kalpetta. Dr Blecit L Abraham and Dr Nisha Bipin took lectures on Advanced periodontal therapy, conquering the unseen.

A dental screening and awareness camp was conducted at Pakkom tribal colony near Pulpally on April 22, 2018

Conducted another screening and treatment camp at Thapovan rehabilitation center, Sulthan Bathery on the same day.

A staff training program 'Amazing Assistants ' was conducted at hotel Trident arcade Kalpetta on May 13. The class was taken by Dr Civy V Pulayath. There was an active participation from the staffs from all the clinics and the class received an excellent feedback

Family tour was conducted on 2nd and 3rd of June to Yellow bamboo resort Gonikoppal.

Branch sports was conducted on July 8, 2018 at Y's mens club Kalpetta. It was inaugurated by president Y's mens club Kalpetta. Conducted various events like badminton, carrots, table tennis and fun games for kids.

IDA Wayanad branch hosted the 3rd state level CDE on 29/7/18 at Wynd valley resorts.

Dr Joby Peter took class on Watching the change- Early prevention of malocclusion and guiding the dentition

Free denture distribution program was conducted on 5/8/18 at Wynd valley resorts Kalpetta. Mr Praveen Kumar CI of Police inaugurated the function. Around 50 free dentures were distributed.

Our members are attending a phone in program in association with radio mattioli.

A family get together was conducted on 13th and 14th of October at BLOOMS resorts Kenichira.

IDA Wayanad branch contributed Rs.101000 towards IDA kerala state flood relief fund.

Palakkad Branch

The Third Executive meeting of Palakkad IDA was conducted on the 29th of July at 2pm in Hotel KPM Residency, Palakkad. President Dr Dinesh discussed with team members about budget allotment for the coming Onam Celebration and Various CDE and CDH programmes to be conducted in the following month.

The 4th Executive meeting was conducted on 5th September at 7 pm in Hotel Sayoogyam as an emergency to allocate funds for IDA members and General public affected by floods.

CDE Activities

The 5th CDE Programme was conducted on the 29th of July between 9.30 am to 12.30 pm at Hotel KPM Regency, Palakkad. The topic was on the Pharmacology in Dental Practise and was a success with an attendance of around 45 members. Dr Sunil Ravinder Paul was the speaker and interacted well with the audience.

The 6th CDE was on Over Dentures by eminent speaker Dr Prasad Menon MDS DNB held at ATS Grand Kera, Palakkad between 10 am to 1 pm on the 30th of September 2018. The CDE was well appreciated by 34 members who attended the programme.

Publications

The 2nd Magazine of IDA Palakkad District IDA was launched on the 29th of July at Hotel KPM Regency by President Dr Dinesh, Editor Dr Veena And Secretary Dr Vipin.

The first 2 copies was given to Guest CDE Speaker Dr Sunil Paul Ravinder and Dr Anuradha Sunil Principal of Royal Dental College. The Magazine was well appreciated by members and copies were posted to everybody.

Dental Camp was conducted by IDA Palakkad On the 1st of August 2018 at Secondary Palliative care unit, Taluk Head quarters Hospital, Manarkkad. Powered tooth brushes were distributed Cerebral Palsy Patients. The Programme was organised by IDA members Dr Veena, Dr Suresh And Dr Saji Thomas

A dental Camp was conducted in Satya Seva Samithi Camp in Puthur, Palakkad by Palakkad IDA and WDC Wing. Dr Leena and Dr Ramya Mohan attended the camp

IDA Palakkad donated 1.5 Lakh to IDA Kerala Flood Relief Fund by President Dr Dinesh, Secretary Dr Vipin, President Elect Dr Jayakrishnan, WDC members DR Juby and Dr Shiji to State Hope Secretary Dr Anwar Ali

Breast Feeding Awareness session

Date: 04 August 2018

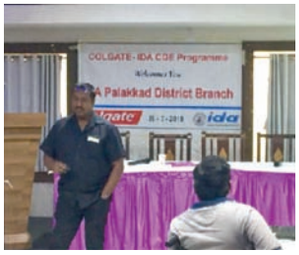
Gynaecologist Dr. Dhanya led a session on breast feeding awareness, importance of breast feeding, its role in mental and physical development in child, significance of feeding Cholustrum to new mothers and expectant mothers. We also distributed awareness pamphlets.

Flood affected Anganavady

2018 September 01

WDC IDA Palakkad donated toys to flood affected Anganavady, Andimadam, Palakkad.

Conducted an awareness class for Higher Secondary students of Govt. Higher Sec. School, Kumarapuram on 15th September 2018. Topic was Work Smarter not harder and the Speaker was Dr. Shabeena Sheik



North Malabar Branch

The sixth executive meeting was convened on 20th July. Various activities was discussed and upcoming programmes were discussed.

An emergency executive committee meeting was called on 21st of August to discuss about the IDA disaster relief fund. It was decided to can the Onam celebrations and give a fund towards the cause.

In the month of September no executive was called.

Various CDE programmes were conducted in these months, 22nd of July A CDE on "Repeteative strain injuries in Dental Surgeons & tips in clinical assessment for new entrants" taken by Dr Unnikrishnan Ramachandran and Dr Raj AC respectively. 18 members participated the programme.

5th of August a CDE on "The root to crown solution a practical approach" by Dr. Deepak Mehta was conducted. 38 members participated.

28th August CDE on "Rubberdam for stree free Dentistry" by Dr. Shalini Mevada was conducted. 29 members participated.

23rd September CDE on "Application of CBCT in Dentistry & image Handling" by Dr. Hari Suresh Prabhu was conducted. 100 members participated.

25th September CDE on "Antiplatelets and Anticoagulants – Basics and beyond" by Dr Anilkumar was conducted. 49 members participated.

Various CDE programmes in these periods were,

Handing over a dental Kit to the Kannur Collectorate for flood victims of Kerala.

Handing over a dental kit to the Wynad area which was done in collaboration with Kannur Dental College, Anjarakandy.

A camp was conducted along with WDC members on 3rd July as part of Doctors Day celebrations in Ryan International Montessori School, Taliparamba. 250 kids were screened.

Another programme conducted with WDC on 16th August at Seethi Sahib Higher Secondary School.

Dental camp at BEMP School cantonment area Kannur on last August.

Dental camp with WDC on 30th September at 7th Mile Juma Masjid, Taliparamba.

The WDC has collected relief material for flood affected and dispensed at Wynad.

These were the activities done by IDA North Malabar branch during the period of three months starting from July through September.

Quilon Branch

JULY:

On 11th July,WDC conducted a seminar by Dr N R Reena (Gynec.) on FAQs in Family planning at Fathima Mata National College.

On 15th July, CDH conducted a camp & talk on 'Your Smile :Your Health' by Past State Sec. Dr Shibu Rajagopal at New Hockey Stadium.

On 27th July, at S N Trusts School,CDH conducted a talk on' Eliminate Hepatitis' by Dr Anney George with doc. present. on hepatitis & WDC conducted doc.present. on nature conservation with seeds distribution.

AUGUST:

On 1st August, WDC conducted a talk on 'Breast Feeding : Foundation for life" followed by quiz compet. at PHC Kilikoloor

On 3rd August,CDH conducted a talk by Dr Swetha V R on'Healthy Smiles Everyday" follow.by Quiz compet. at Bishop Jerome Institute .

On18th August ,CDE on " Periodontal treatment" by Dr TP Padmakumar-Prof. HOD Periodontics ,Azeezia Dental College.

On 20th August,CDH contributed relief materials worth rs10,000 at TM Varghese hall.

On 23rd August,WDC contributed relief materials worth rs10,000 at TM Varghese hall.

SEPTEMBER:

On 13 th September,CDH donated rs 10,000 & conducted a dental camp at LP School,Odanavattom

On 15th Sept,CDE on "Safety & Infection Control"by Dr Dhanya Prakash- Cons.OMFS Shankers Hospital.

On 17th Sept,CDH conducted a dental camp at SN Trusts School

On 29th Sept.WDC ,organised a ppt.on"Updates in contemporary Dentistry" by Dr Aswathy S,Assist. Prof. Periodontics ,Sree Sankara College at S N College for women.

On 30th September,CDH conducted a Medical & Dental camp at Govt. Old age Home,Anchalmood.

BUILDING CONSTRUCTION:

Building structure completed(2nd phase of work)

IDRF:

The members of IDA Quilon branch contributed rs 'one lakh ,four thousand' towards IDRF

MEETINGS:

17th August: 2nd Emergency Executive meeting & Condolence meeting of Late Dr.Vishnu Mohan.

18th August:3rd General Body Meet

15th September:4th General Body meet




Alappuzha Branch

CDH

IDA ALAPPUZHA joined hands with Rotary Club of Alleppy east on 15.09.2018 at Kainagari for the medical camp. Dr Aji Sarasan, President IDA Alappuzha and Dr Binu Mathew participated in the camp.

CDE

CLINICAL ASSISTANCE TRAINING PROGRAM.

On 29.07.2018 Cochin Majilis Hall, Alappuzha 09.30am – 1.00 pm (for assistants and doctors) the faculty.....: Dr Civy Pulayath MBA, National Trainer JCI India, HOD, Dept of Public Dentistry, Malabar Dental College, Edappal.

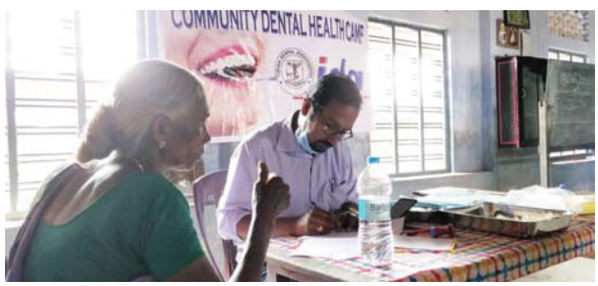
CDE

STYLE ITALIANO

On 16.09.2018 Cochin Majilis Hall, Alappuzha 09.30am – 05.00 pm Dr Varsha Rao

The ONAM CELEBRATION, Family meet & HONOURING OF SINGER LYRICIST Dr Venugopal G for achieving critics award.

The Onam celebration and honouring of our member Dr Venugopal G for winning the critics award as LYRICIST in film field. The IDA State President Dr Ciju A Paulose was the chief guest of the day.




Central Kerala-Kottayam Barnch

Flood Relief

Our members were in to flood relief for 5 consecutive days. They have gone in to flood affected areas and rescued people from the affected area. We CKK appreciated their work during the EC meeting. CKK had an emergency EC and decided to handover Rs. 5,00,000/- Five lacks to IDA Kerala state for the flood relief fund of IDA Kerala.

Handing over Cheque to Dr. Suresh State Secretary for

IDA Disaster Fund

IDA CKK also handed over medicines worth Rs. 1.5 lakhs to Lions Club Kottayam Central for their Mega Medical Camp at Chengannur.

CDH

1. 4th July - Dental Health education class at Labour India School, Marangattupilly

2. August

a. 1st Aug - Check up and Education class for LP students at Njarakkal School

b. 8th Aug - Check up and Education class for LP students of Good shepherd School, Kottayam

3. September

a. 12th September - Check up and Education class for LP Students at St. Annes School, Kottayam

b. 24th September -Treatment Camp at Nalla Samariyan Orphanage, Ponkunnam

c. 29th Sep - Check up Camp for public organised by IEM trust at Mariyasadanam, Kumarakom.




Coastal Malabar Branch

Executive committee meetings: conducted two executive committee meetings on 19/7/18 and 10/9/18.

CDE activity:

8th CDE programme: conducted a full day workshop on basic life support in association with emergency medicine department, Pariyaram medical college on 29th July 2018 at hotel J K residency, Cheruvathur from 9 am to 5 pm.

9th CDE programme was held on 15th august 2018 at Hotel Juju residency, Payyannur from 6.30 Pm to 10.00 Pm on the topic 'medical problem solving in dentistry' the faculties were Dr Padmanabhan, MS ENT, Dr Anandakrishnan, MD GEN medicine and Dr Rajiv, MD Dermatology and the moderator was Dr Suma Samuel, MDS.

10th CDE programme: hosted the 5th state CDE on 29th September 2018 at Raj Residency, Kanhangad from 10.00 am to 5.00 pm on the topic "rubberdamology- the art of isolation" and the faculty was Dr Rajeeve S Pillai.

CDH activities

1. Oral hygiene day: observed the oral hygiene day on 1st august 2018 at Viswajnan Public School, Pulingome and Ursuline orphanage, payyannur. Various competitions for children were conducted like essay writing, quiz competition, elocution and prizes distributed.

2. Observation of international day for elderly: hosted the state cdh on 1st October at chamber hall Payyannur. State cdh chairman Dr Joby J Parappuram welcomed and municipal chairperson Adv Sasi Vattakoval inaugurated the function. Fluoride therapy, dental check up and free kits were distributed.

Achievements: bagged the best oral hygiene day celebrations award constituted by Indian Society of Periodontology with a cash prize of Rs 7500/- and a certificate.

Family activities: organized a one day kayaking trip to Cherupuzha on 5th August 2018.

Malanadu Branch

Installation Report

The meeting started at 7.30 pm with Hon secretary Dr Litto Manuel collaring the president Dr Joby J Parappuram,

Dr Joby J Parappuram called the meeting to order.

The meeting began with a prayer song by Susan Byju and Pursy Ciju.

Dr Jose Paul welcomed the gathering

Dr Joby J Parappuram delivered the presidential address.

Dr Litto Manuel presented a brief report about the activities of the events held in 2017.

Dr Joby gave away the awards,

DrPaul G Vadath memorial merit awards were given to the toppers of each college that comes under the premises of Ida Malanadu.

Dr Sumayya A.P (Al Azhar dental college)

Dr Surumi Salam (Annoor dental college)

Dr Teenu Philip (Mar Baselious dental college)

Dr Gifty Jacob (Mar Gregorious dental college)

Dr Rizwana (Indira gandhi dental college), received the awards.

Dr Ciju A Paulose, president elect IDA Kerala state 2018 installed the new president Dr Terry Thomas Edathotty by administering the oath

Dr Joby J Parappuram handed over the collar to the new president by investing the collar upon Dr Terry Thomas Edathotty.

Dr Terry Thomas Edathotty accepted the new responsibility as new president of IDA Malanadu for the year 2018 and addressed the gathering.

Dr Terry Thomas Edathotty invited the office bearers of IDA Malandu 2018 to the dias.

Dr Terry installed the new office bearers by administering them the oath.

Lamp lightening ceremony was held after this.

Dr Siju V Jose introduced the chief guest,

Chief guest Justice C.N. Ramachandran Nair addressed the gathering.

Guest of honour Cine artist Saju Navodaya and Judge Cherian K Kuriakose also addressed the gathering.

Cine Artist Saju Navodaya and Cherian K Kuriakose inaugurated the Santhwanam project and handed over

2 Water beds and 5 dialysis coupons to Dr Benny Augustine to be distributed to the needy.

Various IDA activities were declared and over view of each activity was presented

Various CDE, CDH, HOPE, Womens wing activities were inaugurated on that day,

Around 105 members along with there families attended the meeting

CDE Programs:

1. 01-07-2018: CDE Program on BASIC LIFE SUPPORT was held at hotel kabani, muvattupuzha.
2. 15-07-2018: CDE Program on PRACTICE MANAGEMENT FOR DENTIST & DENTAL ASSISTANTS TRAINING PROGRAM by Dr Civy Pulayath was held at Hotel Kabani, MUvattupuzha
3. 31-07-2018: CDE on IMPLANT SUPPORTED DENTURE By Dr Byju paul kurian was held in Rotary club, perumbavoor
4. 16 & 17-09-2018: National workshop on Basics in oral minor surgery STOMA 18 was held in association with Mar Baselious dental college, kothamangalam.
5. 23-09-2018: CDE Program on Composites STYLE ITALIANO by Dr Varsha Rao was held at hotel kabana, muvattupuzha

CDH Programs:

1. 25-07-2018: Oral Hygine classes and dental kit distribution were conducted for children from St Thomas boys home, perumbavoor.
2. 31-07-2018: Dental kits distribution,Dental awareness classes and hand washing techniques were conducted at GUPS Asamanoor, teachers training program was also conducted along with the camp in association with Indira Gandhi dental college, kothamangalam.
3. 01-08-2018: world oral hygine day was observed in association with Annoor dental college, muvattupuzha. Dental awareness classes, dental kit distribution, dental treatment camp, short film, dental exhibition, was conducted as part of the program. Around 2000 people participated in the camp.
4. 17-09-2018: dental treatment camp was conducted at Lions community hall, Munnar Dental examination, awareness classes and dental kit distribution was done at the camp.
5. 18-09-2018: Dental examination and dental kit distribution for kinder garten children was held at Rajagiri christu jayanti kinder garten school, kakanad. 350 students were screened as part of the program.
6. 04-10-2018: Dental awareness classes, teachers training program dental kits distribution and dental camp was held at Mar kauma church, vengoor in association with indira Gandhi dental college, kothamangalam
7. 09-10-2018: Awareness class for teachers of anganwadi schools as part of Pal punchiri project by our president Dr Terry Thomas. DENTAL kits distributed to 370 students of 25 anganwadies of OKKAL Panchayath
8. 25-09-2018: Blood donation camp was organized in association with IMA and indira Gandhi dental college. 49 participants donated the blood.
9. 28-08-2018: Mutual benefit scheme SNEHA SPARSHAM-dialysis coupons at subsidized rates for IDA Members and families and SNEHA DHARA – water & air beds at subsidized rates for IDA Members and family was launched.
10. 16-09-2018: As part of flood relief, usable clothes, household items and utensils were collected from members of IDA Malanadu and distributed to flood attected areas of Idukki and Kuttanad.

A Cheque Of Rs 150,000 from IDA Malanadu and RS 50,000 from WDC of IDA Malanadu was handed over to Dr Ciju paulose, president, IDA KSB and Dr Susha, chairperson, IDA KSB towards IDA KERALA DISASTER FUND

11. 01-10-2018: International day of elderly was observed by IDA Malanadu at pensioners bhavan, perumbavoor.
12. 25-09-2018: IDA Malanadu in association with Vidal health insurance & Annoor dental college conducted dental camp and awareness class to all the employees of US Technologies, info park,Kakkanad

EXECUTIVE MEETING:

1. 09-08-2018: 6th Executive meeting of IDA Malanadu was

held at hotel kabai, muvattupuzha.

2. 28-08-2018: 7th Executive meeting of IDA Malanadu was held at hotel kabana, muvattupuzha.

JOURNAL RELEASE:

15-07-2018: 2nd edition of Malanadu dental journal MDJ was released by Dr Ciju Paulose, president, IDA KSB in presence of DR Joby J Parappuram, State CDH.

SPECIAL DAYS:

25-07-2018: World environment Day was observed by planting trees in perumbavoor municipality area.

28-08-2018: world friendship day was celebrated, Dr Alias Thomas gave the friendship day message.

WDC Activities:

1. 16-09-2018: WDC IDA Malanadu in association with WDC IDA Kerala state conducted flood relief activity "REBUILD 2018" at Muvattupuzha. As part of flood relief, usable clothes, household items and utensils were collected from members of IDA Malanadu worth almost Rs 1,00,000 and distributed to flood attected areas of Idukki and kuttanad.

2. 16-09-2018: A cheque of Rs 50,000 was handed over to Dr.Susha WDC Chairperson,IDA KSB as part of REBUILD 2018

3. 28-07-2018: Executive meeting of WDC of IDA Malanadu was held at edathottil dental clinic, kurumpady, perumbavoor

4. 08-09-2018: Executive meeting of WDC of IDA Malanadu was held at hotel kabana, muvattupuzha

5. 16-9-2018: Meeting of WDC of IDA Malanadu was held at dent care hall, muvattupuzha with the presence of Dr Susha, WDC Chairperson, IDA KSB.

6. 12-10-2018: WDC of IDA Malanadu donated Rs 10,000 to vimukthi special school, kalamassery.

7. 02-10-2018: Dr Ruby, president, WDC IDA MALANADU handed over rs 5000 to fathima suhura towards cancer treatment of her father.




Thrissur Branch

A general body meeting was held on July 28th at Hotel Merlin International

Talks conducted during the General Body

1. HOPE by Dr. Anvar Ali, HOPE Secretary

2. Legal part of HOPE by Dr. Deebu J Mathew, Vice President, HOPE

3. Practicality in managing an emergency situation in a dental clinic by Dr. P S Sangameswaran with demonstration of IDA MARK Kit.

CDH Activity

1. Dental Screening camp

Venue: INOX Theatre, Shoba city mall

Date: 1st July (Doctor's Day)

Members participated: Dr. Davis Thomas, Dr. Arjun V Dev (CDH Convenor), Dr. Benil P, Dr Vijith J, Dr Preeja C Menon, Dr. Nayana G

No. of students screened: 100

Awareness class on oral hygiene practices was held and demonstrated by CDH Convenor, Dr. Arjun V Dev

2. Dental Screening camp

Venue: Malayalam School & Corporation Autism School

Date: 6th July

Members participated: Dr. Davis Thomas, Dr. Arjun V Dev (CDH Convenor), Dr. Tameem A

Other guests: Vicar General (Inauguration), counsellor of the area, PTA President of the school

No. of students screened: 120

Tooth brush, tooth paste, coloring kit & Story books were distributed among the students.

3. Dental Screening camp

Venue:S.R.K.G.V.M.H.S.S

Date: 28th Sept

In association with: Lions Club of Ayyanthole

Members participated: Dr. Davis Thomas, Dr. Arjun V Dev (CDH Convenor), Dr Franil Francis

No. of students screened: 300

Dr Davis Thomas inaugurated the camp

Dr Arjun V Dev gave talk on the importance of brushing and maintenance of oral hygeine

Dr Franil Francis demonstrated the brushing technique

Colgate samples were distributed among the students

Other activities:

Members took active participation in flood relief camps at their places and coordinated the required materials among different camps


Trivandrum Branch

1. CDH Activities

1. The First CDH Activity in July was conducted on Thursday, July 5th at Govt.Care home,Pulayanarkotta, Trivandrum in association with Dept. of Prosthodontics, GDC Trivandrum as a check-up camp of the dentures given to the inmates as a part of the "Santhwanam free denture Programme".Dr.Pramod and team of Prosthodontists from GDC participated in the camp.

2. The Second CDH Activity in July was conducted on Sunday,July 15th at Pappanamcode, Thulavila School in association with SNDP Youth movement from 10am-1pm. Dr.Sidharth and Dr.Sreeja participated in the camp.

3. The Third CDH activity was conducted on Saturday,August 4th from 10am-1pm at St.Mary's Auditorium, Vizhinjam in association with AIPC Trivandrum Chapter. The Programme was inaugurated by Dr.Shasi Tharoor MP.

4. The Fourth CDH activity was conducted on Sunday, September 23rd at Nellimoodu, Balaramapuram in association with Sathyasaisevasamithi.

2. CLINICAL CLUBS

1. The Fifth clinical club of IDA Trivandrum branch was held in IDA Hall on Tuesday, July 10th from 8pm-9pm by Dr.Mathew. P.Varghese (Oral Surgeon) on the topic "Antibiotics in dentistry". 28 members attended the session which was followed by dinner.

2. The Sixth Clinical club of IDA Trivandrum branch was held on Tuesday, August 14th from 8pm-9pm by Dr.Aji Mathew on the topic "Strip perforations of root canal walls- A critical analysis (causes, prevention & management)".

3. The Seventh Clinical Club of IDA Trivandrum branch was held on Tuesday, September 11th from 8pm-9pm at IDA Hall, Innu apartments by Dr.ManikandanG.R M.D.S (Periodontist) on the topic "Never Stop Practicing time tested techniques (Non-Surgical Periodontal Therapy)".

3. CDE Programmes

1. The 6th CDE of IDA Trivandrum branch was held on Sunday,July 1st at Hotel SP Grand days by Dr.PankajMaheswari on the topic "Contemporary Aesthetic Dentistry".

Topics included current concepts in restorative dentistry with special focus on aesthetics and smile designing.

2. The 7th CDE of IDA Trivandrum branch on the topic "The needs and uses of Dental Implants" by Dr. Tejas Kothari M.D.S was held in Hotel SP Grand days on Sunday, September 16th.

The faculty was DrTejas Kothari MDS(Periodontist), Key opinion leader for Straumann Implants.

4. EXECUTIVE COMMITTEE MEETINGS

1. The Sixth Executive committee meeting of IDA Trivandrum branch was held on Wednesday, July 18that IDA Hall, Innu apartments.

2. The Seventh Executive committee meeting of IDA Trivandrum was held on Wednesday,September 19th at IDA Hall,Innu apartments.

5. Women's Council Activities

1. IDA Trivandrum Women's Council

The Fourth meeting of the Women's Council of IDA Trivandrum was held on Sunday, July 15th from 4pm-5pm at IDA hall, Innu apartments.

Followed by a talk on the topic "Cosmetology-live demo workshop" by Ms.Sherly Joseph

2. IDA Trivandrum Women's Council conducted a ladies day out on Sunday, September 16th from 10am-4pm at Travancore Heritage, Poovar. It was followed by lunch and a cookery show.

6. FLOOD RELIEF ACTIVITIES

The flood relief activities of IDA Trivandrum branch were done in 3 sessions.

1st donation: The first flood relief material donations from members were given to Govt.Taluk office on 16/8/2018.

Materials worth Rs.1,10,000 were donated which included food, dress,provisionals,drinkingwater,napkins,soaps,detergents,mosquito repellents etc and we also donated 100 towels and 60 bedsheets.2100 tooth pastes and brushes were also given.

2nd donation: The second flood relief material donation was done on 19/8/2018. Materials worth nearly Rs.90,000 were donated to the collection center in Mar Ivanious college which included ample bed sheets,ladies inner wear,cotton,gauze,food materials,drinking water,napkins,soaps,detergents, medicines etc.

3rd donation: The third flood relief material donation was done in association with IDA Tirumangalam branch on 23/8/2018 to the collection center in SMV School which included material worth Rs.1,00,000.

Ample number of bed sheets,towels,lungi, nighties,sleeping mats,napkins,food items and 2 box medicines worth 11,000 were given.

7. COC Meeting

The First COC Meeting of IDC 2020 hosted by IDA Trivandrum branch was held on Sunday, August 5th at Hotel Windsor Rajadhani, Trivandrum.

IDA State President Dr.CijuPaulose,President Elect Dr.Abhilash,IDA National Joint Secretary Dr.SanjayJoshy,IDA National CDE convener Dr.Raveendranath, IDA State Secretary Dr.SureshKumar,IDA Past National President Dr.AliasThomas,IDA Past President Dr.Sabu Kurian and many IDA State leaders attended the meeting.

Kunnamkulam Branch

IDA Kunnamkulam conducted a Free Dental Check-up camp and conducted oral hygiene classes on August 15th at Islamic Vocational Higher Secondary School, Orumaniyoor.

IDA Kunnamkulam did its small part to the flood hit Kerala by providing cleaning kits to the relief camp in Ponnani and provided 15 sacks of rice to the tribal colony of Attapadi.

Pathanamthitta Branch

05-07-2018 PRESS MEET Conducted press meet at Press Club, Pathanamthitta on 05-07-2018 to announce CDH Wing's District level Oral Screening and Orientation Programme - Naleyude Nirapunchirikal in association with District Childline at SC Pre metric Hostels in the district.

07-07-2018- CDH – Naleyude Nirapunchirikal Inauguration of District Level Oral Screening and Orientation programme - Naleyude Nirapunchirikal at SC Pre metric Schools and hostels. Shri. P B Nooh IAS (District Collector, Pathanamthitta) inaugurated the project on 07-07-2018 at SC Pre Metric Hostel, Pathanamthitta in the presence of President Dr.Sujith P R, Shri.R Jayakrishnan (Dist. Sub Judge), Smt.Rajani Pradeep (Muncipal Chairperson), Mr.David Reji Mathew (Childline District Co Ordinator).

07-07-2018 Women's Wing - Family Dinner Meet

Women's Wing organized family dinner meet on 7th July 2018 at Hotel Kuttis Residency, Konni. Dr. Sujith P R presided over the meeting and women's wing chairperson Dr. Rincy Eugene welcomed the gathering.

14-07-2018 CDH – Oral Health Screening Camp

Organised oral health screening camp at SC Pre metric hostel, Kallarakadavu, Pathanamthitta. Dr.Sujith P R precided the meeting. Childline District co Ordinator Mr.David Reji Mathew inaugurated the camp.

19-07-2018 Dr.Binish Fund

Branch has collected Rs.70,000 to help Late Dr.Binish's Family and the amount transferred to Calicut Dental College Alumini Association account.

23-07-2018 – Executive Committee Meeting

The third executive committee meeting of the branch was held at Hotel Hills Park,Pathanamthitta on 23rd July 2018.

09-08-2018 CDH – Oral Hygiene Day

CDH wing observed Oral Hygiene Day on 9th August 2018 by conducting Chiriyum Mozhiyum Competition for high school and higher secondary students at Netaji high School, Pramadom, Pathanamthitta. Dr.Sujith.P.R presided over the inaugural meeting.

District Medical Officer Dr.A.L.Sheeja inaugurated the programme in the presence of Mr.Rajesh Akleth (Manager, Netaji HSS), Dr.Ralu Varghese, Dr.Johnikutty Jacob, Dr.Eugene Varghese, Dr.Anita Markose.

Chiriyum Mozhiyum, a well arranged programme which highlighted the discipline and confidence of the students. The three minute presentation session, the topic 'Smile and Confidence' was given earlier to present on the stage. The interactive sessions between the judges and the students were so lively and positively accepted by the whole crowd as it was a mixture of educative, entertaining and thought provoking, where children excelled well. The competition was judged by Dr.Shann Thomas (Community Welfare Officer, Believers Church Hospital,Thiruvalla), Dr.Dhanya Krishnan (CDH Chairperson& JCI India, Zone Trainer) and Prof. Unnikrishnan Poozhikadu (Asst. Professor, MSM College, Kayamkulam). The function was well appreciated by the school management and staffs and with the prize giving session the competition came to an end etching a colourful memory of oral hygiene day celebration in everyones mind.

12-08-2018- IDA KSB Executive Committee Meeting

Dr.Sujith P R, Dr.Ralu Varghese, Dr.Eugene Varghese, Dr.Suku Koshy and Dr.Gigu Zakariah Philip attended IDA Kerala State Executive Committee Meeting held at Mahe on 12th August 2018.

21-08-2018 Emergency Executive Committee

Emergency Executive Committee Meeting of the branch was held on 21st August 2018 at Kulathoor Dental Clinic, Pathanamthitta to discuss the situation facing by members and to reschedule branch activities due to flood. Formed assessment committee to assess the damages occurred to clinic and houses of IDA Members due to unfortunate natural disaster. Postponed CDE Programme by Dr.Haby Mathew Somson and cancelled onam celebration.

09-09-2018 Resurgence - Family Gatherig

Organised a family gathering on 9th September 2018 at Aban Arcade, Pathanamthitta. Dr.Sujith P R presided over the meeting. Members shared the situation they faced and damages caused by natural disaster. All appreciated the steps taken and support given by the branch and state office to the members who are suffering and affected due to flood.

30-09-2018 CDE Programme

The fifth CDE Programme of the branch on the topic clinical orthodontic diagnosis and treatment planning was conducted on 30th September 2018 at hotel Indraprastha, Adoor. The programme was in association with IDA Kottatrakara and IDA Mavelikara. Dr.Benoy Ambooken MDS was the faculty for the programme. The programme was well appreciated. The faculty had an amazing ability to connect with the audience and stay connected for the duration of the presentation. No. of registrations 67.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Malabar Branch

1, Sixth CDE of IDA Malabar Branch (27/05/18)

The Sixth CDE of IDA Malabar branch was held on 27/05/18 at Hotel Marina Residency, Kozhikode. The Topic of the CDE was Oral Cancer – What a General Practitioner Know, Faculty was Dr Sudheesh Manoharan MDS FHNS (Head & Neck Surgery).

2,Launching of Project IDA Malabar Cancare (27/05/18)

Launching of our new project IDA Malabar Cancare, much awaited comprehensive cancer treatment scheme in association with MVR Cancer centre was done by signing MOU between IDA Malabar branch & MVR Cancer centre. On behalf of IDA Malabar branch Dr.Mehul R Mahesh, President IDA Malabar and on behalf of MVR Cancer centre Dr.Sudheesh Manoharan signed the MOU. First policy was handed over by Dr.Nikesh Babu vice president IDA Malabar and coordinator IDA Malabar can care.

3, Seventh CDE of IDA Malabar Branch (24/06/18)

The seventh CDE of IDA Malabar branch was held on 24/06/18 at Hotel Malabar Palace. The programme started at 9:00am and topic of the cde was Gold Revolution in Rotary Endodontics.. The faculty was Dr,Ajit A Shaligram. 80 members participated including 25 for Hands on.

4, Participation in Radio Programme. (23/06/18)

Dr. Saju NS Past President IDA Malabar branch and Oral and Maxillofacial Surgeon participated in the live phone in programme of All India Radio held on 23/06/18 between 11:00am and 12:00pm.

5,Dental Checkup Camp & Awareness Class (04/07/2018)

IDA Malabar branch conducted dental checkup camp, awareness class and distribution of dental health kit at Elambilad LP School on 04/07/2018. Dr.Mohammed Basheer took the awareness class for the students. On behalf of IDA Malabar branch Dr.Nikesh Babu and Dr.Mohammed Basheer participated. Around 120 students including their parents were examined.

6, Release of 2nd Edition of Malabar Dentist

Second edition of IDA Malabar branch Journal Malabar Dentist was done by Dr.Harikumar Menon on 15/07/2018 at Hotel Marina.

7,Eighth CDE of IDA Malabar branch (15/07/2108)

Table Clinics – Extraction & Flaps with a Gurukul concept was conducted on 15/07/2018 at Hotel Marina Residency. Dr.Ravindran Nair KS, Dr.Manoj Joseph Michaele and Dr.Saju NS was faculty from Oral surgery and Dr.Harish Kumar, Dr.Harikumar Menon and Dr. Sameera G Nath was faculty from Periodontics. Around 40 members participated.

8, Fans Football Tournament (15/07/2018)

IDA Malabar branch conducted fans football tournament on 15/07/2018 at synthetic ground at Karikamkulam. Great participation was shown by our senior members and youngsters. Four teams participated. Belgium team lead by Dr.Shaju Mandoli won the tournament.

9, Dental Checkup Camp & Awareness Class (20/07/2018)

IDA Malabar branch conducted dental checkup camp, awareness class and distribution of dental health kit at NSS School Chalapuram on 20/07/2018. Dr.Ramakrishnan former HOD Dept of Pedodontics Govt Dental College, Calicut took the awareness class for the students. On behalf of IDA Malabar branch Dr.Krishnan R Menon and Dr.Asha Krishnan participated. Around 150 students including their parents were examined.

10. Dental Checkup Camp & Awareness Class (22/07/2018)

IDA Malabar branch in association with Music Artists Association conducted dental checkup camp, awareness class and distribution of dental health kit at Varthakamandalam hall Puthiyara Kozhikode on 22/07/2018. Dr.Rekha Binu took the awareness class. On behalf of IDA Malabar branch Dr. Sreekumar, Dr.Khalid, Dr.Sandeep Rajagopal and Dr.Sethu Shivshanker participated. Around 100 patients were examined.

11. Nineth CDE of IDA Malabar Branch (29/07/2018)

9th CDE of IDA Malabar branch was conducted by Dr. Binoy Ambooken on clinical Orthodontics at Hotel Woodies. 100 members participated.

12. Dental Checkup Camp & Awareness Class (30/07/2018)

IDA Malabar branch conducted dental checkup camp, awareness class and distribution of dental health kit at Mercy Charitable boarding home Kullathuvayal Perambra on 30/07/2018. Dr.Renjith Menon took the awareness class for the inmates. On behalf of IDA Malabar branch Dr.Renjith Menon and Dr.Indhu B Nair participated. Around 120 students inmates were examined.

13, Tenth CDE of IDA Malabar Branch (13/08/2018)

Tenth CDE of IDA Malabar branch was conducted on 13/08/2018 at Hotel Maharani. Raising Awareness on Resin was the topic and Dr.Yohan Chakko was the faculty. 100 members participated.

14. Dental Checkup Camp & Awareness Class (13/08/2018)

IDA Malabar branch conducted dental checkup camp, awareness class and distribution of dental health kit at Ramanatukara on 13/08/2018. On behalf of IDA Malabar branch Dr.Indhu Sajeev, Dr.Ayisha Hussna, Dr.Rajeesh AK, Dr.Saven and Dr.Umith participated. Around 80 patients were examined.

15, Participation in State Executive Meeting and Release of Milan 19 Brochure (13/08/2018)

4th State executive meeting of IDA Kerala State was held on Mahe, almost all state executive members of IDA Malabar branch participated. Brochure of our Milan 19 was released at the venue. Also Milan registration team was present at Kedda.

16, Flag Hoisting at IDA Hall (15/08/2018)

17, IDA Malabar Branch Relief Activity Phase I

IDA Malabar branch donated a truck of Rice, Aatta, Tooth paste, brushes and undergarments for men and women and dress for kids as a first phase of our reach out to flood affected brothers and sisters in Kerala.

18, Contribution towards IDA DISASTER RELIEF FUND (03/09/2018)

As a second phase of relief activity IDA Malabar branch handed over a Cheque of Rs.1,25,000/- to IDA Kerala State towards Disaster Relief Fund. Dr.Mehul R Mahesh handed over the Cheque to Dr.Ciju Paulose (President IDA KSB) in the presence of Dr. Suresh Kumar (Hon. Secretary IDA KSB) and Dr.Abhilash (President Elect IDA KSB) during COC meeting held at IDA Hall.

19, Eleventh CDE of IDA Malabar Branch (23/09/2018)

11th CDE of IDA Malabar branch by Dr.Chris Chen was conducted on 23/09/2018 at hotel Maharani. The topic of cde was Successful Teeth Whitenning & Management of Flurosis. The programme was inaugurated by Dr. Anil Thunoli, State CDE chairman. 105 members participated.