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JOURNAL OF INDIAN DENTAL ASSOCIATION - KOCHI

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Journal of Indian Association of Kochi Branch (JIDAK) is the official scientific publication of Indian Dental Association, Kochi Branch. It is a peer-reviewed journal published quarterly in e-format as well as print format.

The journal invites manuscripts from dental and other allied health sciences. It publishes manuscripts under categories of Original Research, Review and Case Reports.

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FOREWORD

The field of dentistry is constantly evolving, driven by advancements in technology, research, and clinical practice. In this dynamic environment, it is crucial for dental professionals to stay abreast of the latest developments and innovations. The Journal of Indian Dental Association Kochi serves as a vital platform for fostering this ongoing discourse and exchange of ideas.

As we embark on yet another journey of academic excellence and knowledge dissemination, I extend my heartfelt gratitude to all the contributors, editors, and reviewers who have made this endeavour possible.

Through its comprehensive coverage of various aspects of dentistry, this journal aims to enrich the knowledge and skills of dental practitioners. Our dedicated team of editors and reviewers ensures that each article published in the journal upholds the highest standards of quality and relevance.

I am particularly proud of the contributions from our esteemed members and colleagues, whose expertise and insights continue to drive excellence in dental care. Their commitment to advancing the field of dentistry is truly commendable.

I extend my best wishes to the editorial team, authors, and readers of the JIDAK. May this journal serve as a beacon of knowledge and innovation in the field of dentistry for years to come.

Warm regards,

Dr Vinod Thamby
President
IDA, Kochi

Secretary's Message

Dear IDA Kochiite,

It is quite surprising to observe that despite being so well connected these days, genuine communication often takes a back seat in our relationships. We are constantly in touch with each other - at a pace that is sometimes baffling.

Somehow, I am compelled to ask. Have we really touched each other's lives meaningfully? The truth is certainly hard to run away from.

JIDAK is our voice on a stage called the World.To make some noise is your choice. This first edition is resplendent with pages of intellect, intent and information. While it connects us as a family, it serves to showcase us in many special ways.

It is a proud reflection of the depth that we carry in our fraternal bonding and the immense responsibility we choose to uphold as professionals.

I am reassured that you will encourage it as a platform to blend your views, mend your thoughts and send your words of worth, in the future.

My warmest wishes are reserved for the Editorial Board in bringing life to these pages, even as I urge you to take a few moments to relish the fruit of their earnest efforts.

Yours sincerely,

Dr Brijitha Manoj
Hon Secretary
IDA Kochi

Dear Friends

Greetings from the editorial desk...

It's with immense pleasure that I bring forth the first edition of the term. I really appreciate and thank the contributors and the office bearers and the media team who work tirelessly to make it happen. We have carefully selected the articles to enlighten the clinicians and academicians. May this enlighten and enrich the audience.

Dr Joy Kurian
Chief Editor- JIDAK
IDA Kochi

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CASE REPORT

THE CAST POST – A CASE SERIES

ABSTRACT

Post and core restorations have been used as a treatment modality for structurallycompromised teeth. Different types of posts are available in the market like Fiber post, Ribbond post, Everstick post etc. However, custom made cast posts continue to demonstrate its efficiency. This article presents a self explanatory case series of different steps in cast post fabrication using pattern resin with six year follow up.

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INTRODUCTION

Post endodontic restoration is one of the major factors that determines longevity of an endodontically treated tooth. When more than three surfaces are lost, 60% strength of the root canal treated tooth reduces. To restore the strength it becomes mandatory to place a post. Different varieties of post are now available in the market like Fiber post, Ribbond post, Everstick post and so on.

Custom made posts have a long term clinical success rate. They adapt exactly to the shape of the root canals, minimal alterations to the canal anatomy and can be easily adapted to large irregularly shaped canal orifice which is one of the major advantages of cast post restorations. They remain passive inside the root canal. An adequate ferrule will ensure long term success. A Ferrule is the tooth structure that extends 1.5-2.0 mm in the occlusal direction from the projected ferrule margin, and will be encircled by the apical 1.5-2.0 mm of the intaglio surface of the crown.

Even though cast post restorations have disadvantages like being rigid, unesthetic and require more than two appointments, they are still widely used. This article aims to present a case series of post endodontic restorations using custom made cast post describing the clinical steps of cast post making through self explanatory photos.

Steps in cast post fabrication

First appointment:

Custom post core fabrication

Initial step in cast post fabrication is to prepare a post space in a root canal treated tooth using peeso reamers at least till size3, leaving almost 3mm-4mm gutta percha remaining at the apex. In this case series we have used pattern resin to fabricate cast posts. Pattern resin has advantages of reduced polymerization shrinkage, faster setting time, being more rigid and less irritating to the mouth than self cure acrylic resin(Case 1:c).

Next is to lubricate the canal using petroleum jelly. Then place a burnout post (Angelus Pinjet - Polycarbonate Burnout Posts) into the prepared root canal. Burn out post has the advantage ofleaving no residue in the investment ring when it is in the burn out furnace. Polymer and monomer of the autopolymersining resin are mixed and placed into the canal. Then a burnout post is placed into the canal to adapt the pattern resin to the canal pattern. It may take 5 to 10 seconds for the material to set. The post and the pattern resin is to be removed and kept back swiftly many times with in the canal while the pattern resin is setting to ensure that the pattern resin doesn't get locked into any undercuts within the canal. Core portion may be built over the post at the same time while the pattern resin is setting with in the canal (Case 2:d). It can also be done separately after the root portion has been set and its passive fit has been confirmed. This replica made in Pattern resin is transported to the lab in a container with water

GC Pattern Resin

Angelus Pinjet -
Polycarbonate burnout posts

to prevent resin shrinkage. Instructions to the lab are also sent along.

This method is easier than making an impression of the post space with elastomer or with inlay wax, hence administered in this case series.

Second appointment :

Custom cast post try in

When the metal post comes back from the lab it is tried in (Case 1:d,Case 2:e). Minor trimming may be required sometimes to fit the metal post into the canal. Passive fit of the metal post should be ensured to prevent fracture of root canal during use in future. The handle (Case 1:d) may be removed after try in(Case 1:e).

Post cementation

Conventional cements like GIC or resin cements can be used to cement the metal post (Case 1:f). Clearance of the core with the opposing tooth is also checked.

Ferrule/Crown Preparation

Core may be modified according to the crown and bridge principles and ferrule may be prepared. Sometimes gingivectomy with (Case 1:g, Case 1:h) or without (Case 2:g,Case 2:h) crown lengthening is required.

Impression

If crown lengthening has been done then a waiting period of three weeks is recommended before making impressions. Gingival retraction is done. Impression/intra oral digital scanning for the crown is made.

Crown Fixing

Once the crown comes back from the lab it's tried and fixed on the metal core using conventional cements making sure that the crown is relieved of lateral excursions (Case 1:j, Case 1:i).

Case Series

Case 1

Case 1.a

Case 1.b

Case 1.c

Case 1.d

Case 1.e

Case 1.f

Case 1.g

Case 1.h

Case 1.i

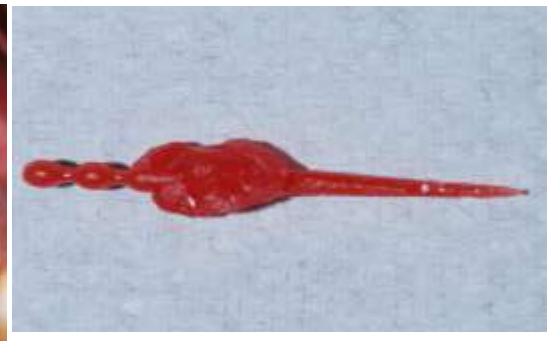
Case 1.j

Case 2

Case 2.a

Case 2.b

Case 2.c



Case 2.d

Case 2.e

Case 2.f

Case 2.g

Case 2.h

Case 2.i

Case 3

Case 3.a

Case 3.b

Case 3.c

Case 3.d

Case 3.e

Conclusion

Restoration of endodontically treated teeth is a challenging procedure. The choice of using cast post or prefabricated post depends on the remaining tooth structure present and canal configuration. When a large amount of tooth structure is lost, cast post has always been a lifesaver remedy. Even though cast post restorations are time consuming and may take multiple appointments it is helpful in providing long term success.

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MANAGEMENT OF ENDODONTICALLY TREATED MAXILLARY MOLAR ROOT FRACTURE - A CASE REPORT

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ABSTRACT

Root fracture can occur in teeth in horizontal , vertical or oblique patterns. Other than as a result of trauma , horizontal root fractures are rare in the absence of previous endodontic treatment. In the early stages , root fractures might not show any specific signs or symptoms and in such cases diagnosis only becomes possible after the patient develops secondary complications. Various factors determine the predictability and long term survival of treated teeth and therefore, accurate case selection for carrying out specific therapies become invincible. Root resection is a surgical procedure by which one or more of the roots of a multirooted tooth are removed at the level of furcation, whilst the crown and remaining roots are left in function.

The following case report discusses a 36 year old female patient, diagnosed radiographically with oblique fracture in relation to the mesio-buccal root of 26. Root resection procedure of the fractured root was carried out under local anaesthesia, by access through reflecting mucoperiosteal flap. A thin plate of bone overlying the media-buccal root was removed using a rotary cutting carbide round bur. After resecting the fractured root section using a long tapered Diamond Point , the section was disengaged and socket was thoroughly curetted and irrigated with saline . Patient received permanent metal ceramic crown in relation to 26, one month following surgical healing. 6 months post operative revealed satisfactory bone fill. This case report shows satisfactory results in short term follow up period. Periodontal supportive care should be meticulously carried out to ensure long term functional maintenance of resected teeth .

Keywords: Root fracture, root resection, overhanging restoration, sinus tract, radiographic fracture line, furcation involvement, non-regenerative treatment, bone fill.

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INTRODUCTION

Root fractures may be horizontal, vertical or oblique in pattern. Horizontal root fracture is usually characterized by a fracture line perpendicular to the long axis of the root of a tooth. Horizontal or oblique root fractures usually occur in the anterior teeth of young adults because of traumatic injury. Other than as a result of trauma, horizontal root fractures are rare in the absence of previous endodontic treatment.[1] A number of contributing factors have been implicated in root fractures, including traumatic injury, iatrogenic dental procedures (excessive compaction forces during root filling) and trauma from occlusion.[2]

Besides exogenous traumatic injury, understanding of the causes of horizontal /oblique root fracture is unclear. Yeh suggested that root fractures might be related to special dietary or chewing habits.[3] On the contrary, Bader et al suggested that patient behaviors such as chewing hard food or clenching teeth, were not major risk indicators for posterior tooth fracture.[4]

Accurate diagnosis of root fractures is usually accomplished by detailed clinical and radiographic examinations. However in the early stages, root fractures might not show any specific signs and symptoms, making diagnosis difficult. Diagnosis of such cases, thus might only become possible when the patient develop secondary complications. Today, a number of treatment modalities are available for salvaging teeth with root fractures. However, various factors determine the predictability as well as long-term survival of the treated teeth. Thus, accurate case selection for carrying out certain specific therapies become invincible.[5]

Root resection is the surgical procedure by which one or more of the roots of a multirooted tooth are removed at the level of the furcation whilst the crown and remaining roots are left in function.[6] The procedure of root resection was first introduced by Farrar in 1884 .[7]

The indications for root resection include:

1. Advanced periodontitis affecting only one root of a multirooted tooth
2. Cervical enamel projections
3. Inoperable root canals of endodontically treated teeth
4. Unfavourable root proximities
5. Sub-alveolar root fractures
6. Advanced caries extending to or beyond the alveolar crest
7. Developmental grooves
8. Iatrogenic damage

Contraindications :

1. Poor oral hygiene
2. Fused roots
3. Unfavourable tissue architecture
4. Retained roots endodontically untreatable

Treatment planning for root resection encompasses a multidisciplinary approach that includes periodontic, endodontic, and restorative considerations for the tooth being treated. The following case report describes a conservative approach towards management of maxillary molar with root fracture of mesiobuccal root, comprising of root resection and prosthetic rehabilitation.

CASE REPORT

A 36 year old female patient reported to the Department of Periodontology, with the chief complaint of pain in relation to upper back left tooth since 1 month. Pain aggravated on chewing and was relieved on having pain killers. Patient reported history of root canal treatment with respect to upper back left tooth 1 year back, with no permanent crown placement. Patient also complained of food lodgement in the upper back left region since 6 months. Patient reported history of localized swelling in relation to the upper back left tooth since 2 months , with intermittent pain and pus discharge for which she received symptomatic treatment from a private clinic.

On clinical examination, a mesio-occlusal amalgam restoration with mesial over-hanging was observed in relation to 26. A 5 mm periodontal pocket with 2mm recession was seen with respect to the buccal aspect of 26. There was presence of a localized swelling of 2 mm diameter with regressed sinus opening

Figure 1 – Draining sinus

Figure 2 – Pre-operative radiograph

with respect to buccal gingival margin of 26, which was also tender to vertical percussion . (Figure 1)

Radiographically, there was an oblique radiolucent line extending from the cervical one third to the middle one third of the mesio-buccal root of 26. There was widening of periodontal ligament space in relation to the same root was also observed.(Figure 2)

Clinical and radiographic findings indicated oblique fracture in relation to the mesio-buccal root of 26 and therefore, root resection of the same root was planned as a part of conservative periodontal therapy. Patient education and motivation was carried out followed by full mouth scaling and root planing. The patient was prescribed 0.2% Chlorhexidine mouthwash[Guard-OR® mouthwash] and inter-interdental brush [STIM-Proxa interdental brush]. The patient was reviewed after 1 week for surgical phase.

Patient was administered local anaesthesia (2% Lignocaine hydrochloride; 1:80,000 Adrenaline) for posterior superior alveolar nerve block . Two vertical incisions were placed in relation to the mesio-buccal and disto-buccal line angle of 26, followed by a crevicular incision buccally with No.15 BP blade. (Figure 3) A muco-periosteal flap was reflected beyond the mucogingival junction, providing accessability to the apical extent of bone overlying the mesio-buccal root.(Figure 4) A rotary cutting carbide round bur was used to carefully remove the thin plate of bone overlying the mesio-buccal root till it's apical extent, under copious saline irrigation. (Figure 5)

Figure 3 – Horizontal and vertical Incisions

Figure 4 – Flap reflection

Figure 5- Oblique fracture line

Figure 6- Resection of fractured root

Figure 7- Resected root fragment

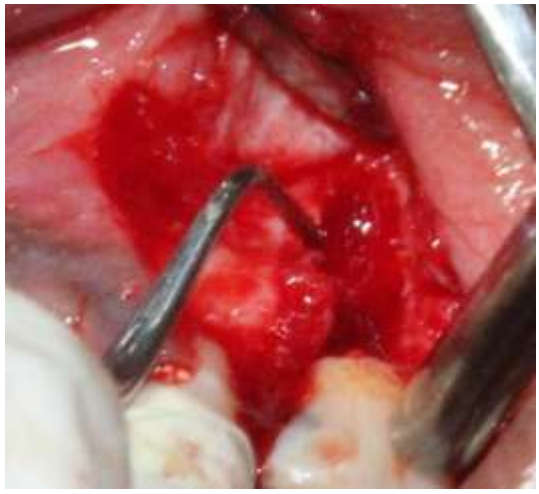

Figure 8 -Degranulation of the socket

Figure 9- Sutures placed

Figure 10 – Dressing placed

The fracture line was observed clinically extending obliquely from the level of furcation on the mesial side to the middle third of the root on the distal side.(Figure 6) A long tapered diamond point was used to resect the exposed mesio-buccal root at the level of furcation in horizontal direction. (Figures 7and 8) The resected fragment of root was disengaged from the socket using a periosteal elevator.(Figures 9 and 10) The socket was then thoroughly curetted to remove all granulation tissue and rough bony edges were filed and thoroughly irrigated. (Figures 11 and 12) The tooth crown was relieved of occlusion with diamond points. Flap was approximated using single interrupted sutures (3-0 Mersilk black braided non-resorbable suture) and periodontal dressing was placed. (Figures 13 and 14)

Patient was prescribed Amoxicillin 500mg (t.i.d) and Diclofenac sodium 50mg (s.o.s) for five days. Oral hygiene instructions were reinforced. Patient was recalled after 10 days

for suture removal. (Figure 15) Patient received permanent metal ceramic crown in relation to 26, one month post-surgically.(Figures 17 and 18) 6 month post-operative radiograph revealed satisfactory bone fill.(Figure 16)

DISCUSSION

Weine emphasized that a greater number of endodontically treated teeth are lost because of fracture due to improper restorations than of poor endodontic result. Comparing teeth with and without crowns demonstrated a significant difference in longevity. With permanent crown placement, the average time before extraction was found to be 87 months. Without a crown, the average prosthetic failure was found to occur at 50 months.[8] Kern et al stated that specimens prepared by a specific restorative technique fractured in a consistent predictable pattern.[9] In the current case, the failure to prosthetically restore the tooth after endodontic treatment as well the bulky overhanging amalgam MO restoration, would have caused undue occlusal forces to concentrate and fracture the mesio-buccal root.

Root fractures often present no specific signs and symptoms. After progression for several months or years, the symptoms and signs of root fractures may become more obvious with the development of pulpal and periodontal lesions. Finally, the fractured segments may separate from the rest of the tooth structure and be observed during periodontal or root canal treatment. In most cases, horizontal/oblique root fractures can be suspected when a combination of the following symptoms is observed: pain, local swelling, tooth mobility, periodontal pocket, radiographic fracture lines, sinus tract, abscess formation, sensitivity to percussion or palpation or detection of fracture lines over root surfaces with an explorer. As seen in the present case, the patient became symptomatic only after the development of abscess following the root fracture.[10]

The main goal of periodontal therapy is to eliminate the subgingival infection and through subsequent supragingival plaque

Figure 11 – 10 days post-operative

Figure 12- Permanent metal-ceramic crown placed

Figure 13- 6 post-operative radiograph

control measures, prevent recolonization of the subgingival area. The posterior segments of the dentition present particular problems, due to the complex morphology of the molars.[11] Hence, additional treatment means, varying from furcation plasty to root separation/resection, are commonly used in order to improve the accessibility for proper root debridement and to facilitate post-treatment plaque control.[12]

Treatment alternatives for teeth with horizontal/ oblique and vertical root fractures may depend upon the location and extent of the fracture, the length and bony support of the remaining roots. Additional factors include the extent and quality of remaining tooth structure, root morphology and distribution of occlusal forces for the final prosthesis.[13] The 4-year survival rate of maxillary molars after root amputation is reported to be 93% and long term survival of teeth after root amputation ranges from 87% to 95%.[14,15]

Svardstrom and Wennstrom conducted study in first and second molars to analyze the factors influencing non-regenerative treatment moadalities for molars as well as the outcome of those treatment decisions after 8-12 year follow up. They concluded that, other than the degree of furcation involvement, tooth mobility, tooth position and lack of occlusal anatagonism markedly influenced the decision with respect to non-regenerative therapy. Among the factors evaluated with respect to root resection, degree of furcation involvement strongly influenced the treatment decision. Factors like endodontic conditions, root and root canal anatomy and overall treatment strategy, has also shown to have a strong influence on the treatment decision for molars.[16]

When performing root resection of maxillary molars, care should be taken not to overload the furcal concavities and provide a favourable environment for maintenance of adequate oral hygiene. After resection, regular maintenance treatment, consisting of sub-gingival instrumentation, might be required periodically to prevent periodontal disease.[17]

CONCLUSION

Root resection therapy is still a valid treatment option for molars with furcation involvement as well for teeth free of periodontal disease. However, root resection to treat periodontal problems showed a better prognosis than root resection performed for non-periodontal purposes.[18] The present study shows satisfactory results in short-term follow up period. Periodontal problems around resected molars have a tendency to recur and should be maintained through meticulous supportive periodontal treatment. In addition, a careful prosthetic plan should be designed to avoid a fracture of resected molars related to biomechanic impairment.

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CASE REPORT

NOONAN SYNDROME : AN OVERVIEW

ABSTRACT

Noonan syndrome (NS) is a genetically inherited autosomal dominant disorder. Its a multiple anomaly syndrome almost mimicking Turner syndrome but a difference being formed without a chromosomal anomaly. Noonan syndrome has a high ratio of individuals affected with cardiovascular diseases in which congenital heart disease being the most common one with prevalence in both male and female children being a major difference from Turner syndrome. The affected children show down slanting palpebral fissures as a characteristic facial feature along with hypertelorism, short stature, posteriorly rotated ears, skeletal abnormalities and cognitive defects, some leading to certain cancers. Noonan syndrome on a dental point of view may be seen with various dental anomalies that include unerupted permanent teeth, retained deciduous teeth, supernumerary teeth etc. Malocclusion, dental cares, Giant cell lesion are also seen as secondary dental features.

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INTRODUCTION

Noonan Syndrome is a clinical diagnosis. The incidence of NS is reported to be between 1 in 1000 and 1 in 2500 live births. Establishing the diagnosis can be very difficult, especially in adulthood. There is a great variability in expression and the phenotype becomes less pronounced with increasing age.[1] This condition affects both males and females, and most cases are sporadic, but occasionally autosomal dominant inheritance occurs.[2] Oral findings in patients with NS include a high arched palate (55-100%), dental malocclusion (50-67%), articulation difficulties (72%), and micrognathia (33-43%).[3]

The clinical features and pathogenesis of Noonan syndrome is related to certain syndromes like, Noonan syndrome with multiple lentigines or LEOPARD syndrome, Neurofibromatosis type 1, cardiofacio cutaneous syndrome and Costello syndrome. Undescended testicles at birth are common in male patients (77%).[4]

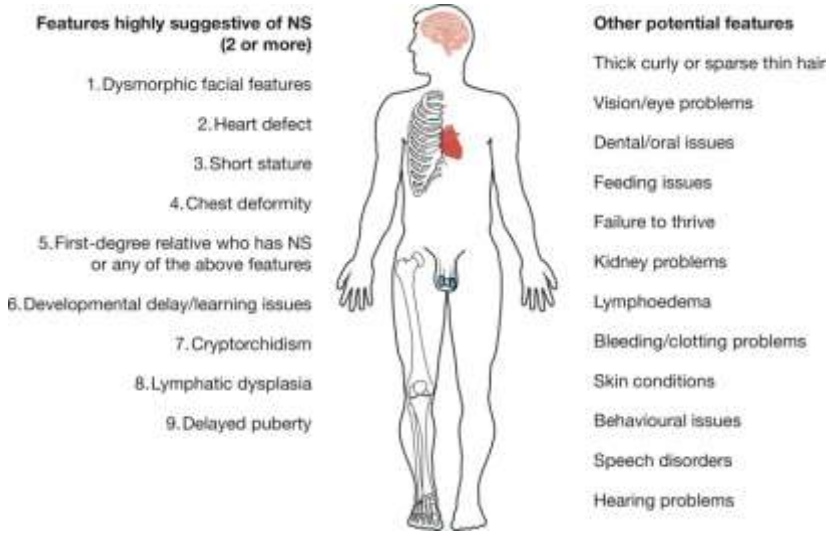
Approximately half the people with Noonan syndrome have mutations of the tyrosine-protein phosphatase non-receptor type 11 (PTPN11) gene, which is located on the long arm of chromosome 12.5 The gene encodes for an enzyme, Src homology region 2 domain-containing phosphatase-2 (SHP-2). SHP-2 is a protein tyrosine phosphatase involved in the signaling pathways of a variety of growth factors and cytokines.[6] Seminal findings include combinations of cardiac alterations (e.g., congenital heart defects, cardiomyo pathy), endocrine changes, and neoplasms already developing in childhood. NS patients are often of smaller body sizes than the average population.[7] Acute leukaemia and myelo proliferative disorders (MPD) have been described in some patients. The 218C>T mutation in the PTPN11 gene is associated with a predisposition to an MPD, which most often resolve spontaneously.[8]

DISCUSSION

Noonan syndrome is a heterogeneous but clinically recognisable, multiple congenital anomaly syndrome. Scoring systems can help the diagnostic process[9]. NS mainly occurs on a sporadic basis or in a pattern consistent with autosomal dominant inheritance, with a predominance of maternal transmission.[10]

There are a number of conditions with phenotypes strikingly similar to NS. The first to mention is Turner syndrome (45, X0), a well known chromosomal abnormality in girls. Then there are a group of distinct syndromes with partially overlapping phenotypes in which causative mutations are found in genes of the RAS-MAPK pathway. These include Cardio-Facio-Cutaneous (CFC) syndrome, Costello syndrome, Neurofibromatosis type 1 (NF1) and LEOPARD syndrome (multiple lengthiness, ECG conduction abnormalities, ocular hypertelorism, pulmonary stenosis, abnormal genitalia, retardation of growth and deafness.[11]

There is no cure for Noonan syndrome as it is a genetically inherited disease. Management of Noonan syndrome is targeted toward symptomatic improvement and supportive care. Interprofessional care is often needed; multiple organ systems are to be addressed. Hearing tests and ophthalmic exams are appropriate throughout childhood.[12]



Recommended approaches may include, Heart treatment, treating low growth rate, managing learning disabilities, Vision and hearing treatments, treatment for bleeding and bruising for fluid buildup, treatment for genital problems.

CONCLUSION

Individuals with Noonan syndrome often exhibit a wide range of health problems. Prognosis is majorly dependent and varies according to the clinical features of each individual. Proper knowledge among dental practitioners enables them to provide parents with adequate counselling and optimal management. Increased awareness among health care providers will lead to correct earlier diagnosis and provide patients and their families with optimal management and counselling. Therefore, they must be followed-up by a multidisciplinary team including dental care, in order to prevent problems that could become more complicated and untreatable.

Given the nature of the syndrome, most patients suffer from malnutrition, which is worsened by presence of intra-oral swelling and infections. Therefore, careful gingival, periodontal, and soft tissue assessments and frequent recalls in the hygiene or periodontal clinics are recommended in such patients. Long-term use of chlorhexidine toothpaste and other preparations may play a role in prevention of recurrence of intra-oral plasmacytosis. However, further studies are required to confirm this observation.

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NAVIGATING THE COMPLEXITY: A COMPREHENSIVE CASE REPORT ON PRIMARY PERIODONTAL SECONDARY ENDODONTIC LESION RESOLUTION AND MULTIDISCIPLINARY APPROACH

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ABSTRACT

The management of endodontic periodontal combined lesions poses a challenge for clinicians, given the complexity involved in accurately diagnosing and assessing prognosis. In addressing such cases, a comprehensive approach is essential, combining endodontic therapy with periodontal regenerative procedures. This case report illustrates the successful treatment of a combined lesion attributed to traumatic occlusion.

The initial step involved the application of conventional root canal therapy to address the endodontic aspect of the lesion. Subsequently, a multidisciplinary approach was employed, integrating periodontal therapy into the treatment plan. Three months post-operatively, a favourable outcome was observed, marked by a reduction in pocket depth. Radiographic examination further indicated evidence of bone regeneration, highlighting the success of the combined endodontic and periodontal intervention.

This case underscores the importance of a thorough and integrated approach in managing endodontic periodontal combined lesions. By addressing both endodontic and periodontal components, clinicians can optimize treatment outcomes and promote the regeneration of affected tissues.

Keywords: Endodontic periodontal lesion, Periodontal regenerative procedures, Root canal treatment.

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INTRODUCTION

The term 'endodontic-periodontal' (endo-perio) lesions is employed to characterize conditions that affect both the pulp and periodontal tissues, either independently or in a combined manner. For clinicians, diagnosing, managing, and predicting the prognosis of teeth with endo-perio lesions pose significant challenges. The intricacy of these lesions stems from the intimate developmental relationship between the pulp and periodontal tissues. Over the last decade, there has been a notable shift in the perspective and understanding of endo-perio lesions, marking a transformative period in how these conditions are approached in clinical practice. This case report describes diagnosis and treatment protocol for an endo-perio lesion of primary periodontal with secondary endodontic involvement.

CASE REPORT:

A 27-year-old male presented to the Department of Periodontology with a chief complaint of tooth mobility in the upper left posterior region over the last three months. The patient's medical history was unremarkable. Intraoral examination revealed Grade II mobility for tooth 24 and Grade I mobility for tooth 26. Pocket depths of 15mm with a clinical attachment loss (CAL) of 13 mm were noted for tooth 24, and 11mm pockets with a CAL of 9mm were observed for tooth 26. Additionally, Grade I furcation involvement was identified for tooth 26, and there was no evidence of caries.

Further diagnostic measures, including electric pulp testing and thermal testing, confirmed that tooth 24 was non-vital, while tooth 26 remained vital. Radiographic examination revealed significant bone loss extending almost to the apex of tooth 24 and noticeable bone loss around tooth 26. The combined clinical and radiographic findings pointed towards a Primary Periodontal Secondary Endodontic lesion affecting teeth 24, 25, and 26.

Although extraction of tooth 24 was advised, the patient expressed reluctance. Consequently, a treatment plan was devised involving root canal therapy (RCT) followed by periodontal surgery. Scaling and root planing (SRP) were performed, and the patient was recalled after one week for re-evaluation. Subsequently, RCT was carried out in two appointments. The endodontic procedure involved canal patency establishment, root canal cleaning and shaping using Protaper rotary files, and the application of intracanal medicament with calcium hydroxide. A temporary filling was placed, and occlusal reduction was performed to alleviate trauma from occlusion. After 10 days, the teeth were asymptomatic and were obturated, with permanent restoration using posterior composite resin.

Three months post-endodontic treatment, periodontal therapy was initiated. A pre-procedural mouth rinse was administered, and local anaesthesia was provided in the 23-27 region. A full-thickness flap was raised, and open flap debridement was conducted using Gracey curettes. Pre-suturing was performed, and Osteon-II bone graft was applied to tooth 24, while platelet-rich fibrin (PRF) was placed around tooth 26. Sutures were applied, and post-operative care included analgesics and antibiotics. Suture removal took place after one week, and the patient was scheduled for regular recalls at 1 and 3 months.

At the three-month follow-up, tooth 24 exhibited reduced mobility (grade I), 5mm probing depths, and no signs of inflammation. Radiographically, evidence of bone regeneration was observed. The patient returned for a one and half year follow-up, reporting satisfactory results with no mobility and a 5mm pocket depth for tooth 24. The collaborative endodontic and periodontal approach yielded successful outcomes in preserving the natural dentition and restoring periodontal health.

DISCUSSION:

Dental mortality is predominantly attributed to pulpal and periodontal issues, collectively responsible for over half of tooth losses. The intimate connection between dental pulp and periodontal tissues, both originating from ectomesenchymal cells (dental papilla for pulp

and dental follicle for periodontal ligament), is underscored by their separation via Hertwig's epithelial root sheath. Simring and Goldberg's 1964 work highlighted the interplay between periodontal and pulpal diseases, coining the term "endo-perio lesion" to denote conditions where inflammatory products affect both tissues.[1]

Three main pathways have been implicated in the development of periodontal-endodontic lesions, namely[2]:

1. Dentinal tubules

2. Lateral and accessory canals

3. Apical foramen

Bacterial infections are the primary culprits in the majority of pulpal and periodontal diseases. Anatomical pathways such as the apical foramen, lateral canals, accessory canals, dentinal tubules, and palato-gingival grooves, along with non-physiological routes like iatrogenic root canal perforations and vertical root fractures, facilitate cross-infection between the root canal and periodontal ligament. Periodontal disease progresses coronally to apically, while endodontic lesions propagate from apex to crown.

The infected pulp triggers an inflammatory response in the periodontal ligament, yet the impact of periodontal inflammation on pulpal tissue remains debated. Clinically, the pulp remains unaffected by periodontal disease unless accessory canals are exposed or the microvasculature of the apical foramen is compromised.

Simon et al.'s classification system include[3]

1- Primary Endodontic Diseases,

2- Primary Periodontal Diseases

3- Primary Endodontic Disease with Secondary Periodontal Involvement,

4- Primary Periodontal Disease with Secondary Endodontic Involvement, and

5- True Combined Disease.

This classification provides valuable guidance for informed clinical decision-making.

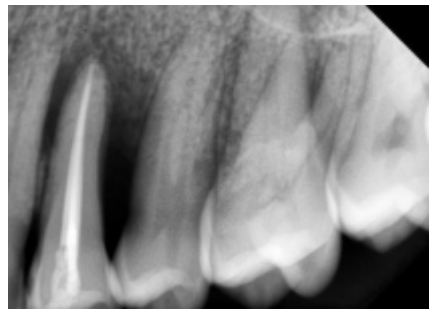
Critical factors influencing treatment decisions include pulp vitality and the type and extent of the periodontal defect. Although distinguishing between endodontic and periodontal diseases poses challenges, accurate diagnosis is crucial for tailored treatment approaches. The differential diagnosis, despite its complexity, plays a pivotal role in ensuring appropriate and effective interventions for optimal patient outcomes.

The consensus in dental literature emphasizes that addressing either endodontic or periodontic issues alone may not yield a satisfactory prognosis when both disease entities coexist.[4] Hiatt and Amen[5] argued that persistent periodontal disease may only resolve after definitive periodontal therapy is followed by successful endodontic treatment. Many authors agree that a combination of both therapies is crucial for the successful healing of combined lesions. The challenge lies in determining which lesion occurred first and which is causing or perpetuating the clinical problem. While there is a general agreement that pulpal disease could initiate or perpetuate periodontal disease, the opposite theory remains controversial. Johnson and Orban[6] demonstrated that periodontal disease persisting after unsuccessful endodontic therapy cleared up after successful endodontic treatment. Some studies have also shown the remission of severe periodontal bone loss after endodontic therapy alone. Simring and Goldberg suggested that endodontic therapy is indicated in the treatment of terminal periodontal disease unresponsive to periodontal therapy[1].

The impact of periodontal inflammation on the pulp remains a topic of controversy, with conflicting studies. Some propose that periodontal disease has no effect on the pulp until it involves the apex, while others suggest a degenerative influence, including increased calcifications, fibrosis, collagen resorption, and direct inflammatory effects. It appears that the pulp is not directly affected by periodontal disease until recession exposes an accessory canal to the oral environment[7]. Therefore, treatment of combined lesions should aim to eliminate both issues.

While the treatment and prognosis of primarily endodontic and primarily periodontal diseases are straight forward, predicting the prognosis

PRE-OP XRAY



PD- 15MM

INTRAOPERATIVE DEFECT

GRAFT AND PRF PLACED

SUTURES PLACED

PERIODONTAL PACK PLACED

POST OP PD- 5MM
1.5 YEARS

PRE-OP XRAY-
1.5 YEARS

of combined lesions is more challenging. Endodontic therapy is considered more predictable, and completing this therapy before periodontal procedures positively influences periodontal healing. True combined lesions are associated with the most guarded prognosis. In general, assuming adequate endodontic therapy, issues of endodontic origin tend to heal. However, in cases of combined diseases, the prognosis depends on the severity and extent of the periodontal lesion and the effectiveness of periodontal therapy[2]. In conclusion, understanding that in perio-endo lesions, endodontic treatment is more predictable, but its success depends on completing periodontal therapy. A comprehensive approach addressing both aspects of perio-endo lesions is essential for achieving successful long-term results.

Wang and Boyapati suggested PASS principle that is critical for bone regeneration: primary wound closure, angiogenesis as a blood supply and source of undifferentiated mesenchymal cells, space maintenance, and stability of the wound [8].

CONCLUSION

While conventional wisdom often suggests that endodontic treatment should precede periodontal management in cases of primary periodontal lesions with secondary endodontic involvement, it is commonly observed that endodontic therapy alone primarily addresses the endodontic component, with limited impact on the periodontal lesion. However, this case report emphasizes the significance of accurate diagnosis, elimination of etiological factors, and the adoption of a comprehensive, multidisciplinary treatment approach in restoring the functional status of teeth affected by endo-perio lesions.

In contrast to the conventional sequential approach, this case underscores the importance of a combined endodontic and periodontal strategy from the outset. By integrating both aspects of treatment concurrently, clinicians can address the complexities of primary periodontal and secondary endodontic involvement more effectively. This multidisciplinary approach ensures a holistic management plan, aiming not only to resolve the endodontic issues but also to comprehensively manage the periodontal component.

The successful outcome presented in this case report illustrates the potential benefits of a well-coordinated treatment strategy. By considering both endodontic and periodontal aspects simultaneously, clinicians can enhance the chances of restoring functional and structural integrity to teeth affected by endo-perio lesions. This reframing of the treatment paradigm emphasizes the need for a nuanced and integrated approach in managing these challenging dental cases.

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REVIEW ARTICLE

PREVALENCE AND PATTERNS OF THE FISSURED TONGUE AND ITS ASSOCIATION WITH AGE AND GENDER AMONG CUDDALORE DISTRICT POPULATION – A CROSS SECTIONAL SURVEY

ABSTRACT

Background: Tongue is best known as mouth mirror of oral and systemic health. Fissured tongue is a commonly encountered tongue disorder in dental practice. But there is a lack of data on different pattern, association of fissuring with demographic factors in Indian population.

Aim: The study attempts to assess the overall prevalence and pattern of fissured tongue and its association with age and gender.

Materials and methods: A cross sectional survey was conducted in a sample of 253 patients visiting the dental OPD of Cuddalore Government Dental College and Hospital. A study proforma comprised of information regarding the demographic data, associated symptoms and awareness about the lesion is used. Fissured tongue and its pattern was diagnosed by clinical examination. The data was analyzed using Chi-square and Fishers exact test.

Results: Out of 253 subjects, the prevalence rate of fissured tongue was 9.9%. The frequency of Central longitudinal pattern was 5.9%,Central transverse pattern was 1.2%, Diffuse pattern was 1.6% subjects, branching was 0.4% and Lateral longitudinal pattern was 0.8%.Fissured tongue was more common in middle aged adults(40-60 years) and men. There is no statistical significant association of lesion with age (p =0.224) and gender (p=0.35).

Conclusion: The most common prevalent pattern was central longitudinal fissure and the least common was branching fissuring (0.4%) and fissured tongue does not show an association with age and gender.

Keywords: Fissured Tongue, Tongue disorders, Prevalence, age and gender.

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INTRODUCTION

Building and augmenting research aptitude in public health are highly recommended by World Health Organization for effective control of disease and the socioeconomic development of any given country.[1] Epidemiological studies performed in different locale have substantiated importance of tongue lesions considerably.[2]

Fissured tongue (FT) is a commonly encountered tongue disorder in dental practice, it is also termed as scrotal tongue or lingua plicata often presents as groove oriented antero-posteriorly with multiple branch fissures extending laterally, which does not require treatment. The depth of the fissures ranges from 2 milli-meters up to 6 mm.[3] FT as a second complication is suggested to be associated with factors such as inheritance, malnutrition, infections such as candidiasis and diabetes, as well as developmental disorders such as Down syndrome and Melkersson Rosenthal syndrome.[4] It is an incidental finding diagnosed during the routine intraoral examination. Usually the fissured tongue is asymptomatic but glossitis and halitosis may develop due to development of the bacterial and fungal colonies into the accumulated debris of food particles in the deep fissures.[5]

Few studies reported the prevalence of fissured tongue in Indian population which was found to be in the range of 5.7 to 28.6%.[6,7] However extensive review of literature revealed dearth of studies on the prevalence of patterns of the fissure tongue in India. Hence the present study aimed to assess the overall prevalence and pattern of fissured tongue in a population of Cuddalore district. The association of lesion with age and gender was also appraised in the present study.

Materials and Methods

The present study is a descriptive cross sectional survey. Ethical clearance was obtained from Institutional review board of Rajah Muthiah Dental College and Hospital (RMDCH), Chidambaram. Written informed consent in the local language was obtained from the subjects who were willing to participate in the study. The sample size was estimated using G power statistics. A total of 260 subjects were included. The patients who visited the Department of Oral Medicine and Radiology, RMDCH from January 2020 till March 2020 were recruited by consecutive sampling method. Patients with restricted mouth opening and limited tongue protrusion were excluded from the study. The study questionnaire collected information regarding age, gender, associated symptoms and awareness on the lesion. The intra-examiner and inter examiner variability was assessed using Kappa statistics found to be 0.88 and 0.78 with respect to examination of pattern of lesion on tongue indicates high degree of conformity in observations.

Tongue was examined by all the investigators under artificial light with conventional mouth mirror, tweezer, and gauze piece. The universal precautionary measures were observed and the lesions were diagnosed according to WHO criteria suggested by Kramer.[8] Examination of tongue included the presence or absence of fissure and also regarding the pattern of fissured tongue. When fissures were present, depending on the pattern of fissure, they are classified into the following types based on the classification given by Sudharsan as branching pattern, central longitudinal pattern, central transverse pattern, diffuse pattern and lateral Longitudinal pattern.[9]

The collected data was organized, tabulated and subjected to statistical analyses using Statistical Package for Social Sciences software (SPSS version 17, USA). Chi square test and Fischer's test was employed. Significance level was set at $p \leq 0.05$.

Results

A total of 260 patients were recruited for the study. Of these, data analysis was done for 253 subjects due to missing data in the participant's demographic details. The prevalence of fissured tongue found to be 9.9%. Of these only 2.4 subjects aware about the fissured tongue. The most prevalent pattern of fissure was found to be central longitudinal fissuring, 15(5.9%) followed by diffuse fissuring, 4(1.6%), central transverse fissuring, 3(1.2%) and lateral longitudinal fissuring constitutes

2(0.8 %). The least prevalent pattern was branching pattern, 1(0.4%) is presented in table 1.

Table 2 shows the distribution of study subjects based on age and fissured tongue. Age was stratified into 4 groups as 0-20years, 21-40 years, 41-60 years and 61-80 years for data analysis. The presence of fissured tongue was seen in 4(16%) subjects in the age group of 0-20 years, 9(36%) subjects in the age group of 21-40 years, 11(44%) subjects in the age group of 41-60 years and 1(4%) subject in the age group of 61-80 years. The association between age and fissured tongue was not statistically significant (p=0.224). Almost 155 subjects were males and the remaining 97 were females. In gender wise distribution, the presence of fissured tongue was seen.

in 18 (72%) in males and 7 (28) in females. The association between age and fissured tongue was not statistically significant (p=0.35) is depicted in tables 2 and 3.

Discussion:

Tongue acts as an index marker in early diagnosis of some of the systemic diseases and performs numerous important functions such as phonation, deglutition, perception of sensations, such as, taste, thermal changes, pain and general sensations, and also has a role in the development of the jaws.[10,11]

The involvement of tongue in various disorders and diseases poses a diagnostic and therapeutic challenge to a general dental

Table 1: The distribution of study subjects based on patterns of fissured tongue

Patterns of fissured tongue	N (%)
Branching pattern	1 (0.4%)
Central Longitudinal pattern	15(5.9%)
Central Transverse pattern	3(1.2%)
Diffuse pattern	4(1.6%)
Lateral Longitudinal pattern	2(0.8%)

Table 2: The distribution of study subjects based on age groups and fissured tongue

Age groups	Fissured tongue		P Value
	Present N (%)	Absent N (%)	
0-20 years	4(16%)	37(16.3%)	0.224(NS)
21-40 years	9(36%)	120(529%)	
41-60 years	11(44%)	57(25.1%)	
61-80 years	1(4%)	13(5.7%)	

Fischer's test applied; NS-Not Significant

Table 3: The distribution of study subjects based on gender and fissured tongue

Gender	Fissured tongue		P Value
	Present N (%)	Absent N (%)	
Male	18(72%)	137(39.6%)	0.35(NS)
Female	7(28%)	90(60.4%)	

Chi-square test applied; NS-Not Significant

practitioner with limited knowledge about the same. Therefore, the role of oral medicine specialist is noteworthy in appropriate diagnosis of various tongue lesions, determining any underlying systemic disorder, detecting any malicious change at its earliest, referring for pertinent investigations, apt management, and most importantly education of the patient.[2] With this background in the mind, the cross sectional study was planned to assess the overall prevalence and pattern of the fissured tongue and its association with the age and gender among the patients in Cuddalore district. The study design being cross sectional allowed the massive collection of information from the participants and however there were few missing data which was managed by adequate coverage in the sample size. In the present study, consecutive sampling method is used which is considered as the best of non-probability methods at controlling the selection bias because it includes all available subjects.

Fissured is a common variant of the tongue and present with numerous fissure/grooves on the dorsum of the tongue. In our study, prevalence rate was found to be 9.9% whereas the prevalence rates varies at different parts of the world were reported. The frequency rate reported at studies conducted in Iraq was 43.7%, Sicilian population(was 3.2%, Hungarian population was 29.2% Libyan population was 8.4% Malaysian population 13.8% and Indians population was 28.6%.[12,13,14,15,16,7] The difference in the prevalence rates could be attributed to demographic factors, geographic factors, genetic factors,, sample size and sampling designs.

Evidence suggest that fissured tongue is a sign of aging process and this particularly due to hypo-salivation, which is one of the prime contributing factor. In the present study. The frequency of fissured tongue was highest in the age group between 41-60 years at 44% which is in close proximity to the study conducted by Jacob et al.[7] However it is less common in the age group of 61-80 years (4%) which is in contrast with the study conducted by Shindhe (19.6%)[17] This may be owed to less number of patients from the elderly age group reporting to the dental hospital. Fissured tongue is more prevalent in males (72%) compared to females (28%) which is in agreement with the studies conducted by Feil and Patil[18,19] However there is no meaningful relationship between gender and fissured tongue in the present study.

Fissured tongue patterns can be recognized based on position as medial and lateral types. The central longitudinal pattern with vertical fissures runs along the midline of the dorsal surface of the tongue, central transverse pattern with horizontal fissures runs along the midline of the dorsal surface of the tongue, lateral longitudinal pattern with vertical fissures running lateral to the midline, branching pattern with transverse fissures extending from the central longitudinal pattern and diffuse pattern with fissures diffusely distributed across the surface of the tongue.[9] With respect to the pattern of fissured tongue, central longitudinal pattern was most prevalent comparing to other patterns. This finding is in accordance with the studies conducted by Omal and Mathew.[20,21]

Few recommendations can be considered to improve the patient awareness about the variations in the tongue. The patients should be educated on self-examination of the tongue to observe the changes perceived by them as its give clue to identification of many systemic disease at the earliest and as well as they should be enforced to adopt the practice of cleaning the tongue using a soft tooth brush as their daily routine. The study has its own limitation. A very few parameters were associated with the fissured tongue. Hence further longitudinal studies should be conducted to assess the tongue with different risk factors in the future will help to extrapolate the results to the general population.

The present study concludes that overall prevalence rate was 9.9% and most common prevalent pattern was central longitudinal fissure (5.9%) and the least common was branching fissuring (0.4%) The is no significant association of fissured tongue a with age and gender

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