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RESEARCH ARTICLE

Non Surgical Retreatment in Endodontics- A Case Study.

***Dr.Vivian Flourish D'Costa[1], Dr. MadhuKeshavaBangera[2], Dr. Sunil Martin Stevens[3].**

1. BDS, MDS, Assistant Professor, Department of Conservative Dentistry and Endodontics, Yenepoya Dental College, Deralakatte
2. BDS, Post Graduate Diploma in Dental Materials, Assistant Professor, Department of Prosthodontics, A. J Institute of Dental Sciences, Mangalore.
3. BDS, Assistant Dentist at a Multi-specialty walk in Dental Clinic.

Manuscript Info *Abstract*

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Corresponding Author

Dr.Vivian Flourish D'Costa.

The current era is well refined and bears the basic knowledge regarding oral health conditions and its treatment modalities. The availability of resources on various media keeps people abreast with latest developments in health care sector. Hence a strong urge for preservation of teeth rather than its extraction prevails in the society. With the increasing number of dentists graduating every year from dental schools, it makes one strive for efficacious living. Catastrophes are inevitable in day to day practise of a general practitioner. Fractured restorations, dislodged crowns & root canal treatment failure, being the common ones encountered. But to tackle those failures is what makes a dentist rightly distinctive to their patients. Nonetheless a carious tooth involving the pulp could be retained by effective endodontic therapy without being extracted. In an attempt to save the treated teeth various interdisciplinary treatment modalities are perceived and the best of it is conveyed to the patient. The present case report describes one such scenario where the endodontically treated tooth required non-surgical endodontic retreatment due to inadequate obturation and loss of coronal seal.

Introduction:-

Preservation of teeth has constantly been of utmost concern to dental practitioners since ages. Also in this developing era patients are more conscious about available treatment plan and its outcome. Hence endodontic therapy has developed as a regular but arduous procedure in general dentistry.[1]

The approaches to evaluate the endodontic treatment outcome are typically based on radiographic evaluation only or amalgamation of radiographic and clinical assessment. [2-6] A high proportion of inappropriate root canal treatment rendered by general practitioners in different populations across the world has been gauged.[4,7-10] The reason for failures ranging anywhere from intricate tooth morphology to inadequate endodontic training sessions at dental schools.[11]

In the present day picture, what knocks at the door of the endodontists are cases of failed endodontic management due to various reasons and its' retreatment. The success of a nonsurgical root canal retreatment is governed by the removal of previous obturating material and /or necrotic tissue. A perceptive practitioner must deliberate a nonsurgical retreatment only if the succeeding concerns are met; the patients desire to retain the tooth, periodontally healthy teeth which can endure an endodontic retreatment.

The following case report deals with a similar scenario were the tooth requiring retreatment is periodontally sound but the reason for failure of root canal therapy was established as incompletely obturated canal with loss of coronal seal.

Case report:-

A 23 year old male patient was referred to the endodontist with a chief complaint of missing upper front teeth. He reported a fall 3 months ago; due to which his front teeth were lost. Clinical examination revealed a discoloured asymptomatic lateral incisor with a fractured lingual composite restoration. The patient promptly provided a history of root canal therapy attributed to the discoloured tooth which was performed one and a half month ago by a general practitioner. Preoperative radiograph in relation to #12 revealed incomplete obturation of the canal with irregular margin and loss of lamina dura. (Fig 1)

A diagnosis based on clinical signs i.e. loss of coronal seal with inadequate obturation was established and patient was convinced for a nonsurgical endodontic retreatment after explaining the protocol. Before commencement of a nonsurgical endodontic retreatment all other interdisciplinary treatment options were considered and effectively ruled out. With informed consent from the patient it was decided to carry on with the retreatment procedure with #12.

After administration of the local anaesthesia using 2% lidocaine with 1:80000 epinephrine (Indoco remedies, India), the tooth #12 was accessed under rubber dam isolation held in place with wedgets. Access was regained (wrt 12) with EndoAccess bur No.2 (Dentsply) in a crown-down fashion to enlarge the orifices. A solvent GP Cleanse (Deor) was used to soften the gutta-percha prior to usage of hand files. A No.15 K-file (Dentsply, Maileffer, USA) was used to bypass the gutta-percha in the canal; followed by which a No.15 H-file (Dentsply, Maileffer, USA) was used. As H-files are introduced in a quarter to half turn system; it locked the existing obturating material and was retrieved effectively. (Fig 2)

Working length was determined with an Electronic Apex Locator (PropexPixi, Dentsply) and established at 21mm. Step-back method of Biomechanical preparation was carried out and supplemented with alternate 3% sodium hypochlorite, hydrogen peroxide and saline irrigation.

Patency was achieved in the canal and was maintained with #35 K-file (Dentsply, Maillefer, USA).The master apical file being 35-K file; the corresponding No.35 guttapercha (DiaDent,Korea) cone was used as the Master Cone (Fig 3). Canals were obturated with Cold Lateral compaction after drying effectively and finally canal orifice sealed with Composite restoration (Tetric N-Ceram Bulk Fill, IvoclarVivadent). (Fig 4)

Discussion:-

Endodontic treatment necessitates proficient expertise and understanding, as well as a methodical knowledge of the root canal anatomy involving pulp and its variants.[12,13]Unsatisfactory understanding of the root canal makes endodontics further challenging by not forming an appropriate access that permits straight line approach to the canals.

Centered on methodical clinical and/or radiographic analysis of an individual case endodontic retreatment must be accomplished. An indication of endodontic retreatment could be apical periodontitis in a previously endodontically treated tooth. However, this could be confirmed with a radiograph which would reveal inadequate density of the obturation or unhealed periapical pathology or a missed canal/s. Other common reasons for retreatment being technical deficiencies like inappropriate filling material, root filling short of apex, loss of coronal material, inadequate obturation.[14]

In the present case scenario, retreatment was carried out based on poor obturation and loss of coronal seal. Various studies have shown the importance of coronal seal in the success of endodontic treatment.[15, 16, 17]Adequate obturation with adequate coronal seal has shown to produce better outcomes than those with inadequate obturation and/or inadequate coronal seal.[18]

Studies have proven that general practitioners and students were the reason for over half of the failed cases in endodontics.[19] Insufficient knowledge of endodontics at a graduate school level but over enthusiasm to practice endodontics without advanced training has led to high frequencies of failure.
Root canal treatment is rendered useless when treatment falls short of acceptable standards. The quality of obturation is very essential for better outcome of the procedure. Scanty density of obturating material may lead to failure of root canal treatment owing to microleakage along the root filling.[14,19,20] Khabbaz[21] emphasized on the need for the enhancement in the technical quality of obturation while Ericksen and Bjertness[22] stated apical periodontitis was greater in root canal treated teeth with meagre densities. However, the most frequently encountered inaccuracy after obturation is the existence of voids along the root canal filling.[7]

Several approaches have been recommended to remove the former incorrectly condensed obturating material. The utmost common technique being manual or rotary instrumentation, however, solvents comprising chloroform could be primarily used to soften the coronal gutta-percha prior to supplement of the manual or rotary instruments. Ultrasonics are the recent addition in this regard.[23, 24]

It is observed from the literature that use of hand files with or without solvent is a frequently used system. This case study also employs the usage of aforementioned to remove the previously obturated canal as a part of retreatment protocol.

However Khalilak et al have established that previously obturated material is easily surpassed with a ProTaper D retreatment series with chloroform in comparison to hand instrumentation.[25]

The objectives of endodontic retreatment procedures are to cleanse the root canal space of any previous material which was present, offset deficits that are pathologic or iatrogenic in source. Moreover, endodontic retreatment measures checks and corrects mechanical catastrophes, formerly overlooked canals or radicular subcrestal fractures. Prominently, counteractive techniques consents the clinicians to reshape the patented canals and three-dimensionally cleanse and obturate root canal systems.[26,27] When the guiding principles of case selection are valued and the state of the art facilities are utilized along with advanced knowledge of endodontics, the prospect of accomplishment of a nonsurgical endodontic retreatment increases by three fold.

Fig 1 – Preoperative Radiograph

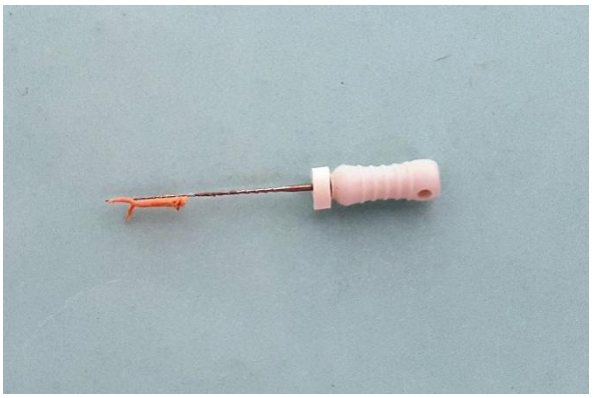

Fig 2 – GuttaperchaRetrieval

Fig 3 – Master Cone Selection

Fig 4 – Post Obturation Radiograph

Conclusion:-

Root canal therapy is a procedure which is carried out by every dentist regularly. In developing countries the need for specialty based practice has yet not established itself. At just a graduate level the knowledge regarding treatment like root canal therapy is minimal and basic. The advanced detailed procedures of endodontic treatment modalities are generally attributed to a post graduate curriculum.

This case study is a simple endodontic retreatment case, originally performed by a general practitioner, carried out by the traditional method of removing the gutta-percha and its subsequent replacement by an endodontist.

But it should also be remembered that every endodontically failed tooth is not docile to nonsurgical endodontic retreatment procedure. In such instances an interdisciplinary treatment modality must be ensured to oblige the condition better.

Every dentist must have a comprehensive knowledge of the root canal anatomy and its possible variations before commencing root canal treatment to minimize the failure rate and the need for subsequent endodontic retreatment. Specialty based practice would almost eliminate any such human error and also provide scope for inculcation of advanced technology and materials which would further minimize inaccuracies in the treatment.

Conflict of interest:-

The authors declare no conflict of interest

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