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Aesthetic Rehabilitation Of Mutilated Anterior Teeth With Post And Core: Case Report

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Abstract:
The successful treatment of teeth with substantial damage to the tooth structure not only depends on good endodontic treatment, but also by prompt prosthodontic reconstruction of the tooth after the completion of the same. The primary purpose of the post is to retain a core that can be used to retain a definitive prosthesis. A post and core helps to prevent fracture when the remaining tooth structure is very less. When a large amount of tooth structure is lost, a custom cast post and core is indicated. The following case reports depict the interdisciplinary approach to restore function and aesthetic of severely damaged treated teeth by means of full veneer crowns after custom cast post. Coordinated by prosthetic, endodontic treatments with careful consideration of patient's expectations and requirements were critical for a successful outcome & patient satisfaction.

Keywords: *Custom cast post & core, Endodontic treatment, Pattern resin, Restoration.*

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I. Introduction:

Excessive loss of dental hard tissues creates difficulties for the aesthetic outcome of subsequent prosthetic restorations. In such instances, an interdisciplinary approach is necessary to evaluate, diagnose & restore aesthetic problems using a combination of endodontic and prosthetic treatment. A large variety of materials, techniques to restore structurally compromised endodontically treated teeth are available[1]. Post and core in endodontically treated teeth have been utilized for more than a century.

Post is a dental material placed in the root of structurally insufficient tooth when additional retention is needed to retain the core & coronal restoration. The objective of the post and core is primarily to replace missing coronal tooth structure sufficiently to provide adequate retention & resistance for the crown that will eventually restore the function and the aesthetic of the tooth[2,3]. The use of Post & core is still an area of great debate within Dentistry. This debate ranges from dentist who only does cast post, to dentist who uses any of a variety of prefabrication system. Posts can be either prefabricated or custom based post. Prefabricated posts are best suited for circular canals while custom-cast posts and cores possess superior adaptation to all root canals. Custom cast post and core allow for a close adaptation of the post to post space preparation and should fit optimally. Cast posts and cores do not require an auxiliary retention such as pins to retain the core as in some prefabricated systems[4].

The indications for a post and core restoration are tooth with extensive crown loss, crown susceptible to cervical area fracture, grossly discolored tooth, loss of two proximal surfaces, shortened tooth with insufficient retention form with favorable periodontal and periapical condition[5]. The fit of the post with the canal walls depends on the configuration and size of the root canal[6]. Prefabricated metal, carbon fiber, ceramic, and glass fiber posts are available. These last two options provide esthetic alternatives to metal posts. They are used in conjunction with a plastic material such as composite resin, amalgam, or glass ionomer. Although one-piece post-crowns were once made, such prostheses are of historical interest only. Superior results can now be obtained with a two-step technique consisting of a post-and core foundation and a separate crown. Most often a metal post is used, which provides the necessary retention for the core. This replaces any lost coronal tooth structure of the tooth preparation. The shape of the residual coronal tooth structure, combined with the core, should result in an ideal shape for the preparation.

With the two-step approach of fabricating a separate crown over a cast post-and-core, achieving a satisfactory marginal fit is easier because the expansion rate of the two castings can be controlled individually[7]. A cast post and core needs to be slightly smaller than the canal to achieve optimal internal seating, whereas the crown needs to be slightly larger to achieve optimal seating. The use of custom- made post is usually accomplished in canals that have a non- circular cross section or extreme taper. Enlarging canals to a pre-formed post may lead to root weakening & perforation[8]. The quick fabrication and exact fitting is the aim of fixed prosthodontic clinicians, fabrication the resin pattern by the bead- brush technique may lose time and effort for the Dentist[9].

The two-step approach further permits fabrication of a replacement crown, if necessary, without the need for post removal. Finally, a different path of placement than the one selected for the post and core may be selected for the crown. This is often helpful when the tooth is restored to serve as an abutment for a fixed partial denture. In the case reports that follow, the use of custom cast posts to rehabilitate patients facing esthetic challenges.

II. Case Report:

A 20 years old male patient reported with chief complaint of grossly decayed anterior teeth in upper jaw. On intraoral examination 11, 12, 21, 22 were found to be grossly carious and destructed with minimal crown support. The teeth showed sound periodontal support. Other teeth showed cervical caries. Treatment planning was done after thorough clinical evaluation.

Procedure:

Caries excavation was done with the help of round carbide bur. Standardized access cavities were prepared in all molars using diamond and Endo Access burs. Apical patency was confirmed with a #10 K-file, and the working length was set 0.5 mm short of the apex to ensure effective cleaning while avoiding over-instrumentation.

Root canal instrumentation following a sequential technique, starting with #10 and #15 K files to prepare the glide path. Shaping was completed till 60 2% hand files. RC Help lubricant and 3% NaOCl irrigant were used throughout, along with saline to flush debris. A final rinse with 17% EDTA was used to remove the smear layer. Canals were then dried with sterile paper points ensuring a clean and moisture-free environment. Obturation was done with lateral condensation with gutta percha and zinc oxide sealer.

Post space preparation carried out with peeso reamers till size 3. Wax pattern taken from prepared post space and sent for casting. In the next appointment metal post were cemented and alginate impression was made.

Final crown cementation was done. All other carious teeth were restored with light cure composite restoration.

Figure 1: Preoperative intraoral photograph

Figure 2: After caries excavation

Figure 3: Refinement of access cavity preparation

Figure 4: Wax pattern of the canal

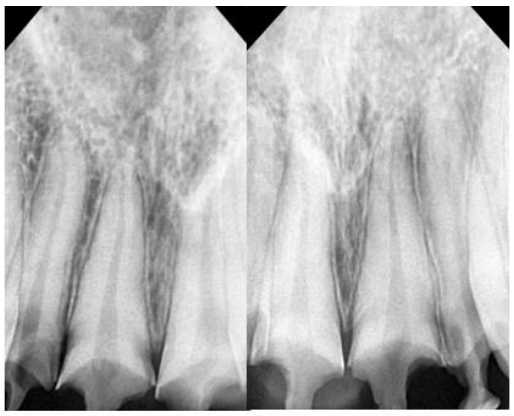

Figure 5: Preoperative radiograph

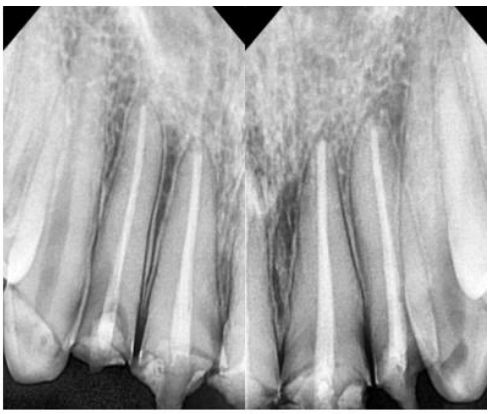

Figure 6: Postobturation radiograph

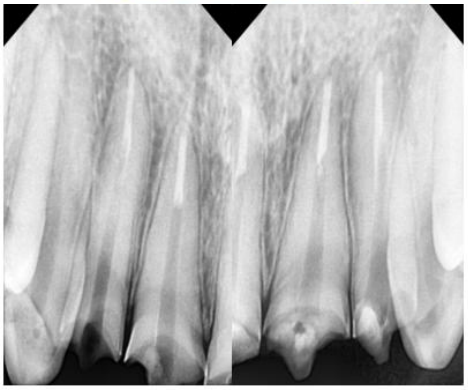

Figure 7: Post space preparation radiograph

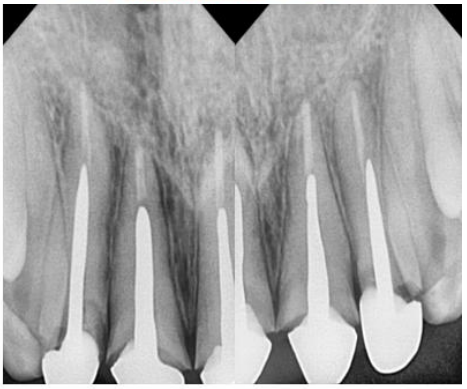

Figure 8: Metal post cementation

Figure 9: Post cementation radiograph

Figure 10: Crown cementation

III. Discussion

A post-and-core restoration is placed in a badly broken-down tooth to restore the bulk of the coronal portion of the tooth to facilitate the subsequent restoration of the tooth by means of an indirect extracoronal restoration. In this case series a custom-cast posts and cores were considered a state of the art for rebuilding endodontically treated teeth. Nowadays, prefabricated posts are becoming much more popular than custom-cast posts and cores[10]. But Cast posts and cores have its own advantages, they include preservation of the maximum tooth structure as the post is fabricated to fit the radicular space with a superior adaptation to the root canal[11]. As core is an inherent part of the post, it does not need to be retained by the post. The anti-rotational property is also an additional advantage[12]. However; it has a disadvantage of involving multiple-visit procedures. Prefabricated cylindrical posts, on the other hand, rely principally on the cement for retention. Disadvantages of this type of posts include decreased core retention to the post and the potential for rotation[13]. As treatment goals must be based upon a multitude of factors and are specific for each patient. The status of the root to be restored is considered to be critical[14]. A brief review of the major concerns in radicular anatomy before restoring an endodontically treated tooth is indicated if a post is to be used. The post preparation should minimally alter the internal anatomy of the root canal. It is essential to leave adequate dentine for support and distribution of post stresses. The above technique helps in achieving the internal reinforcement by posts to the residual root that provides retention and adds stability to the prosthesis.

IV. Conclusion:

The number of endodontic procedures has increased steadily in the past decades with highly predictable results. Therefore, restoration of teeth after endodontic treatment is becoming an integral part of the restorative practice in Dentistry. The treatment described in the case reports is simple and effective also represents a promising alternative for rehabilitation of grossly destructed of fractured teeth. This technique of custom made post and core has shown promising results has presented.

References:

[1] J.R. Pereira, Et Al. Influence Of Intraradicular Post And Crown Ferrule On The Fracture Strength Of Endodontically Treated Teeth. Braz Dent J, 2009; 20: 297–302.
[2] M. Naumann, S. Kiessling, R. Seemann. Treatment Concepts For Restoration Of Endodontically Treated Teeth: A Nationwide Survey Of Dentists In Germany. J Prosthet Dent, 2006 Nov; 96: 332–38.
[3] A.S. Fernandes, G.S. Dessai. Factors Affecting The Fracture Resistance Of Post-Core Reconstructed Teeth: A Review. Int J Prosthodont, 2001 Jul–Aug; 14: 355–63.
[4] Brandal JL, Nicholls JI, Harrington GW. Acomparison Of Three Restorative Techniques For Endodontically Treated Anterior Teeth. J Prosthet Dent. 1987; 58: 1615.
[5] Chadwick J, Gonzales A, Mclean C, Naghavi A, Rosati S, Yau S. Restoration Of Endodontically Treated Teeth: An Evidence Based Literature Review. University Of Toronto, Faculty Of Dentistry-Community, Dentistry 2008; 1–21.
[6] Fernands AS, Shetty S, Coutinho I. Factors Determining Post Selection: A Literature Review. J Prosthet Dent 2003; 90: 556-62.
[7] Velmuruqan N, Parameswaram A. Custom Made Resin Post And Core. Oper Dent 2004 Jan-Feb; 29: 12-4.
[8] Awad MA, Abdulghaffar HS. Custom Made Post & Core Part I: Technique To Fabricate Direct Custom Made Post With Resin Pattern. J Dent Health Oral Disorder Ther. 2014: 1; 00013.
[9] Rosenstiel SF, Land MF, Fujimoto J. Contemporary Fixed Prosthodontics. 2006: Ed 4; 340-65.
[10] Christensen, G.J.: Posts: Necessary Or Unnecessary? J.Am. Dent. Assoc., 127: 1522, 1996.
[11] Goerig, A.C. And Mueninghoff, L.A. Management Of The Endodontically Treated I. Oth. Part I: Concept For Restorativedesigns. J. Prosthet. Dent., 49: 340, 1983.
[12] Silvers, I.E. And Johnson, W.T.: Restoration Of Endodontically Treated Teeth. Dent. Clin. North Am., 36: 631, 1992.
[13] Christensen, G.J. And Christensen, R.P.: Product Use Survey. Clinical Research Associates Newsletter, 1995; 19: 3,
[14] Guttmann, J.L.: The Dentin-Root Complex: Anatomic And Biologic Considerations In Restoring Endodontically Treated Teeth. J. Prosthet. Dent. 1992; 67: 458.