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Case Report

CREATION OF AN ALLURING SMILE BY ESTHETIC CORRECTION OF MALALIGNED MAXILLARY INCISORS: A CASE REPORT

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ABSTRACT

A 20 year old male patient reported with fractured and discolored maxillary central incisors with no pain, sensitivity or swelling. During access opening a cervical perforation occurred which was repaired using ProRoot MTA after obturation. The treatment consisted of endodontic treatment and correction of mal-alignment with glass fibre post, palatal composite core built up and porcelain fused to metal crowns.

Key Words:

Smile Design, Esthetic, Cosmetic, Fibre
Post, Composite Core, Crown, Fracture,
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INTRODUCTION

Oxford's dictionary has defined aesthetic/esthetic as 'concerned with beauty or the appreciation of beauty' and also, 'a set of principles of good taste and the appreciation of beauty.'¹ Sturdevant has stated that, 'Operative dentistry is the art and science of the diagnosis, treatment, and prognosis of defects of teeth that do not require full coverage restorations for correction. Such treatment should result in the restoration of proper tooth form, function and esthetics while maintaining the physiologic integrity of the teeth in harmonious relationship with the adjacent hard and soft tissues, all of which should enhance the general health and welfare of the patient.'² This signifies the importance of esthetics in our treatment planning especially for anterior teeth. Trauma along with discoloration occurs often in anterior teeth. Endodontic treatment is advised

in such teeth because of pulp necrosis and / or other periapical pathosis making disinfection, obturation and coronal seal a necessity.³ In minimal tooth loss, indirect crowns are not recommended⁴ but if the teeth have to be restored esthetically then tooth preparation has to be modified to attempt to achieve an ideal alignment with placement of indirect crowns and / or veneers.⁵ Use of esthetic posts, for example, glass fibre posts along with composite resins as core materials provide resistance to corrosion and easier removal than metal posts in the advent of retreatment or fracture.⁶

Case Report

A 20 year old male patient reported to the Department of Conservative Dentistry and Endodontics at Swami Devi Dyal Hospital and Dental College, Haryana, with the chief complaint of fracture and blackish discoloration of upper front teeth seven

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years before. There was no history of pain, sensitivity or swelling in the above mentioned tooth region. The clinical examination revealed increased overjet of maxillary incisors 11 21. Midline diastema was also noted. There was no tenderness upon vertical or horizontal percussion in 11 and 21 (Figure 1).



Figure 1 Clinical picture depicting midline diastema, discoloration in 11 and increased overjet of 11 & 21

The teeth did not respond to neural sensibility tests with ethyl chloride spray and heated guttapercha along with electric pulp tester suggestive of pulp necrosis. Pre-operative radiograph showed periapical changes suggestive of external root resorption in 21 (Figure 2).



Figure 2 Pre-operative Radiograph

The treatment plan consisted of endodontic treatment of 11,21 along with esthetic realignment using glass fibre post and composite core along with porcelain fused to metal crowns. Access opening was initiated using Dentsply Endo Access bur. Due to misjudgment of the long axis of 11, a cervical perforation occurred distopalatally (Figure 3). Further mechanical preparation was done using K-files and H-files (Mani), the master file being 60. Irrigation with saline, distilled water and 2% chlorhexidine (Dentochlor, Ammdent) was done. Calcium hydroxide dressing was placed for a period of ten days. Since there was no pus / blood discharge or swelling, the teeth were irrigated with ethylene-diamine-tetraacetic-acid solution before obturating with 2% guttapercha cones of 60 tip size (Sure-Endo) with accessory cones and zinc oxide eugenol as sealer.



Figure 3 Working length radiograph. Note distal cervical perforation in 11

After obturation, the perforation in 11 was repaired using ProRoot White Mineral Trioxide Aggregate (MTA) (Dentsply) (Figure 4), a wet cotton pellet was placed coronal to the MTA and the teeth were temporized using Orafil-G.



Figure 4 Radiograph depicting Obturation and repair of cervical perforation in 11 with ProRoot MTA

Alginate impressions of both arches were made for preparing dental stone casts to plan the buccal reduction and mesial build-up required which was simulated by modeling wax (Figure 5).



Figure 5 Preparation of Casts and Wax used for esthetic correction

The next day, shade matching was performed with referral to the intact 12 and 22 using Vita 3D shade guide. Post spaces

were prepared leaving 5mm and 6mm of guttapercha in 11 and 21 respectively. Then glass fibre post (Figure 6 & 7) was luted with glass ionomer cement (GC Fuji Type I).



Figure 6 Placement of glass fibre post in 11



Figure 7 Placement of glass fibre post in 21

Composite (Brilliant Coltene) was added to the palatal surface of the teeth. Crown preparation was done for porcelain fused to metal crowns by creating a shoulder margin (Figure 8) and the teeth were temporized.



Figure 8 Crown preparation changing the alignment of teeth

After two days, a medium bisque trial (Figure 9) was carried out by comparing the PFM crowns with the adjacent teeth using Vita 3D shade guide. Ultimately, after receiving the glazed porcelain fused to metal crowns (Figure 10 & 11), these indirect crowns were placed on 11 & 21 giving the patient an alluring smile.



Figure 9 Medium bisque trial of the porcelain fused to metal crowns in 11, 21



Figure 10 Placement of the glazed porcelain fused to metal crowns on 11 and 21



Figure 11 Post-operative radiograph

DISCUSSION

Although orthodontic correction could have been advised in the present case for the malalignment but esthetic correction with crowns offered an alternative and faster treatment plan which would could also rectify the discoloration of the tooth. Discolorations occur due to necrotic products of the pulp in traumatized teeth necessitating endodontic treatment to avoid further progression of the pulpal disease into periradicular tissues.³ For retention of maximal dentin, bleaching is a viable option but due to the cervical perforation in 11, there is always a possibility of leaching of peroxide and other agents causing resorption, which is a complication of the procedure.⁷The cervical perforation was repaired with ProRoot MTA due to its

biocompatibility, osteoinductivity and advantage of periodontal reattachment.^{8,9} According to Goldstein, the final case presentation in esthetic treatment planning consists of soft tooth colored wax / composite resin directly applied in the mouth and a waxed study model. In the present case, extensive tooth preparation was required, which is why a waxed study model assisted us for educating the patient in visualizing the treatment plan, similar to an architectural blueprint.⁵ With increased translucency and ease of placement in a single visit, glass fibre posts are frequently recommended in comparison to cast metal posts, as fibre posts have higher fracture resistance when placed in endodontically treated teeth.^{10,11} Even though resin based luting cements have higher pull out strength than glass ionomer based luting cements but it was found by Li XJ *et al* (2014) that after thermomechanical loading, the strength of Fuji I luting cement significantly increased as compared to self adhesive resin based luting agents.¹² After luting glass fibre posts, an immediate core build-up of composite was done. The crown preparation had a shoulder margin as porcelain is brittle.¹³ With the change in the alignment of the crown of the tooth, the root remaining intact, there could be increased compressive and tensile stresses on the cervical portion of the tooth, making it a less ideal treatment than orthodontics.¹⁴ Therefore, although the teeth appear esthetically pleasing but the functionality of the teeth is reduced in terms of occlusion, for which the patient has to be instructed to refrain from biting hard objects with re-aligned crown portions of teeth.

CONCLUSION

For esthetic and cosmetic correction, a thorough treatment plan is required which facilitates minimal damage to the natural tooth and corresponds to the patient's desires.

References

1. Dignen S. DK Illustrated Oxford Dictionary. Dorling Kindersley Pub.; 2003.
2. Heymann HO, Swift Jr EJ, Ritter AV. Sturdevant's Art & Science of Operative Dentistry-E-Book. Elsevier Health Sciences; 2014 Mar 12.
3. Trope M. Endodontic Considerations in Dental Trauma. In: Ingle JI, Bakland LK, Baumgartner JC, editors. Ingle's Endodontics. 6th ed. Delhi: CBS Publishers & Distributors; 2013. p. 1330-57.
4. Dietschi D, Bouillaguet S, Sadan A. Restoration of the endodontically treated tooth. In: Hargreaves KM, Cohen S, editors. Cohen's Pathways of the pulp. 10th ed. Missouri: Elsevier Mosby; 2011. p. 777-807.
5. Goldstein RE. Esthetics in Dentistry Volume 1 Principles, Communications and Treatment Methods. 2nded. Hamilton: B.C. Decker Inc.; 1998. Chapter 2, Esthetic treatment planning; p. 17-49.
6. Hegde MA, Sureshchandra B. Esthetic posts- An update. *Endodontology*. 2010; 22:100-7.
7. Rotstein I, Li Y. Tooth Discoloration and Bleaching. In: Ingle JI, Bakland LK, Baumgartner JC, editors. Ingle's Endodontics. 6th ed. Delhi: CBS Publishers & Distributors; 2013. p. 1383-99.
8. Parirokh M, Torabinejad M. Mineral trioxide aggregate: a comprehensive literature review-Part I: chemical, physical, and antibacterial properties. *J Endod*. 2010 Jan; 36(1):16-27.
9. Gandolfi MG, Iezzi G, Piattelli A, Prati C, Scarano A. Osteoinductive potential and bone-bonding ability of ProRoot MTA, MTA Plus and Biodentine in rabbit intramedullary model: Microchemical characterization and histological analysis. *Dental Materials*. 2017 May 31; 33(5):e221-38.
10. Fokkinga WA, Kreulen CM, Vallittu PK, Creugers NH. A structured analysis of in vitro failure loads and failure modes of fiber, metal, and ceramic post-and-core systems. *International Journal of Prosthodontics*. 2004 Jul 1; 17(4).
11. Giovani AR, Vansan LP, de Sousa Neto MD, Paulino SM. In vitro fracture resistance of glass-fiber and cast metal posts with different lengths. *J Prosthet Dent*. 2009 Mar; 101(3):183-8.
12. Li XJ, Zhao SJ, Niu LN, Tay FR, Jiao K, Gao Y, Chen JH. Effect of luting cement and thermomechanical loading on retention of glass fibre posts in root canals. *J Dent*. 2014 Jan; 42(1):75-83.
13. Rosenstiel SF, Land MF, Fujimoto J. Contemporary Fixed Prosthodontics-E-Book. Elsevier Health Sciences; 2015 Jul 28.
14. Gabel AB. The American textbook of operative dentistry. Lea & Febiger; 1947.

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