AESTHETIC REMODELLING OF FRACTURED TOOTH WITH SUPERNUMERARY NEIGHBOURS IN MIDST OF FLUOROSIS - A CASE REPORT

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INTRODUCTION

Supernumerary teeth can be defined as those teeth which are in excess when compared to the normal series.[1] The prevalence ranges from 0.1% to 3.8% in the permanent dentition, with a male to female ratio of 2:1.[2,3] Supernumeraries are classified according to the morphology and location.[1] They are responsible for complications like delayed eruption, rotation, crowding, displacement, root resorption etc.[1] This crowding and malalignment can be the probable site for fracture. For Treatment of supernumerary teeth Rotberg recommended removal as soon as it is discovered and ideally before the age of 5 years. Koch stated that immediate removal of supernumeraries is not necessary if no pathology is present.[4] These supernumerary teeth associated with maxillary central incisor possess a grave aesthetic problem. The fracture of front teeth is one of the routine presentations of traumatic injuries associated with supernumerary teeth. The treatment of a fractured tooth involving the pulp includes RCT and post placement followed by core build-up depending on the remaining tooth structure or by the extraction of the fractured tooth if it is not restorable.[5] This condition becomes graver when associated with fluorosis.

Dental fluorosis is a condition of enamel hypomineralization due to the effects of excessive fluoride on ameloblasts during enamel formation. In its mildest forms, enamel fluorosis appears as loss of marginal translucency, poorly demarcated opacities, faint white flecks, spots or striations. With increasing severity, white flecks or striations enlarge and may merge. The classical appearance of fluorosis is characterized by banding following the developmental lines of enamel and by substantial symmetry on homologous teeth. In mild fluorosis, bleaching and microabrasion have been recommended. In the moderate-to-severe fluorosis, bleaching with or without microabrasion, direct composite restorations or

combination of both methods can be used. In some instances, aesthetic veneers or crowns may be necessary for some patients.[6]

CASE REPORT

A 27-year-old male patient reported with a chief complaint of discoloured and fractured upper front tooth since 1-year due to road traffic accident and discoloration with the same for 4 months. Patient's medical history was non-contributory but the intraoral examination revealed Ellis class IV fracture involving enamel, dentin without pulp exposure and discoloration with 21 and Ellis class II fracture involving enamel and dentin with 22. He also presented 2 supplemental supernumerary incisors on the palatal side leading to the proclination of the concerned tooth. There was no tenderness to percussion and patient had angle's class I molar relation with proclined 21 and generalised fluorosis as per history given by the patient. Radiographic examination revealed periapical radiolucency with 21. Hence a diagnosis was formulated pulp necrosis with asymptomatic apical periodontitis. There are different treatment options available but the most conservative modality was chosen for the same. Extraction with supernumerary teeth, followed by endodontic treatment with intra-coronal bleaching and aesthetic composite build up with 21 and composite restoration with 22 were planned. The informed consent was obtained from the patient. Extraction of the two supernumerary teeth was done and endodontic treatment for 21 was initiated after 7 days. Cleaning and shaping was performed under rubber dam isolation using step-back technique. 3% sodium hypochlorite and 17% EDTA (Prime dental products) were used alternatively with 23 G needle. Calcium hydroxide (RC Cal- Prime dental products) was given as inter appointment medicament. After 14 days, the canal was thoroughly rinsed with sodium hypochlorite (Prime dental products) and saline in conjugation with ultrasonic agitation and single step-apexification was done with gray MTA (MTA Angelus). Backfill with gutta percha (Dia Dent) was done after 24 hours ending, below the level of CEJ. A seal of cresent shaped GIC (GC) barrier was placed and intra-coronal walking bleach technique was done using sodium perborate and 15% hydrogen peroxide. Two weeks post bleaching, when the shade of affected tooth became equal to adjacent tooth, shade selection was done by Vitapan classical shade guide and composite build up was done with nano-hybrid composite (Filtek Z350) with 3D layering technique using selective etching in the pulp chamber and total etching on the labial surface of 21 and was brought into the arch alignment. Class IV Composite restoration was also done with 22. White Color tints were used for characterization. Postoperative adjustment and initial finishing & polishing were done and patient was recalled after 24 hours for delayed polishing and postoperative instructions were given.

Fig.1 Pre-Operative Photograph & Radiograph

Fig 2. After Extraction of supernumerary teeth

Fig.3 Working length determination

Fig.4 MTA and Obturation

Fig.5 GIC Barrier

Fig 6. After Non-vital bleaching

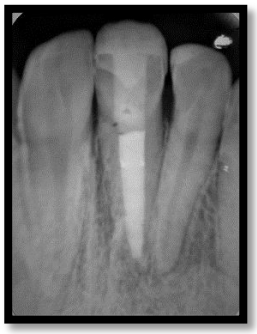

Fig.7 Post-operative Photograph & Radiograph

Discussion

Treatment of a fractured tooth in relation to the supernumerary teeth in a zone of aesthetic is a great challenge. Thorough clinical & radiological diagnosis suggested a non-vital central incisor to be treated endodontically & corrected aesthetically. Extraction of the supernumerary teeth was done prior to endodontic treatment in order to prevent food lodgement, caries, malocclusion & unaesthetic appearance and presence of supernumerary teeth made access opening of affected tooth difficult.[7] Endodontic treatment of the central incisor with multi-visit approach with calcium hydroxide dressing, as the lesion was a chronic one due to long standing history of trauma.[8] As the apical size was excessive due to the

resorptive lesion, decided to perform single step apexification using MTA plug, followed by backfill with gutta percha below the level of CEJ. It will allow immediate apical closure, promotes apical healing, strengthens the root dentin. It is a good alternative treatment option for these type of cases.[9] Non-vital bleaching was planned for improvement of the shade & GIC base over the obturation was applied in crescent shape to prevent progress of bleaching agent into the periradicular tissue. Lado et al suggested, base thickness of 2 mm is, but one stereomicroscopic study recommended at least 4 mm base thickness to prevent the percolation of bleaching agent.[10] After endodontic therapy, the final step was the aesthetic correction using composite with 3D layering technique but it was performed after 2 weeks because bleached dentin affect the bonding of composite.[11] Smith and Schumann provided a guideline for the restoration of the endodontically treated tooth, based on the remaining sound tooth structure. In this case, an indirect ceramic crown was deferred due to time and monetary concern and composite resin is the most recommended direct restorative material due to its conservative technique and preservation of healthy tooth structure.[12]

A thorough diagnosis, a meticulous treatment planning followed by a skilful operator are the key elements to provide satisfactory results in such cases. However, using modern advancement in material science and technology par excellent result can be achieved which should be eventually the goal in the future.

CONCLUSION

Composite build up with 3D layering technique for the fractured teeth in the presence of supernumerary teeth and fluorosis along with the use of color tints is an extremely efficient and minimally invasive technique for aesthetic re-establishment.

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