CASE REPORT

Subgingival tooth fracture: An esthetic treatment approach

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ABSTRACT:

This article describes a technique for the esthetic rehabilitation of a complicated crown root fracture. Here the sub gingival fractured root is extruded about 4mm by a combined orthodontic and periodontal treatment procedure, followed by a fiber post placement and ceramic crown which has given an excellent functional and esthetic result.

Key words:

Cervical root fractures, crown-root fractures, forced eruption

Conflict of Interest: None declared

Source of Support: Nil

INTRODUCTION

Sub gingival fracture of anterior tooth causes not only an esthetic and functional breakdown but also a psychological breakdown. Treatment of sub gingival fracture of anterior tooth often requires a multidisciplinary approach.[1]

Attempts to expose the fracture line by alveolar re- contouring and periodontal procedures may compromise the functional root length and esthetics.[2] Placing the margin of the restoration in the biological width frequently leads to chronic gingivitis, loss of the clinical attachment, pocket and gingival recession. Controlled orthodontic extrusion is considered as the easiest tooth movement to expose the fracture line, which has excellent result, good prognosis and low risk of relapse. The method is also called forced eruption, orthodontic eruption, vertical extrusion or assisted eruption. First reported by Heithersay and Ingber, controlled orthodontic extrusion is considered the easiest orthodontic tooth movement that can produce excellent results with a good prognosis and a low risk of relapse. Although highly advantageous, the technique is rarely used; the possible reasons may include the fear of first time approach, a false belief that the procedure is inherently complex, and little knowledge in this field and some emphasis on specialist orthodontic aspects involved.[3]

CASE REPORT

A 33 yrs old male patient reported to a private clinic with fractured teeth following an assault. Preliminary treatment and soft tissue injuries had been treated at a hospital nearby and was referred for further dental treatment. On clinical examination maxillary right and left central incisors (11 & 21) had Ellis type 3 fractures. (Fig.1). Intraoral

periapical (IOPA) radiograph showed multiple fracture of the crown portion of 11 extending sub gingivally. Root tip fracture of the same tooth was also noted. Re attachment of the fragments was ruled out because of the extensive nature of the fracture. Endodontic treatment of both tooth #11 & 21 was performed. On tooth #11 the obturation was extended till the root apex including the fractured tip. Gingivectomy was performed on tooth # 11 along with orthodontic extrusion with the intention of maintaining the biological width. Orthodontic forced eruption was performed by cementing a stainless steel wire hook in the canal of the tooth # 11. A 26 gauge stainless steel wire was splinted connecting teeth #12 & 21 with composite. Chain Elastic was used to extrude tooth # 11 with weekly change of elastics for three weeks (fig.3 & 4). On completion of eruption to the desired level of approx 4 mm (fig. 5) circumferential supra crestal fibrotomy was done on tooth#11and stabilized for a period of 2 months to prevent relapse. Later Fiber post of tooth # 11 and metal free ceramic e-max crowns were given on both 11 & 21(fig. 6 & 7). Immediate esthetics was satisfactory and 1 year review has been followed up with satisfactory results.

Fig. 1

Fig. 4

Fig. 2

Fig. 3

Fig. 5

Fig. 6

Fig. 7

Discussion:

Reattachment of the fractured fragment is considered the best treatment option in a fractured tooth. In this case re attachment was ruled out because there were multiple fragments in the fractured area. Gingivectomy for crown lengthening alone would not give sufficient fracture margin exposure therefore Orthodontic extrusion along with gingivectomy were performed. Forced orthodontic eruption is considered to be the best treatment option for exposing the fractured margins without compromising on the biological width. Care was taken not to compromise on the crown–root ratio of at least 1:1 for a good long-term prognosis.[4] In the present case, we also limited our forced eruption within the maximum limit of 4 mm to avoid relapse and to maintain proper crown–root ratio for a favorable prosthetic restoration.[5] Relapse of the extruded tooth is one of the main problems that is commonly seen in such cases. In this case report circumferential supra crestal fibrotomy procedure was followed to prevent the relapse of the extruded tooth and also a 2 months retentive period was given by stabilizing the tooth before the crowns were given. Simon et al. indicated that the orthodontic extrusion should become a routine procedure in dentistry. They also stressed that the orthodontically extruded tooth must be stabilized for 8-12 weeks prior to fabrication of a permanent post and core.[6]

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