Case Report

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SURGICAL EXTRUSION OF TEETH: CONSERVATIVE APPROACH FOR TOOTH REHABILITATION - A CASE REPORT

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ABSTRACT

Surgical extrusion of teeth is a one-step procedure, is simpler and less time-consuming than orthodontic extrusion, which requires multiple visits to place and adjust orthodontic appliances. 150 consecutive patients were selected for randomized clinical trial of age ranging from 18 years to 45 years. All the patients complained of broken tooth and wanted to get it rehabilitated. None of the extruded teeth, with 1:2 crown to root ratio, showed any mobility before and after crown cementation. As being cost effective, this technique had better patient compliance and a very good patient satisfaction.

KEYWORDS: Extrusion, Intrusive luxation, Crown Root Ratio (CRR)

INTRODUCTION

Intrusive luxation is uncommon and occurs in only 3% of all mechanical injuries to the permanent dentition[1]. A subgingival crown-root fracture presents the clinician with a difficult restorative problem, including reaching the fracture line, and is complicated by the need to maintain the periodontal tissues in good health. The optimal treatment for intruded permanent teeth has not been determined yet. There are three treatment approaches [2-7]:

1. Allowing the tooth to re-erupt spontaneously
2. Surgical repositioning and fixation immediately
3. Orthodontic repositioning.

Although it is suggested that orthodontic forces render a more biological way of extruding the tooth, surgical extrusion, a one-step procedure, is simpler and less time-consuming than orthodontic extrusion, which requires multiple visits to place and adjust orthodontic appliances[7].

CASE REPORT

In this article,150 consecutive patients were selected for randomized clinical trial of age ranging from 18 years to 45 years. All the patients complained of broken tooth and wanted to get it rehabilitated. Included teeth were all single rooted with long roots, Ellis class III fractured and with no periodontal problems. 44 out of 150 patients had their fractured tooth root canal treated(Figure I). The rest of the patients were advised to get root canal treatment done before extrusion. After local anaesthesia, the tooth was carefully extracted with periotomes (Figure II). All the periodontal fibres were separated till the teeth were grade III mobile in the socket. The extracted tooth was examined visually for suspected fracture, and was gently placed back into the socket immediately (Figure III).The minimum crown to root ratio was considered as 1:2 for good prognosis. The replanted tooth was placed in extruded position & stabilized with anchoring technique using 3-0 silk suture including incisal edge & interdental suturing was done with interrupted sutures for preserving the periodontal health of the tooth (Figure IV). Periodontal packing (COE-PAK; GC America INC, Alsip, IL, USA) was given for 10 days postoperatively. Postoperatively, the patient was advised to have soft diet and avoid biting with the affected tooth. An antibiotic (amoxicillin 500 mg every 8 hours

for 7 days) and chlorhexidine 0.2% rinse were prescribed to prevent infection. Ten days after extrusion, the suture and periodontal packing were removed. Mild mobility (degree I) was detected. Patients were followed in every 7 days for the decrease in mobility upto three months. When no mobility was detected and adequate bone was formed around the tooth with a good periodontal health, ceramic crown were placed on the extruded tooth acting as abutments. Mobility was checked clinically every month for the next three months of crown cementation. Radiographic analysis for any bone recession was also done by IOPA radiographs taken every month (Figure V). After a three month of no mobility, bone loss or gingival recession with the extruded tooth, the treatment was considered as successful.

RESULTS

All treated teeth were stabilized only by suturing and periodontal packing. Out of 150 patients, only 13 patients had grade II mobility after removal of the periodontal packing and sutures. The extruded tooth was endodontically stabilized with composite splint for one month. None of the extruded teeth, with 1:2 crown to root ratio, showed any mobility before and after crown cementation. As being cost effective, this technique had better patient compliance and a very good patient satisfaction.The study showed that combined surgical, endodontic and periodontal treatment that involved extrusion, stabilization, and root canal treatment was successful in the managing of intruded or fractured teeth.

Figure I - Preoperative

Figure II - Intraoperative

Figure III - Complete Removal Of Tooth

DISCUSSION

In a study by Kahnberg[8], surgical extrusion by marginal luxation and stabilization with interdental suturing and surgical dressing was described. Calliskan et al[9] found this technique to be successful in management of crown-root fracture. Clinical procedures directly affect the Crown Root Ratio (CRR). Abutment preparation for overdentures has the most dramatic effect on the ratio, reducing the crown to 1 to 2 mm above the free gingival margin which can improve the CRR from 1:1 to 1:2 or 1:3. The decrease in crown height shortens the corresponding lever arm length, and therefore, less lateral force is applied to the attachment apparatus, with an apparent reduction of the abutment horizontal mobility. In a longitudinal study of overdenture patients, Renner et al demonstrated that over a 4-year period, 50% of the roots remained immobile, 25% of the roots that were initially mobile

FIGURE IV - Reimplantation & Suturing

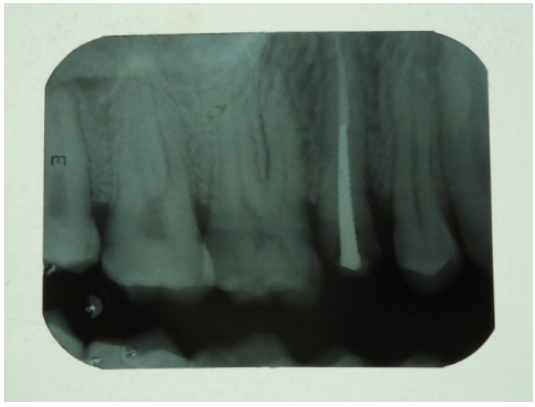

FIGURE V - Post Obturation IOPAR

exhibited no mobility, and 25% of the roots decreased in mobility. Abutment mobility was correlated to general periodontal health, as well as to the improved biomechanical CRR. Conversely, any increase in the vertical dimension of occlusion (VDO) increases the CRR[10]. A study has revealed that stabilization of the root with only interdental sutures, together with application of a surgical dressing, was found to be very effective and has a good prognosis[11]. Often, successful management of such cases requires a multidisciplinary combination of oral surgery, endodontic, periodontal, and prosthetic therapy. As a suggested clinical guideline for the evaluation of abutment teeth, the clinician should use the crown to-root ratio only with other multiple clinical parameters, such as abutment mobility, total alveolar bone support, root configuration, opposing occlusion, presence of a parafunctional habit, pulpal condition, presence of endodontic treatment, and the remaining tooth structure.

CONSENT

Written informed consent was acquired from the patient for publication of this case report and any accompanying images.

CONFLICT OF INTEREST & SOURCE OF FUNDING

The author declares that there is no source of funding and there is no conflict of interest among all authors.

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