Case Report

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Clinical Crown Lengthening by Surgical Extrusion of Tooth Using Periotome

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ABSTRACT

Background: In today's competitive society, the difference between success and failure in both our personal and professional lives often means a pleasing appearance. Due to current advancement in dentistry, people are reluctant to know how dentistry would help in enhancing their smiles. Esthetic or cosmetic dentistry endeavors to merge function and beauty with the individual needs of every patient. The patient expectations and awareness have increased recently to the point that sub optimal aesthetics are no longer an acceptable outcome. The present case report deals with root canal treatment of the fractured tooth, which was followed by atraumatic extrusion of the tooth using a periotome and stabilizing the tooth to a required level by temporary splinting, followed by final restoration.

Keywords: Crown lengthening, Surgical extrusion, Periotome, Gingival zenith.

INTRODUCTION

A short clinical crown occurs as a result of, deep subgingival caries, tooth fracture, iatrogenic factors may lead to poor retention form which allow for proper tooth preparation. Surgical crown lengthening procedure is done to increase the clinical crown length without violating the biologic width. In the present case report, the clinical and radiographic results of a surgical extrusion technique for clinical crown lengthening is discussed. Though restoration with implant after extraction of the tooth can also be done, but placement of implant in anterior aesthetic zone is challenging due to several factors like incisal edge position, arch form, gingival symmetry, lip line papilla height, occlusal relationship, emergence profile, overjet and overbite[5]. Surgical crown lengthening is a procedure which is done to increase the clinical crown length without violating the biologic width. Several techniques such as gingivectomy, apically repositioned flap with or without respective osseous surgery, and orthodontic forced eruption with or without fibrotomy have been proposed for clinical crown lengthening[1,2].

The selection of one technique over another depends on several patient related factors such as esthetics, clinical crown to root ratio, root proximity, root morphology, furcation location, individual tooth position, collective tooth position and ability to restore the teeth[3,4].

In the present case report, the clinical and radiographic results of a surgical extrusion technique for clinical crown lengthening was discussed, another reason for selection of this technique is the aesthetic requirements for maintaining the gingival margin(gingival zenith) after the crown lengthening procedure in a single anterior tooth[6].

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CASE REPORT

A male patient of age 27 years reported to the department of periodontics with a chief complaint of broken teeth in the upper left front teeth region. Intraoral examination revealed a fracture in the cervical third of #21 (Fig 1). Medical history of the patient revealed no systemic condition which could otherwise contraindicate the surgical procedure. Detailed clinical and radiographic evaluations were performed prior to the surgical procedure. Surgical extrusion is performed only when the extensive bone removal is anticipated. Following local anaesthesia (lignocaine 2% with 1:80,000 epinephrine), an intra-sulcular incision is given around the teeth. A periodontal probe was used to measure the distance between fractured tooth margin and surrounding alveolar bone to determine the amount of extrusion needed (Fig 3). A specialized instrument (periotome) was used to luxate the tooth. Careful luxation was done to avoid damage to the area of marginal bone and root apex. For this procedure the blade of Periotome was placed into the periodontal ligament (PDL) space. The Periotome was moved in the PDL space of the tooth in a "walking motion" to luxate the tooth without inducing surgical trauma. After careful luxation, the tooth was extruded to the desired position by using a anterior extraction forcep as a traumatically as possible, to protect the vital PDL. Stabilization of the tooth to its new position was done using a stainless steel wire and bonding it with composite resin. Removal of the temporary splint to evaluate the extrusion was done after 2 weeks. Permanent restoration was given 4 weeks after the surgical process.

DISCUSSION

The importance of gingiva in relation to anterior esthetics has been well documented[10,11] .surgical technique employing extrusion of the tooth followed by stabilizing it with the temporary splint resulted in an ideal gingival zenith form which on the other hand would not have predictable result after extensive osseous resective surgery and also there is a potential risk of gingival recession after removal of the bone[9]. The results of periodontal repair on transplanted or surgically extruded teeth usually shows slight marginal bone and apical root resorption[7]. Since, a epitome was used in this case

Fig 1: Pre operative.

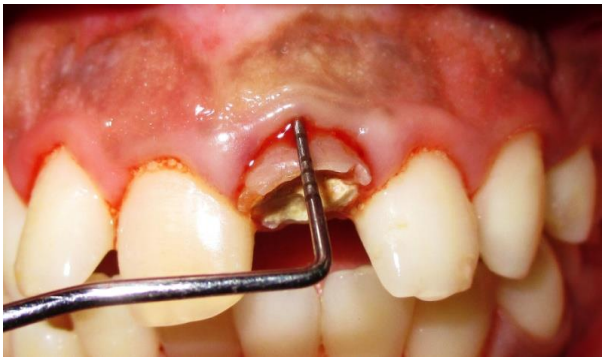

Fig 2: Pre operative measurement of available crown structure.

Fig 3: Determining the amount of extrusion needed.

Fig 4: Extrusion using epitome.

Fig 5: Stabilizing the tooth using extraction forceps.

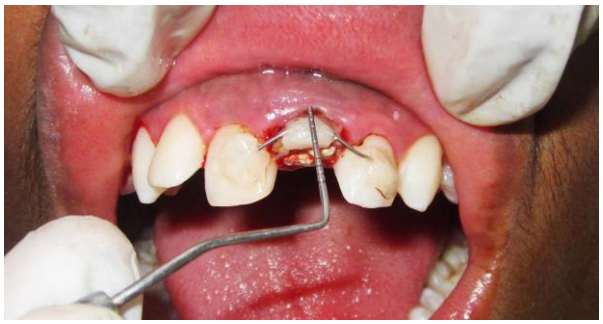

Fig 6: Temporary splinting using wire and composite.

Fig 7: Post operative after fixed prosthesis.

which is specially designed for atraumatic extraction and lunation, the root never left the socket during the surgical procedure thus minimizing the risk of damage to the periodontal ligament. No endodontic problem was encountered as the root canal therapy was performed before surgery. The tooth mobility was minimal after 4 weeks post operatively. The non rigid fixation in the form of temporary splint had a positive influence on the healing[8]. Therefore, the clinical findings which are presented in this case suggest that this technique offers several advantages over the conventional surgical approaches.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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