

CASE REPORT/CASO CLINICO

Surgical extrusion: A reliable technique for saving compromised teeth. A 5-years follow-up case report



Estrusione chirurgica: una tecnica predicibile per il recupero di denti compromessi. Un caso clinic con controllo a 5 anni

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KEYWORDS

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Biologic width.

Abstract

Aim: To present a long term follow up clinical case in which a compromised anterior tooth was saved by a surgical extrusion procedure.

Summary: Although different techniques have been suggested for clinical crown lengthening in the anterior zone, some of them have limitations in terms of aesthetics and procedural requirements. The current case report demonstrates how a simplified surgical extrusion procedure was successfully performed for saving a severely damaged anterior tooth; furthermore, it is possible to apply the technique described in this case using minimum and simple armamentarium like a scalpel, elevators, forceps and splinting flexible cord.

Key-learning points: Saving severely compromised anterior teeth is possible by applying surgical extrusion techniques when crown-root ratio allows it. Risk of root resorption or ankylosis is minimum.

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PAROLE CHIAVE

Frattura coronale;
Allungamento di corona
clinica;
Estrusione chirurgica;
Riposizionamento
chirurgico;
Ampiezza biologica.

Riassunto

Obiettivo: Presentare un caso clinico con controllo a 5 anni in cui un dente anteriore compromesso è stato recuperato con una procedura di estrusione chirurgica.

Riassunto: Sebbene siano state suggerite diverse tecniche per l'allungamento della corona clinica nella zona anteriore, alcune di esse presentano limitazioni in termini di estetica e competenza nelle procedure. Il presente case report dimostra come una procedura di estrusione chirurgica semplificata sia stata eseguita con successo per salvare un dente anteriore gravemente danneggiato. Va sottolineato che la tecnica descritta in questo caso può essere portata a termine utilizzando un armamentario minimo e molto semplice come un bisturi, leve, pinze e uno splintaggio flessibile.

Key learning points: E' possibile salvare elementi dentari gravemente compromessi applicando tecniche di estrusione chirurgica quando il rapporto corona-radice lo consente. Il rischio di riassorbimento della radice o anchilosi è minimo.

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Introduction

Nowadays that dental implants are popular options for replacing natural teeth, it is not always necessary to perform heroic efforts to save severely damaged teeth¹; however, retain patient's natural dental organs should be one of the main goals of dentists around the world.

Although different techniques have been suggested for clinical crown lengthening procedures to provide good conditions to restore severely damaged teeth, all of them have some limitations in aesthetic terms. In aesthetic zone, crown lengthening requires a more complex diagnostic and planning process, because, when choosing a surgical crown lengthening technique, special care should be taken or it could cause asymmetry of the gingival line.^{2,3}

A high percentage of traumatic injuries occur most frequently in the anterior zone, mostly in central and lateral maxillary incisors.^{4,5} When these injuries happen, sometimes is not possible to restore the affected tooth without additional dental procedures for obtaining adequate supra-gingival structure.

Different terminologies have been used for surgical extrusion: it is also known as intra-alveolar transplantation, intentional replantation and forceps eruption.⁶⁻⁸ A surgical tooth extrusion technique was described in 1978,⁹ while the first case report was published in 2002.¹⁰ Despite of its first description long time ago, this technique still remains rarely performed among practitioners.

Surgical extrusion is defined as the procedure in which the remaining tooth structure is repositioned at a more coronal/supra-gingival position in the same socket in which the tooth was located originally.^{8,11} The main principle is to place the affected tooth in a more coronal position for providing acceptable conditions to achieve the reestablishment of healthy supra-coronal tooth structure; this last point is important to be able to create a good restoration, that will maintain the biologic width healthy.^{1,3} Thus, this technique can be used successfully to treat severely damaged teeth, especially in the anterior esthetic zone.

A resume of the main steps involved in the technique described are: syndesmotomy, luxation of the tooth using periotomes and/or elevators, extrusion of the root with

forceps, immobilization of the root for two to three weeks in the new position using a semi-flexible splinting cord or interdental sutures, post placement and final restoration.^{1,3,6,7,12} The technique can be successfully applied with minimal chair side procedures, no needed of special surgical skills, good esthetics, low incidence of failure and easy acceptance from the patient.

Case series and reports are categorized as low evidence literature^{13,14} because causal relationships between intervention and outcome cannot be definitely established without a control group. Nevertheless, clinical reports can influence clinical decision making during dental clinical practice,¹³ as well as open interest in new techniques, clinical approaches and investigation lines. Therefore, the aim of this report is to show a long-term follow up of a clinical case in which a compromised anterior tooth was saved by a surgical extrusion procedure.

Report

In the present case report, a simplified surgical extrusion procedure is described where an upper lateral incisor with severely compromised structure was treated successfully.

A 37 years old female patient suffered a traumatism at the level of anterior–superior teeth. The patient arrived at the office with a fractured upper left central incisor. The tooth had a previous root canal treatment, a pre-fabricated metal post and a composite build-up (Fig. 1). After removing the post and the build-up material, it was evident the lack of supra-gingival sound tooth structure to perform a predictable and reliable long time lasting restoration (Fig. 2): ferrule effect was not possible to be obtained in such conditions.¹⁵ The next steps were to evaluate the radicular length and the width of remaining radicular and coronal walls and to consider the possible different treatment options to save the tooth. After a complete evaluation, it was decided to perform a surgical tooth extrusion to obtain a proper supra-gingival sound structure, thus offering to the patient a reliable long-term result.⁸

Clinical procedures were performed as follows: after disinfection of the affected area using a wet gauze with 2% chlorhexidine, syndesmotomy was made using a 15c scalpel and luxation of the tooth was achieved using a fine elevator

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