Decoronation of an Ankylosed tooth: A Case Report
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Abstract

Introduction: Following severe dental trauma, patients can experience ankylosis leading to possible infraocclusion and disruption of normal dentoalveolar development in growing individuals. Through a decoronation procedure, the ankylosed crown can be removed thus preserving bone and allowing for normal bone growth and development. In this case report, a decoronation procedure was performed on an ankylosed tooth. Methods: A 15-year-old patient with a history of severe facial trauma from a horse kick presented with ankylosis of tooth #10. A decoronation procedure was completed. Results: Following the procedure, healing was successful while maintaining alveolar ridge height and width. Conclusions: This case demonstrated decoronation as a viable treatment option for ankylosed teeth in developing individuals.

Case Report

A 15-year-old female presented with her mother 3 years after facial trauma from a horse kick. Due to the trauma, the patient subsequently underwent endodontic therapy on #10. At the follow-up, the patient reported a history of no more tooth movement. The patient’s orthodontist wanted #10 evaluated for ankylosis and resorption.

Medical History: Patient reports no medical conditions, medications or allergies.

Chief Complaint: “My orthodontist said my teeth are not moving.”

Teeth History: #10 Avulsion in June 2012 and NSRCT in November 2012.

Clinical Exam:
- Full fixed orthodontic appliance
- #10 peg lateral
- Percussion: sharp metallic sound
- Mobility: Class I (Fig. 1A)

Radiographic Exam: (Fig 1A)
- #8, 9, 10 canals obturated with good length, density and taper.
- #9 lamina dura/PDL space absent in apical third, irregular root border, decreased root width, normal surrounding bone trabeculation.
- #10 lamina dura/PDL space absent in the middle third of the root, irregular root border, decreased root width, normal surrounding bone trabeculation.

Diagnosis:
- #9 Replacement Resorption (Ankylosis)
- #10 Replacement Resorption (Ankylosis)
- Pulpal: Previously Treated, Periapical: Normal

Treatment Options: Nothing, extraction, or decoronation.

Decoronation Procedures:
- Gutta percha was removed and canal walls debrided. (Fig. 1B)
- Crown removed with a diamond bur. (Fig. 1C)
- Full mucoperiosteal envelope flap was reflected from #9-11.
- Decoronation followed by root reduction 2mm below the marginal bone with a diamond bur.
- DFDBA/Calcium sulfate graft placed within the canal and on theridge. (Fig. 1D)
- Flap repositioned and sutured. (Fig 2A-B)
- Post operative radiograph. (Fig 1D).
- Keflex 500mg. 21 tabs, tid

Follow-Up:
- Suture removal at 1 week.
- Post operative images at 4 months. (Fig. 2C-D)
- Re-assess for replacement resorption of other teeth.

Figure 1. (A) Preoperative radiograph showing replacement resorption of #10. (B) Removal of obturation material and debridement of canal walls. (C) Removal of coronal tooth structure. (D) Post operative radiograph with bone graft. (E) Recall at 4 months showing alveolar ridge height.

Figure 2. (A) Post operative image with sutures. (B) Post operative image showing sutures. (C-D) Post operative picture all 4 months.

Background

Dental injuries have been drastically increasing over the past few decades, and according to literature the prevalence has wavered between 4% and 33% dependent upon gender and age (1). When these injuries cause significant damage to the periodontal ligament, dentoalveolar ankylosis is often a negative outcome. Ankylosis occurs through the mechanism of replacement resorption. This happens by competitive healing where the defect is filled in with alveolar bone before the PDL can regenerate (2). When the defect is slight, the bony bridge can be removed through osteoclastic activity from normal functioning. Unfortunately when the site is greater, continual resorption will result from intrinsic bone remodeling which occurs faster in developing children when compared to adolescents. If this process does occur during stages of craniofacial growth, major concerning esthetic and functional consequences can result such as infra positioning, tilting of adjacent teeth, and lack of vertical development of alveolar bone (1).

Various approaches of treatment for dentoalveolar ankylosis are possible including a build-up on the retained ankylosed tooth, surgical repositioning, bone distraction through dento-osseous osteotomy of the site, autotransplantation, decoronation, extraction, or simply monitoring. Since an ankylosed tooth is immobile, orthodontic extrusion is not a possible option for treatment (3). Placing a buildup on a retained ankylosed tooth with minor infra-position is a treatment option only after the patient’s pubertal growth spurt. If performed on a developing patient, build-ups will need to be redone numerous times due to a continual increase in infra-position. Surgical repositioning should only be done if the degree of ankylosis is marginal. Both surgical repositioning and extraction can lead to increased loss of alveolar bone. With a loss in alveolar bone, potential implant therapy can be compromised possibly needing augmentation procedures (2,3).

Being considered a top treatment option for dentoalveolar ankylosis, decoronation allows for the conservation and prospective growth of alveolar bone whether in adults or children. Additionally, decoronation with a mucoperiosteal flap has been shown to allow for new marginal bone development coronally to the submerged root (1). Studies have shown that it is a dependable treatment option in the preservation of alveolar bone height and width, comparatively an easier surgical approach to ridge augmentation, and can allow for vertical bone formation (1). With these findings, decoronation is shown to allow for an overall better long-term prognosis for prospective implant therapy and should be seen as the gold standard in the treatment of dentoalveolar ankylosis.

References