

Dental Management of an Immature Tooth with Severe Intrusive Luxation: A Case Report

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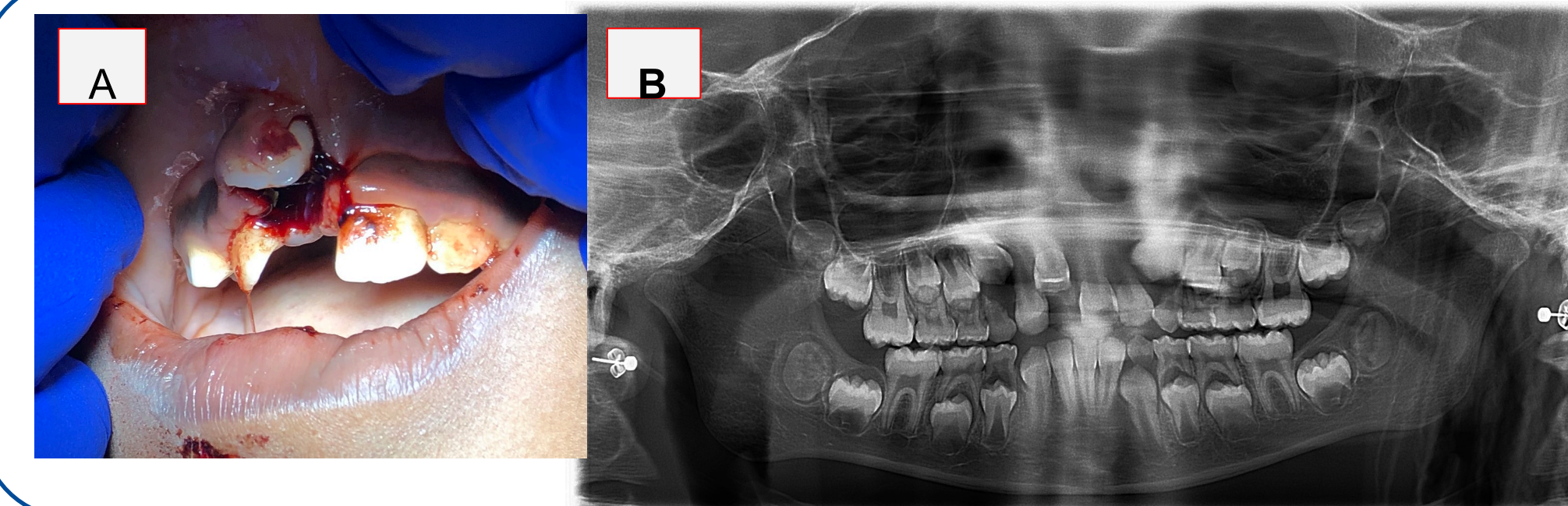
INTRODUCTION

Traumatic dental injuries are most frequent during the first 10 years of life, decreasing with age. These injuries have a higher prevalence in the primary dentition when compared to the permanent dentition of 30% to 20%, respectively. Frequently, dental trauma not only results in injury to the tooth, but also the surrounding and supporting structures. Intrusive luxation (IL) is one of the most severe types of dental traumatic injuries and is defined as displacement of the tooth into the alveolar bone accompanied by comminution or fracture of the alveolar socket. IL is less common in the permanent dentition when compared with other types of luxation injuries. This case report reviews the treatment of an eight-year-old female who presented to the emergency department of Cohen Children's Medical Center (CCMC) in July of 2021 with a 9 mm intrusion and buccal luxation of tooth #8 after falling off the monkey bars.

DENTAL MANAGEMENT

A panoramic, periapical radiographs, and clinical photos were taken at initial presentation. The patient was identified as having severe intrusive and lateral luxation. The findings of the extra oral exam consisted of a mild upper lip swelling, minor facial lacerations, and full range of motion for the mandible. The adjacent teeth (#7, #9, and #10) were found to be subluxated, with class I mobility; no additional trauma was identified. Upon radiographic examination, tooth #8 was determined to have an open apex, which is a clinically consistent finding with the age of the patient. Post examination the patient was instructed to follow up in two weeks for evaluation of spontaneous eruption and prescribed an antimicrobial therapy of chlorhexidine gluconate (0.12%) with instructions to rinse with 15ml twice daily for 30 seconds, morning and evening.

INITIAL PRESENTATION: JULY 2021



Figures A and B:
Initial clinical and radiographic exam showing severe intrusive luxation to tooth #8

March 2022



Figure I: Reposition UR1. 014 Niti.
Figure J: No findings indicative of pulpal necrosis
*Intrusive luxation: 2 mm; Buccal luxation 0 mm

Initiation of Orthodontics: October 2021

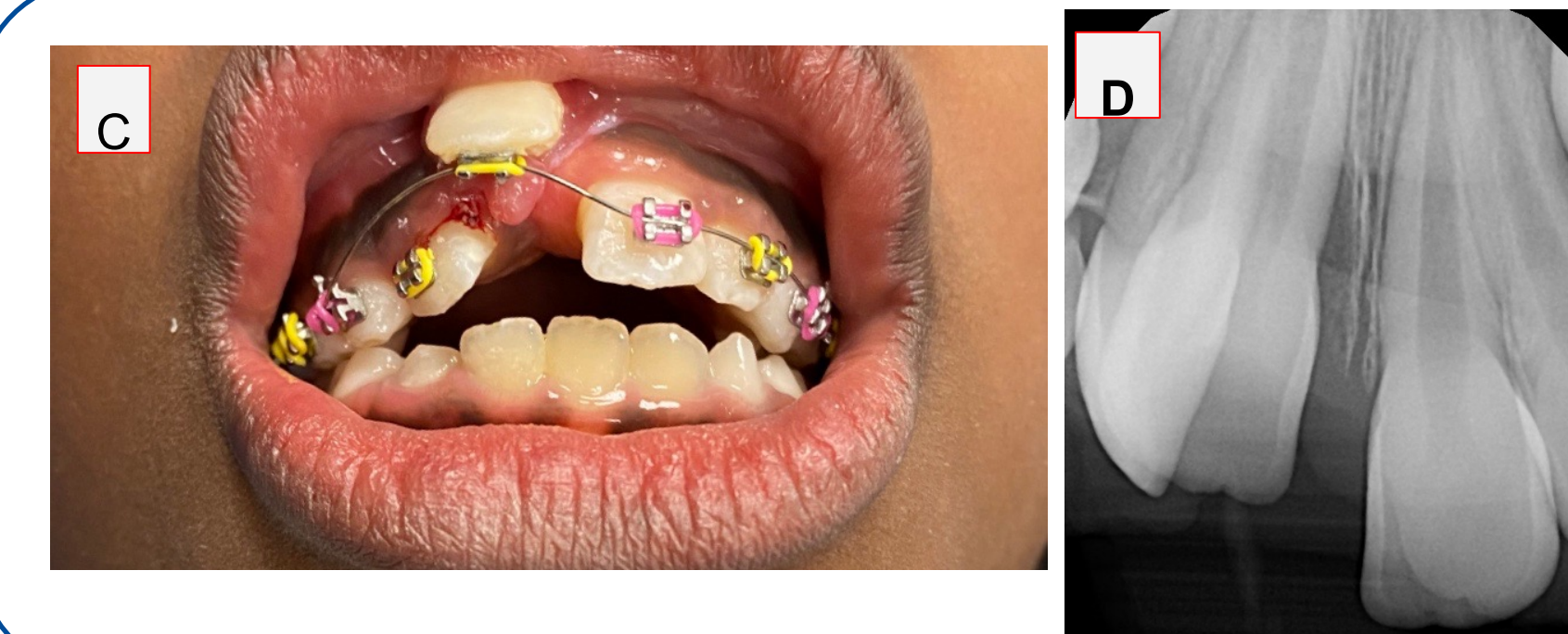


Figure C: Bracket placed on the lingual of UR1.
0.14Niti not engaging UR2.
Figure D: No findings indicative of pulpal necrosis
*Intrusive luxation: 8 mm; Buccal luxation 7 mm

April 2022

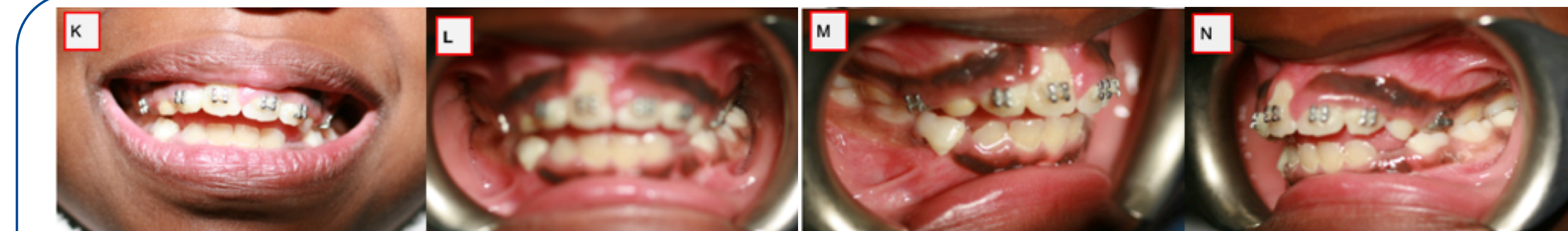


Figure M-N: Intraoral photographs presenting the final repositioning for tooth #8

JANUARY 2022



Figure E: Bracket placed on facial of UR1.014 Ntti upper arch (not engaging UR1) with a stainless steel tie to UR1.
Figure F: No findings indicative of pulpal necrosis
*Intrusive luxation: 5 mm; Buccal luxation 4 mm

CONCLUSION

IL is one of the most severe form of tooth injury due to the damage it causes to surrounding structures during the traumatic displacement of the tooth into the bone. Healing is complicated by damage to the gingival attachment, contusion of the PDL and bone, and injury to Hertwig's epithelial root sheath. Providing teeth with immature root formation (open apex) the time to spontaneously re-erupt limits complications such as necrosis, infection, and replacement resorption in mild, moderate, and severe cases.

Trauma guidelines: Closed vs. Open Apex

Incomplete Root Formation (Open apex):

- Allow re-eruption without intervention for all intruded teeth independent of the degree of intrusion
- If no re-eruption with 4 week, initiate orthodontic repositioning
- In teeth with incomplete root formation spontaneous pulp revascularization may occur.
- Any signs of necrosis or signs of inflammatory root resorption at follow-up appointments indicate root canal treatment
- Parents must be informed about the necessity of follow-up visits

Complete Root Formation (Closed Apex):

- Allow re-eruption without intervention if the tooth is intruded less than 3 mm. If no re-eruption within 8 weeks, reposition surgically and splint for 4 weeks with a passive and flexible splint or reposition orthodontically before ankylosis develops
- If the tooth is intruded 3-7 mm, reposition surgically (preferred) or orthodontically
- If the tooth is intruded beyond 7 mm, reposition surgically
- In teeth with complete root formation, the pulp almost always becomes necrotic

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Figure G: 014 Niti upper arch engaging UR1.
Figure H: No findings indicative of pulpal necrosis
*Intrusive luxation: 5 mm; Buccal luxation 3 mm

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