



Case Report

Non-surgical repositioning of dentoalveolar fracture – A case report

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ABSTRACT

Trauma is one of the leading causes of morbidity and mortality in children. Although less, maxillofacial fractures contribute to an important part of morbidity in children. Here is a case of severe dento-alveolar fracture with intruded and displaced anterior teeth which was treated conservatively by heavy orthodontic wires. The greater osteogenic potential and faster healing rate in children help us to treat with conservative therapeutic procedures and with minimal displacement of fractures.

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1. Introduction

Trauma is one of the leading causes of morbidity and mortality in children. Although less, maxillofacial fractures contribute to an important part of morbidity in children if not treated properly.¹ These fracture patterns and mechanism of injury varies with age. Facial fractures in children differ from adults in anatomy and development, diagnosis, management and follow-up. Facial trauma in a growing child poses a considerable management challenge to the surgeon and emotional burden to the patient and the family. Children with skeletal and dental proclination are more vulnerable to fracture of the maxillary segment and to the dental structures.

Traumatic displacement of alveolar segment can cause permanent loss of dental tissues with malalignment and disfigurement. They cause considerable damage to the periodontium and pulpal tissues.² Immediate management of these fractures are essential to maintain the vitality of dental structures. Hospitals and primary health centres should be equipped well with the management and providing the first level care to such facial traumatic

injuries. Here is the management of one such paediatric dentoalveolar fracture managed conservatively with orthodontic heavy wires with non-surgical repositioning of the displaced teeth.

2. Case Report

A 14-year-old female patient reported to Government Thiruvavur Medical college and hospital September 2021 with a facial trauma. She revealed a history of fall from stairs in the night and it was approximately ten hours old injury. On general examination she didn't have any relevant medical history predisposing to the fall. She was not on any medications. On facial examination, she had lacerations over the lips and bleeding intraorally. On dental examination, she had alveolar bone injury in the maxillary anterior region with left central incisor and lateral incisor intruded, rotated distally and displaced superiorly inside the alveolar bone (Figure 1 A). The right-side incisors were in grade II mobility inside the socket. She had proclination of upper anteriors and increased overjet. Older photographs were analysed to view the position of incisors prior to trauma. Orthopantomogram (OPG) and segmental intraoral periapical (IOPA) x-rays were taken to view periodontal

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status of the adjacent structures. OPG revealed alveolar fracture distal to left lateral incisors with intrusion of both the left incisors. IOPA revealed intruded left incisors and loss of periodontal attachment of all the incisors.

On viewing the patient's age, sex, gingival and periodontal status non-surgical repositioning of the displaced alveolar segment and splinting of the luxated incisors were planned.^{3,4} Since she had severe proclination with incompetent lips and to maintain the periodontal status, heavy arch bars were not considered. So conservatively heavy orthodontic archwires were used.

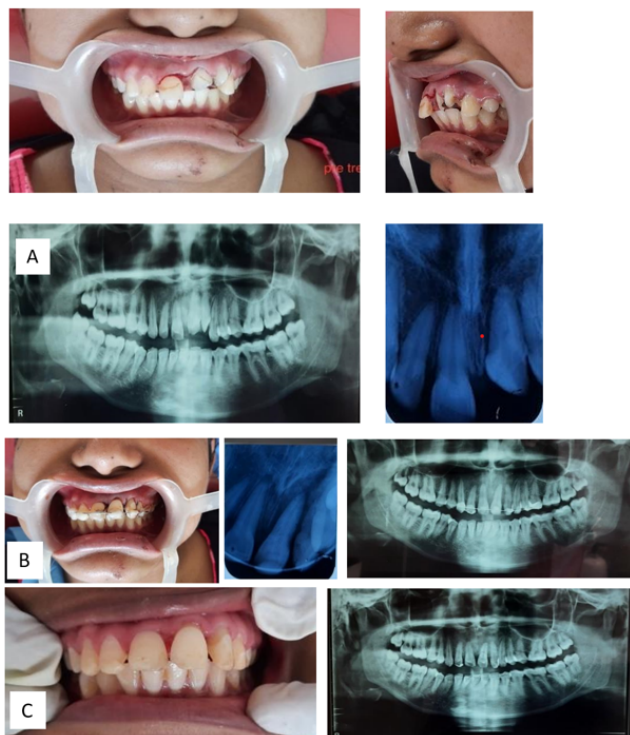


Figure 1: A): Facial trauma with displaced left maxillary alveolar segment with intruded and rotated incisors. OPG, IOPA x-rays. B): Nonsurgical repositioning of alveolar segment and intruded incisors with Orthodontic arch wire and composites. C): Post treatment intraoral photo with OPG

Under local anaesthesia, intruded and displaced left incisors were brought to occlusion manually and stabilization was done with the 21x25 rectangular orthodontic archwires and composites with proper isolation.⁵ Gingival repositioning was done and contour attained with suturing. The splinting was kept in place for 6 to 8 weeks (Figure 1 B). Review was done after every 4 weeks and mobility of the teeth were examined. Since there was improvement in the periodontal status the stabilisation was extended to two more weeks.⁶ At the end of tenth week splinting was removed with acceptable periodontal and gingival health. All the maxillary incisors were nonvital with no root resorption and root canal treatment for incisors

were planned. Clinical and radiographical examination done 6 months after the treatment revealed satisfactory primary bone healing.(Figure 1 C) Follow-up was done after one year to review the dental and the periodontal status of the fractured site. All the maxillary incisors were root canal treated with good periodontal and gingival support. Patient had a good dental smile with proclination for which she opted for fixed orthodontic treatment later.

3. Discussion

Traumatic intrusion of incisors is a rare injury accounting for about 0.5-2% affecting the permanent dentition.² Maxillary prognathism and proclination of incisors are very vulnerable for traumatic injury leading to fracture or loss of dentition. Aesthetics of anterior teeth are very important to be considered while managing such anterior fractured segment.⁷ Periodontium and gingival status of the anterior teeth have to be restored to have a proper and healthy dentition in the future. A simple orthodontic way of stabilisation⁸ in this case helps any clinician in even the rural escorts of the state to provide such tertiary care treatment as a preliminary way treating such fractures with maintaining the harmony of the dental structures.

4. Conclusion

Management of facial trauma and injuries have to be done as early as possible to restore the function and esthetics of the patient as conservatively as possible.

5. Conflict of Interest

None.

6. Source of Funding

None.

References

1. Zimmermann CE, Troulis MJ, Kaban LB. Pediatric facial fractures: recent advances in prevention, diagnosis and management. *Int J Oral Maxillofac Surg.* 2006;35(1):2–13.
2. Andreasen JO, Bakland LK, Andreasen FM. Traumatic intrusion of permanent teeth. Part 3. A clinical study of the effect of treatment variables such as treatment delay, method of repositioning, type of splint, length of splinting and antibiotics on 140 teeth. *Dent Traumatol.* 2006;22(2):99–111.
3. Hurley E, Stewart C, Gallagher C, Kinirons M. Decisions on repositioning of intruded permanent incisors; a review and case presentation. *Eur J Paediatr Dent.* 2018;19(2):101–4.
4. Andreasen JO, Andreasen FM, Mejäre I, Cvek M. Healing of 400 intra-alveolar root fractures. 1. Effect of pre-injury and injury factors such as sex, age, stage of root development, fracture type, location of fracture and severity of dislocation. *Dent Traumatol.* 2004;20(4):192–202.
5. Jang KT, Kim JW, Lee SH, Kim CC, Hahn SH, García-Godoy F. Reposition of intruded permanent incisor by a combination of surgical and orthodontic approach: a case report. *J Clin Pediatr Dent.* 2002;26(4):341–5.

6. Humphrey JM, Kenny DJ, Barrett EJ. Clinical outcomes for permanent incisor luxations in a pediatric population. III. Lateral luxations. *Dent Traumatol.* 2003;19(5):280–5.
7. Feu D. Orthodontic treatment of periodontal patients: challenges and solutions, from planning to retention. *Dental Press J Orthod.* 2020;25(6):79–116.
8. Mohanty S, Acharya S, Swain JR, Singh B. Stabilizing Teeth with non Surgical Treatment: A Case Report of Splinting. *Indian J Forensic Med Toxicol.* 2020;14(4):8855–7.

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