CASE REPORT

A novel approach in management of lateral luxation of primary tooth

Abhijit D Wankhade,¹ Ramesh Kumar Pandey,² Rajeev Kumar Singh,² Rajashree Gondhalekar³

¹Department of Pedodontics and Preventive Dentistry, V.Y. W.S. Dental College and Hospital, Amravati, Maharashtra, India

²Department of Paediatric and Preventive Dentistry, Faculty of Dental Sciences, King George's Medical University, Lucknow, Uttar Pradesh, India

³Department of Oral and Maxillofacial Surgery, V.Y.W.S. Dental College and Hospital, Amravati, Maharashtra, India

Correspondence to

Dr Rajeev Kumar Singh,
rajkids2000@yahoo.co.in

SUMMARY

Lateral luxation is defined as the displacement of the tooth in a direction other than axially. The present case report narrates management of laterally luxated primary maxillary central incisor with occlusal interference using an inclined plane fabricated with composite resin. The composite resin inclined plane was successfully used for correction of cross-bite caused due to lateral luxation particularly in delayed presentation of the case to the Pedodontics clinic after traumatic injury with occlusal interference.

BACKGROUND

Lateral luxation is defined as the displacement of the tooth in a direction other than axially.¹ The prevalence of traumatic injuries in the 0–6 years old children ranged from 11% to 30%.² Primary teeth injuries are common in young children due to their lack of muscle coordination in the early years of life.³ Most trauma occurs in males and females as a result of the fall at their living place.²

In the present case, a composite resin inclined plane fabricated was successfully used to treat cross-bite in laterally luxated maxillary primary right central incisor (51 tooth) with occlusal interference.

CASE PRESENTATION

A 4-year-old female patient was referred to the department of pedodontics and preventive dentistry with chief complaint of traumatic injury to the lower lip and upper front teeth 3 days before at a public mall. The patient's guardian gave the history of application of primary aid therapy by a medical practitioner, who thereafter referred the patient to pedodontics department, for further dental management.

Soft tissue clinical examination revealed laceration of the lower lip and impingement of maxillary central incisors onto lower lip. Hard tissue examination revealed maxillary primary right central incisor (51 tooth) in occlusal interference with mandibular primary right central incisor (81 tooth) due to palatal luxation (figure 1). The tooth was immobile without pain and tenderness on percussion. No discolouration or gingival bleeding was observed in the patient. Intraoral peri apical (IOPA) radiograph revealed no signs of root fracture or alveolar bone fracture. However, increased periodontal ligament space was evident. Underlying permanent tooth germ was radiographically evaluated and was considered to be intact (figure 2).

Figure 1 Preoperative photograph showing lateral luxation in 51 with associated lower lip injury.

On thorough examination, the present case was diagnosed as lateral (palatal) luxation of 51 tooth and scheduled for treatment accordingly.

TREATMENT

The time elapsed between the time of injury and the presentation at our clinic was more than 48 h. So, it was mandatory to perform treatment on an early basis. Therefore, repositioning the luxated tooth using a composite inclined plane was decided at emergent. The treatment options were explained to the parents and their informed consent was obtained.

Labial and incisal surfaces of the mandibular primary incisors were etched with 30% phosphoric acid (SCOTCHBOND, ETCHENT, 3M, ESPE) for 60 s, washed for 30 s and air dried. Uniform application of bonding agent (ADPER SINGLE BOND 2, ADDHESIVE, 3M, ESPE) to the etched area done and light cured for 20 s. Composite-resin restorative material (FILTEK, P60, 3M, ESPE) was applied to

Figure 2 Preoperative intraoral peri apical radiograph showing laterally luxated 51 tooth.

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Figure 3 Intraoral photograph of composite inclined plane.

the incisal and labial surfaces in 2 mm increments to form 3 to 4 mm plane, inclined at a 45° to the longitudinal axes of the teeth and each increment was light cured for 20 s. Extreme care was being taken in designing the plane, such that, the inclined plane should make contact only with the incisal edge of luxated tooth (figure 3).

OUTCOME AND FOLLOW-UP

After 2 weeks of close follow-up, the tooth had attained its original position. The inclined plane was removed using contra-angle high-speed handpiece with straight bur and the mandibular primary central incisors were polished with prophylactic paste (figure 4).

During the follow-up period, 51 tooth was examined for percussion, palpation, sensitivity, mobility, swelling, periapical radiolucency and pathological root resorption. No clinical or radiographical periapical pathological lesions were observed. At the 6-month follow-up examination, the treatment was found to be both clinically (figure 5) and radiographically successful (figure 6). The patient was advised to continue the follow-up until the exfoliation of 51 tooth and eruption of corresponding permanent successor.

DISCUSSION

The established treatment of lateral luxation of primary teeth is to allow passive repositioning or actively reposition the luxated tooth followed by splinting for 1–2 weeks.¹ In severe conditions, when the crown is dislocated in labial direction, extraction is the treatment of choice. In the tooth with minor occlusal interference, the slight grinding is advocated.⁴

The treatment modalities aforementioned had following limitations: (1) To allow passive repositioning may further jeopardise the prognosis of luxated tooth with severe occlusal

Figure 5 Postoperative view after 6 months.

interference.³ (2) Active repositioning procedure cannot apply in cases with delayed presentation after traumatic injury. Active repositioning of lateral luxation was usually associated with developing pulp necrosis.^{3 5} (3) Severe grinding of tooth causes exposure of dentinal tubules and sometimes even exposure of pulp, leading to loss of vitality of the tooth. (4) Extraction of anterior tooth, especially in young children, can lead to poor phonetics, aesthetics and loss of function, thereby, causing psychological and social problems for children.^{3 6} Therefore, in the present report, an incisal plane fabricated with composite resin was used to reposition a primary tooth with a cross bite caused by lateral luxation.

Various treatment modalities have been mentioned in the literature for the correction of cross-bite in primary and permanent teeth. One of the methods described is the use of a 'wooden tongue blade'. This method has been reported to be unsuccessful because it depends on the cooperation of the patients and their parents.^{3 7} Another method for correcting an anterior cross-bite is the use of a 'removable acrylic appliance', consisting of an acrylic plate with posterior bite plate and a z-spring that tips the anterior teeth forward. However, the success of removable appliances also depends on patient cooperation.^{3 8} 'Reversed stainless steel crowns' have been used successfully for this purpose, but considering their poor aesthetic and more chairside time, they do not appear to be the best alternative for children.^{3 9}

Considering the aforesaid facts, the composite resin inclined plane used to correct an anterior cross-bite has been supposed to be an easy, and aesthetically acceptable method. It is less time consuming and cost effective.^{3 10} In the present case report, a composite resin lower anterior inclined plane was used successfully to treat a laterally luxated 51 tooth.

Figure 4 Postoperative view after 2 weeks.

Figure 6 Postoperative intraoral peri apical radiograph after 6 months.

Learning points

- ▶ The use of a composite-resin inclined plane, might be a better treatment option in correction of single tooth cross bite resulted due to lateral luxation especially in cases with delayed presentation to the pedodontic clinic after traumatic exposure with associated occlusal interference.
- ▶ Composite-resin inclined plane is an easy, aesthetically acceptable, less time consuming and cost-effective method of treating delayed presentation of lateral luxation injuries.
- ▶ Treatment results are usually obtained within a short time, usually in 2 weeks. No retention appliance is required as the treated tooth is self-retained by the occluding tooth.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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