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Case Report

Wire Splinting: An Effective Management Approach for Lateral Luxation: A Clinical Case Report

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ABSTRACT

A male patient (aged 47 years) got into an accident, reported to the Emergency Unit with the complaint of traumatic injury to the face. He was bleeding profusely from the nose & his lower lip got completely torn off. The resident doctors of the Emergency room gave the primary care like suturing the lower lip and giving some IV analgesics to him. After getting a bit stability in his condition, they sent him for Face CT and a chest X-ray. Later, the case was referred to the Dental department. The Face CT reveals traumatic luxation injuries to the central and lateral incisors of the maxillary region, but no injuries to the adjoining bony structure was found. Finally, periodontal splinting was done to the maxillary canine to canine region under LA to reposition the luxated teeth.

KEYWORDS:

• Road Traffic Accident • Luxation Injury • CT Face • Periodontal Splinting • Re-Positioning of Luxated Tooth

INTRODUCTION

Maxillofacial injury occurs commonly and if discussed about dental injuries, it is even more common. Children and young adults suffer most commonly due to falling from bed or chair, during crawling or walking phase or during playing if any accidental injury happens. While the adults generally get injured during road traffic accidents or any interpersonal conflicts or fights. It has been seen that, crown fractures are more commonly seen in adult patients during road traffic accidents, but sometimes luxation injuries also may happen.

"LUXATION INJURY" is defined as when the tooth is displaced in labial, lingual or in a lateral position due to injurious trauma to the tooth structure. Periodontal ligament fibres are usually torn during this kind of injury. In these type of cases, upper central incisors are heavily impacted and commonly seen. On percussion

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test, it gives metallic sounds and it is immobile by nature. On radiographic examination, widened periapical ligament space can be assessed.

CASE REVIEW

A patient (aged 47 years) rushed to the Emergency Unit of a reputed super speciality hospital of Agartala city due to traumatic injuries to the face from a road traffic accident. He described the traumatic event and explained that the main force delivered at the orofacial region and the chest area. Further, he was assessed for any other unrevealed traumas. During the time of examination, this patient was found fully conscious as well as he was totally oriented to the place, time, and person. He had suffered an acute trauma to maxillary anterior region together with an associated soft tissue lacerations at the lower lip. For further diagnosis of any facial bone fracture, the patient was sent to Radiology Department for 3D imaging of CT Face. The RMOs of the Emergency Unit treated him initially with some sutures in the lower lip and some anti-inflammatory drugs and then send him to the department of Dentistry.

Figure 1: CT-Face along with 3D reconstruction

Upon coming to the dept of Dentistry, a detailed history was taken along with past medical and dental history. During examination, the lower lip was found swollen & sutures were previously placed. Further, this patient was evaluated with luxated right central incisor of the maxillary region[11] along with minimal trauma to the left central and lateral incisors.[21,22] From 3D CT face report, it was confirmed that, mainly, the central incisors of the maxillary region were luxated (grossly luxated tooth was 11, 21 was also a bit luxated). And the best part was, no facial bone fracture was present in those images. For this grossly luxated incisor tooth,[11] the procedure of wire-splinting was discussed to the patient and his family members. The complications following repositioning of the luxated teeth were previously discussed with the patient. The probable complications are: pulp necrosis (not-vital tooth), inflammatory root resorption, ankylosis (fusion of tooth to bone), pulp canal obliteration (Calcified canals), periapical periodontitis.

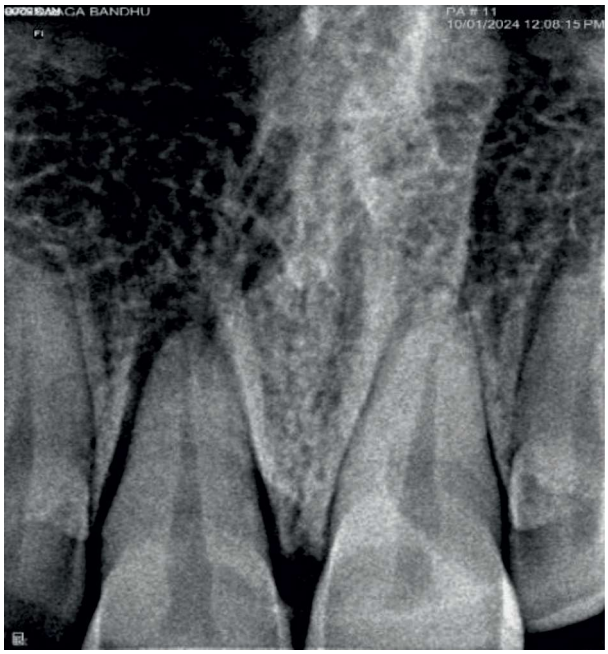

Figure 2: RVG radiograph showing dislodgement of tooth from the socket

The patient and the family members verbally agreed to the proposed treatment plan. After getting the written consent, planning for repositioning the 11 with help of a periodontal wire-splint, was done. The luxated 11 was checked for any cracks or fractures on the root surface by shooting an RVG radiograph and found that, this tooth was having completely fine crown portions. This luxated tooth 11, the adjoining area & its periodontal space, were irrigated gently with betadine before starting with the procedure.

2% solution of lignocaine (LA infiltration) was administered at the apices of the affected teeth region. Socket-spaces of luxated teeth were adequately purged with betadine solution with making sure that the coagulum should be intact. These luxated teeth were placed at its original place by giving gentle pressure and shielded with wire and composite splint technique. It was advised for remaining with the splint at least for next Six weeks period of time.

Figure 3: Wire composite splinting done on the palatal surface of anterior teeth

Figure 4: Luxated tooth placed again in the socket

Oral antibiotics, anti-inflammatory drugs along with some multi-vitamins, all these prescribed and anti-tetanus boosters and its importance was explained as well. Two weeks later, the patient was asked for a recall visit only to ensure that everything is alright.

Following One and half months, after achieving proper outcome from the periodontal ligaments, wire-splinting was eliminated. Further, the patient was called for follow-up. Periodontal-ligament-space along with all the structures around the apical region found completely healthy throughout the follow up appointments.

DISCUSSION

Immediately replanting a tooth is said the best treatment choice for a luxated succedaneums tooth as it is having its ability for maintaining its bony form as well as periodontal cell's viability.[1] The prompt action for replanting the affected teeth, was a savior for this type of cases. Although, the outcome, rate of survival etc. for a laterally luxated tooth, completely based on various factors, starting from duration of time from getting luxated to get repositioned to presence of cracks or root fractures and many more. Ideally, a luxated tooth should be re-positioned as soon as possible after the injury to achieve the best probable results.[2] Delaying in replantation of luxated teeth might give rise to the decreased chances of successful reattachment and can lead to complications like root resorption due to the death of the periodontal ligament cells, resulting in a poor long-term prognosis.

Suggested by Trope *et al.*, wire-splint, made up of steel wire with composite (for 7-10 days) is the best treatment modality for luxated teeth. Whereas, from the recent studies, it is stated that, for shorter duration of application, passive and flexible type of splints made up of stainless-steel wire (measures 0.016" or 0.4 mm or nylon-fishing line) permits necessary physiologic-movement of those teeth which further aids in the healing-process, also removing the chances of ankylosis[3]

Repositioning luxated tooth, should be reviewed for time-to-time follow-up appointments (at 2 weeks, 1 month, 6 months up to 1 year). Clinical as well as examining with shooting RVG x-rays, have to be done for evaluating the probable prognosis of the treatment.[5,6] In the present case-report, up to 1 year recall visits were done as well as documented & this patient was doing pretty well. Patients, who have sustained luxation injury and got the subsequent management for the same, ought to be briefed regarding the unfavorable as well as favorable prognosis of the given treatment.

CONCLUSIONS

Patients should themselves be aware of the proper knowledge regarding luxation injuries as well as the management modalities present in the field of dentistry which carries the vital priority for the outcome in the treatment.[7] Although, replantation option satisfies itself as the-best-treatment-choice, because only by this treatment modality, maintenance of the necessary forms and functions of the alveolar bone can be achieved. Moreover, even if replantation procedure fails, the quality of the alveolar pattern should be there for future prosthetic needs.[8]

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