Misdiagnosis of Traumatic Intrusion of Maxillary Permanent Incisor: Two Case Reports

Daimi Maksiller Keser Dişte Meydana Gelen Travmatik İntrüzyonun Hatalı Tanısı: İki Olgu Sunumu

Göksel ŞİMŞEK KAYA, Öznur ÖZALP

Akdeniz University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Antalya, Turkey

Correspondence Address
Yazışma Adresi

Göksel ŞİMŞEK KAYA
Faculty of Dentistry, Akdeniz University, Department of Oral and Maxillofacial Surgery, Antalya, Turkey
E-mail: gokselsimsekkaya@gmail.com

Received \ Geliş tarihi : 04.11.2019
Accepted \ Kabul tarihi : 02.12.2019
Online published : 04.03.2021
Elektronik yayın tarihi

Cite this article as:
Bu makaleye yapılacak atıf:
Şimşek Kaya G, Özalp Ö. Misdiagnosis of traumatic intrusion of maxillary permanent incisor: Two case reports. Akd Med J 2021; 7(1):164-7.

Göksel ŞİMŞEK KAYA
ORCID ID: 0000-0003-3398-5574
Öznur ÖZALP
ORCID ID: 0000-0003-4350-1975

ABSTRACT

Complete intrusion of a permanent tooth is a very rare entity and may be undetected for many years. We report two cases of severely intruded maxillary permanent incisors which were initially misdiagnosed as avulsion. In both cases, orthodontic or surgical repositioning was not possible due to the loss of the alveolar space of the intruded teeth by the movement of adjacent teeth in time. Therefore, patients were referred for orthodontic treatment following the extraction. The aim of this report was to highlight the importance of early detection of intruded teeth, which would reduce the need for further complicated, high-cost and time-consuming treatments.

Keywords: Misdiagnosis, Tooth injuries, Tooth luxation, Tooth migration

ÖZ

Daimi dişlerin tam intrüzyonu son derece nadir görülen bir durum olup, bu dişler teşhis edilemeden uzun yıllar varlıklarını sürdürebilmektedir. Bu raporda, daha önce avülsiyon olarak yanlış tanı konulmuş, şiddetli intrüzyon izlenen maksiller daimi keser dişleri içeren iki olgu sunulacaktır. Her iki vakada da, komşu dişlerin zaman içerisinde intrüze olmuş dişlerin alveolar boşluğuna migrasyonu nedeni ile ortodontik veya cerrahi repozisyon mümkün olmamıştır. Bu nedenle hastalar intrüze olmuş dişlerin çekimini takiben ortodontik tedavi için yönlendirilmiştir. Bu vaka raporu ile intrüze dişlerin erken teşhis edilmesinin, ileride karmaşık, yüksek maliyetli ve zaman alıcı tedavilere olan ihtiyacı azaltmadaki öneminin vurgulanması amaçlanmıştır.

Anahtar Sözcükler: Hatalı tanı, Diş yaralanmaları, Diş lüksasyonu, Dişlerin yer değiştirmesi

INTRODUCTION

Intrusive luxation is defined as dislocation of the tooth deeper into the alveolar bone through the fractured socket following the axis of the tooth (1). These injuries are more frequent in primary dentition, whereas only 0.3-2 % of traumas affecting permanent teeth have been reported as intrusive luxation (1).

Intrusive luxation is a severe injury due to the destruction of fibers of periodontal ligament, and vascular compression of the periodontium and pulp complex. Therefore, accurate diagnosis and appropriate treatment planning are crucial in order to prevent several complications such as pulp necrosis, root resorption, and tooth loss (1).

Current treatment of choice for intrusive luxation includes spontaneous re-eruption, immediate surgical/orthodontic repositioning, and extraction of the tooth. The degree of intrusion and the stage of root formation are among the key factors that should be considered for accurate treatment planning (2).

DOI: 10.17954/amj.2021.2420

There is limited information in the current literature about intrusive luxation of a permanent tooth to draw clinical conclusions. This paper aims to describe two cases of severely intruded maxillary permanent incisors that were initially misdiagnosed, and to raise awareness of this rare but serious condition among clinicians.

CASE REPORTS

Case 1

A 12-year-old boy, who had sustained a fall injury about 2-years ago, was referred to our department with the main complaint of stuffiness. Past medical history was unremarkable and he was taking no medication. The parents of the patient reported that they had taken the patient to a dental hospital immediately after the injury, and following the physical examination the absence of the left maxillary central incisor had been diagnosed as avulsion by the examining dentist. Follow-up had been recommended without further radiological investigation.

Radiological examination of the patient revealed complete displacement of the maxillary central incisor into the left nasal cavity (Figure 1A). The amount of intrusion was about 12 mm, representing a severe intrusion according to the Royal College of Surgeons of England classification (3). A computed tomography (CT) scan was carried out to identify the exact location of the tooth (Figure 1B). Furthermore, severe root resorption was also recorded (Figure 1A).

In the light of the above-mentioned clinical and radiological findings, which indicate an unfavorable prognosis, surgical extraction of the intruded tooth was planned and informed consent was obtained from the patient's family. Under general anesthesia, the intruded tooth was extracted via an intraoral approach. Post-operative clinical and radiological examination revealed uneventful healing (Figure 2). The patient has remained asymptomatic without stuffiness and/or any further complications for a follow-up period of 2 years.

Case 2

A 14-year-old boy presented to our department for replacement of his missing left maxillary incisor, which was claimed to be avulsed following a fall injury about 4 years ago. The patient did not have any systemic diseases and was not under any medications. The parents of the patient reported that the missing tooth was not detected on the examination following the trauma, which had been performed by a dental practitioner, and follow-up was recommended with the diagnosis of avulsion.

The orthopantomogram demonstrated a well-defined radio-opacity above the left lateral incisor suggestive of the missing tooth (Figure 3A). Further radiological examination using a CT scan revealed complete intrusion of the tooth in a palato-vertical direction above the apex of the right central incisor (Figure 3B), which was classified as "severe intrusion" (3).

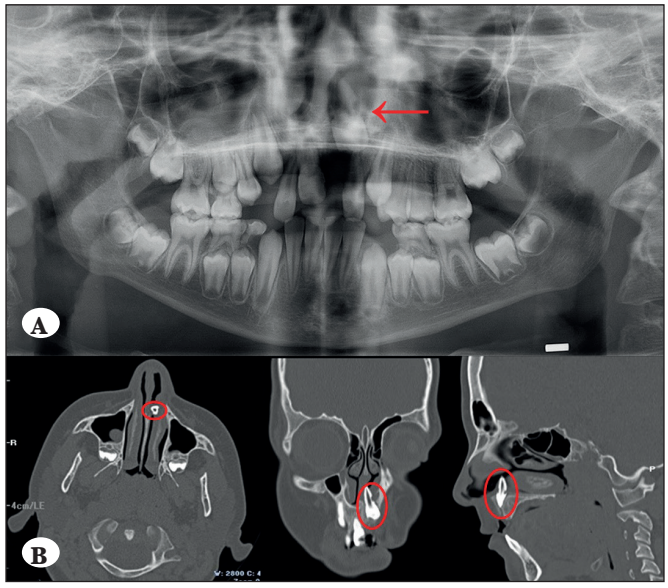

Figure 1: A) Panoramic radiograph of the patient at initial presentation. A maxillary left central incisor with root resorption is observed inside the left nasal cavity, **B)** Axial, coronal, and sagittal sections of the computed tomography scan confirms the complete intrusion of the maxillary left central incisor into the left nasal cavity. Red markers show the position of the intruded tooth.

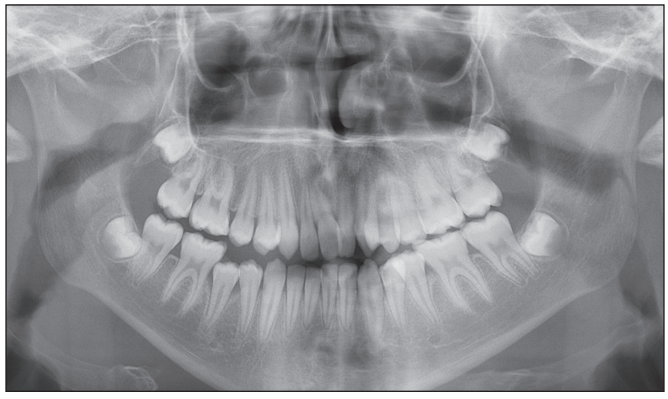

Figure 2: Postoperative panoramic radiograph reveals uneventful healing.

Orthodontic or surgical repositioning was not feasible considering the position of the intruded tooth and current alignment of the teeth. Thus, informed consent was obtained from the parents of the patient and the intruded tooth was successfully removed via intraoral approach without any complications. An uneventful healing was achieved post-operatively (Figure 4) The patient had a follow-up period of 1 year during which he had no further complaint.

DISCUSSION

Intrusive luxation of permanent teeth is a rare entity and severe intrusion extending over 6 mm is even more uncom-

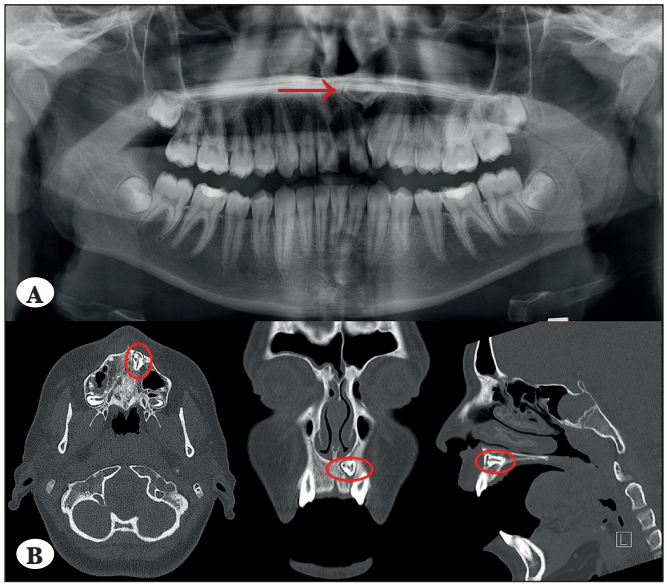

Figure 3: A) Panoramic radiograph of the patient at initial presentation. A well-defined radio-opacity above the maxillary left lateral incisor suggesting the missing tooth is observed, **B)** Axial, coronal, and sagittal sections of the computed tomography scan confirm complete intrusion of the maxillary left central incisor in a palato-vertical direction above the apex of the right central incisor. Red markers show the position of intruded tooth.

Figure 4: Postoperative panoramic radiograph reveals uneventful healing.

mon (1). The rare occurrence and complexity of intrusion of permanent teeth may lead to a complicated healing scenario and an uncertain prognosis (4).

Severe intrusion injuries, in which the tooth is displaced completely may be erroneously considered avulsion by the examining physician as illustrated in the present cases. The intruded tooth may completely penetrate the alveolar process or become displaced into the nasal cavity, maxillary sinus, or even the frontal sinus (1, 5). As well as obtaining standard periapical, occlusal, and panoramic images, further investigation should be carried out using CT on the basis of clinical suspicion.

Intrusion of a tooth into the nasal cavity may be completely asymptomatic or may present with various symptoms. Nasal obstruction (evident in case 1), nasal congestion, oro-nasal fistula, osteomyelitis of the maxilla, nasal pain, epistaxis and septal perforation are among the several complications that have been reported to be associated with intranasal teeth (6, 7). Management of an intranasal tooth is controversial. Some authors advocate extraction of the tooth in the nasal cavity because of the potential morbidity (6, 7), while others recommend observation with close follow-up if the patient is asymptomatic (8).

Management of an intruded permanent tooth depends on the stage of root development, severity of intrusion, presence of alveolar fracture, and time of referral and should be focused on the elimination of further complications (1, 9, 10). In both cases, orthodontic or surgical repositioning was not possible due to the loss of the alveolar space of the intruded teeth by the movement of adjacent teeth in time. Therefore, both patients were referred for orthodontic treatment following extraction of the intruded teeth.

CONCLUSION

The two cases that we have presented demonstrate the importance of early detection of intruded teeth, which would reduce the need for further complicated, high-cost, and time-consuming treatments. A thorough medical and dental history and a comprehensive clinical and radiologic examination are essential for an accurate diagnosis and better prognosis.

Conflict of Interest: All authors declare that they have no conflicts of interest relevant to this manuscript. This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. All authors have contributed significantly, and the final version of the manuscript has been seen and approved by each author.

Ethical Approval: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1964 and later versions. Informed consent was obtained from all patients for being included in the study.

REFERENCES

1. Andreasen JO, Bakland LK, Andreasen FM. Traumatic intrusion of permanent teeth. Part 2. A clinical study of the effect of preinjury and injury factors, such as sex, age, stage of root development, tooth location, and extent of injury including number of intruded teeth on 140 intruded permanent teeth. Dent Traumatol 2006; 22:90-8.
2. Andreasen JO, Bakland LK, Matras RC, Andreasen FM. Traumatic intrusion of permanent teeth. Part 1. An epidemiological study of 216 intruded permanent teeth. Dent Traumatol 2006; 22:83-9.
3. Humphrey JM, Kenny DJ, Barrett EJ. Clinical outcomes for permanent incisor luxations in a pediatric population. I. Intrusions. Dent Traumatol 2003; 19:266-73.
4. Albadri S, Zaitoun H, Kinirons MJ. UK national clinical guidelines in paediatric dentistry: Treatment of traumatically intruded permanent incisor teeth in children. Int J Paediatr Dent 2010; (Suppl 1):1-2.
5. Tsilingaridis G, Malmgren B, Andreasen JO, Malmgren O. Intrusive luxation of 60 permanent incisors: A retrospective study of treatment and outcome. Dent Traumatol 2012; 28:416-22.
6. Hara A, Kusakari J, Shinohara A, Yamada Y, Sato N. Intrusion of an incisor tooth into the contralateral frontal sinus following trauma. J Laryngol Otol 1993; 107:240-1.
7. Kumar R. Maxillary permanent tooth in the nasal cavity. Report of two cases with different etiopathogenesis, management and review of the literature. The Internet J of Dent Sci 2009; 9:1-6.
8. Lee FP. Endoscopic extraction of an intranasal tooth: A review of 13 Cases. Laryngoscope 2001; 111:1027-31.
9. Carver DD, Peterson S, Owens T. Intranasal teeth: A case report. Oral Surg Oral Med Oral Pathol 1990; 70:804-5.
10. Lee JY, Divaris K. Hidden consequences of dental trauma: The social and psychological effects. Pediatr Dent 2009; 31:96-101.