

Bilaterally Impacted Maxillary Canines in an Adult: A Case Report

Jai Ram Kaundal and Sankalp Sood*

Department of Orthodontics and Dentofacial Orthopedics, HP Government Dental College and Hospital, Shimla, India

***Corresponding Author:** Sankalp Sood, Department of Orthodontics and Dentofacial Orthopedics, HP Government Dental College and Hospital, Shimla, India.

Received: September 10, 2018; **Published:** October 15, 2018

Abstract

A case of bilateral maxillary canine impaction due to retained deciduous canines in an adult female is reported. The case was treated by relocating the canines in their correct position in the arch. The impacted teeth were driven through the sockets of the extracted deciduous canines.

Keywords: *Impaction; Maxillary Canines; Deciduous Canines*

Introduction

Impaction is defined as a cessation of eruption of a tooth caused by a clinically or radiographically detectable physical barrier in the eruption path or by an ectopic position of the tooth. Impaction of the maxillary canine, due to ectopic eruption is frequent anomaly. In fact after the third molar, maxillary canine is the second most frequently impacted tooth in the dental arch [1-5]. Unilateral impaction (92%) is much more common than bilateral impaction (8%) [6,7]. Palatal canine impaction (85%) is reported to be more prevalent than labial impaction (15%) [1,2,6-9]. The permanent canines are the foundation of an esthetic smile and functional occlusion. Maxillary canine impaction has been reported to be the primary reason for seeking orthodontic treatment in approximately 2% of the patients [1,10]. The long developmental path of eruption of the maxillary canine also contributes to its potential for becoming impacted. Because the canines usually develop high in the maxilla and are among the last teeth to erupt, they must course a long distance before erupting into the dental arch. Due to the aesthetic and functional implications, an attempt to guide impacted canines into functional occlusion should be made. This paper presents a case of bilateral maxillary canine impaction due to retention of primary canines, which was treated by relocating the canines in their correct position in the arch following extraction of their deciduous predecessors.

Case Report

A 21 year old female patient reported to orthodontic clinic seeking treatment to improve her smile due to spacing and irregularity in upper front teeth (Figure 1a). Intraoral examination revealed a Class I malocclusion with bilaterally impacted maxillary canine due to retained deciduous canines (Figure 1b). On palpation, canine bulge was felt on the palate bilaterally but overjet and overbite were normal and mandibular arch was well aligned. Soft tissues were normal, oral hygiene was good, medical history was non-contributory and there were no signs and symptoms suggesting temporomandibular joint disorders.

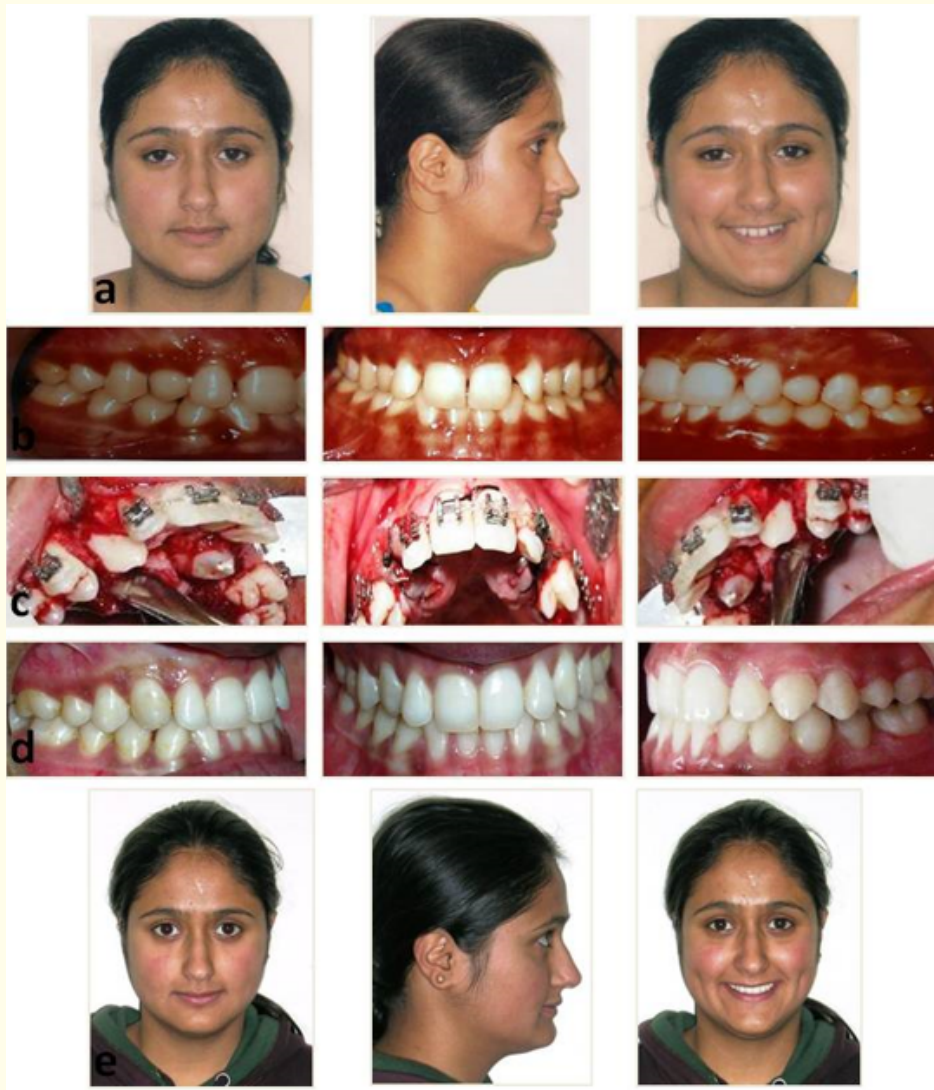


Figure 1

Radiographic examination showed that all teeth except the third molars were present. Both permanent maxillary canines were impacted due to retained deciduous canines. Both the permanent canines were mesially angulated with an angle of 45° to the vertical with the crown crossing the lateral incisor and the root lying between deciduous canine and permanent first premolar (Figure 2). Cephalogram showed a class I skeletal pattern.

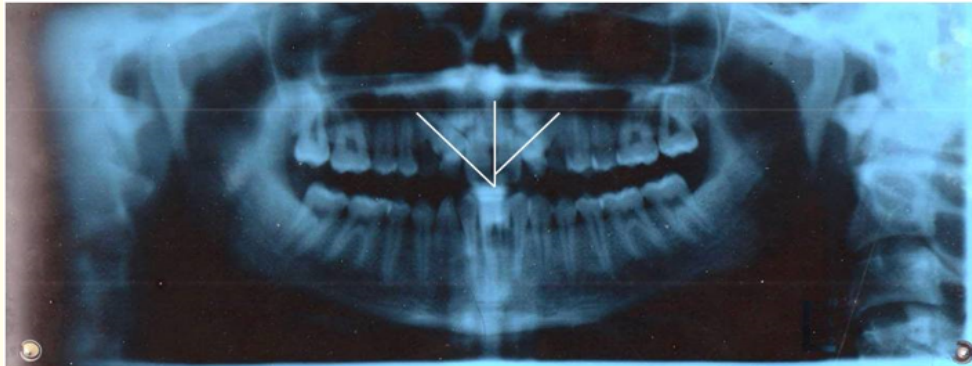


Figure 2

The patient was willing to undergo surgical orthodontic treatment even after having been explained about the length of the treatment and the risks of orthodontic therapy. Periodontal probing before orthodontic treatment did not show any attachment loss nor bleeding after probing. The gingiva was pale pink and firm.

Model analysis confirmed availability of adequate space for both canines. Since the patient was dento-skeletally class I with well aligned lower arch with perfect class I posterior occlusal intercuspation and normal overjet-overbite, so the treatment was planned to treat the upper arch only by moving the impacted canines into the arch. Treatment plan consisted of orthodontic repositioning by guiding canines in to occlusion by closed eruption after surgical exposure and extraction of over retained deciduous canines. The treatment plan was explained to the patient and informed consent was taken.

Upper arch was bonded with 022 pre-adjusted edgewise appliance. After the alignment and leveling, arch was prepared for surgery. A full thickness mucoperiosteal flap was elevated to allow the lingual buttons to be bonded to the exposed crowns of the impacted canines as close as possible to the cusp (Figure 1c). The retained deciduous canines were extracted. Ligature wire was used to apply traction to guide impacted teeth by attaching it to the lingual button on one side and through the flap it was ligated to the archwire on the other. The flap was repositioned and secured with interrupted 4-0 gut suture. Patient was recalled fortnightly to adjust the ligature wire to maintain traction force.

After two months when crown of impacted teeth broke through the gingival tissue, lingual buttons were removed and pre-adjusted edgewise brackets were bonded in proper position on the labial surface of the canine and 016" NiTi alignment archwire was ligated. Mid treatment, patient developed slight anterior open bite as traction force caused NiTi wire to exert intrusive force on anterior teeth, which was corrected with RCS wire. Base wire was further changed to 0.016" x 0.022" SS followed by 0.017"x 0.025" SS wire and the canines were aligned by second order bends and root torquing with 0.019"x 0.025" SS wire. Post treatment OPG (Figure 3) confirmed fully erupted and well seated maxillary canines. Angle of impacted teeth to midline showed considerable improvement. There was considerable improvement in patients smile and the treatment was completed within 18 months (Figure 1e). Fixed retention was applied for one year to maintain the teeth in their correct position. During treatment no sign of root resorption, vitality impairment or other damage to lateral incisors and canines was observed. At the end of the treatment periodontal evaluation showed healthy marginal tissues with pale pink and firm gingivae (Figure 1d).

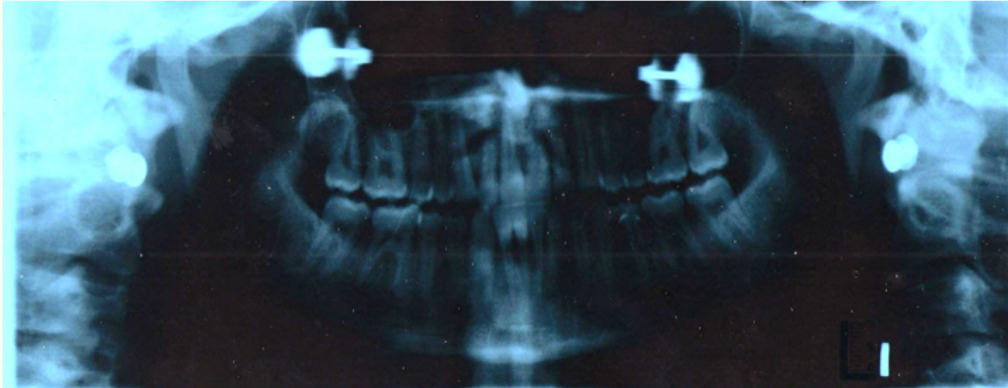


Figure 3

Discussion

Canines are the corner stone of dentition. It plays a significant role in facial esthetics, dental arch development and functional occlusion. Canine is said to be impacted if it is unerupted after complete root development or if the contralateral tooth was erupted for at least 6 months with complete root formation [11]. The usual origin of impaction appears to be lack of space which results in follicular collision between developing teeth, prolonged retention of the deciduous canine, trauma to other deciduous tooth buds, disturbances in tooth eruption sequence, lack of space, rotation of tooth buds, premature root closure, canine eruption into cleft areas, supernumerary teeth, odontoma, cysts, crowded tooth germs or erupted teeth [12,13]. Thus, there is an increasing potential for mechanical disturbances leading to subsequent canine impaction. Impacted canines usually are asymptomatic and patients are usually unaware of its existence. For effective management and to prevent later complications, early detection of impacted canines is very important. This requires that all children who visit dentist should be carefully evaluated for ectopic eruption of permanent maxillary canine due to retained deciduous canine. The simple interceptive procedure of timely extraction of the primary canines can prevent impaction of the permanent maxillary canine and the associated complications. In addition careful clinical examination of the permanent lateral incisors should also be undertaken. Their abnormal position or angulation could indicate a deflected canine, which could potentially become impacted. Severely distally tipped crowns of lateral incisors might be pressured by the crown of a mesially displaced canine against the distal aspect of the lateral incisor root. A labially inclined lateral incisor could be the result of a displaced canine lying on the labial aspect of the lateral incisor root. Excessive or unusual mobility of the maxillary permanent lateral incisor could be the result of root resorption caused by a displaced canine. In the present case, timely extraction of the primary canines was not done which lead to the impaction of the permanent maxillary canine.

Conclusion

A proper diagnosis and careful selection of surgical and orthodontic technique help to achieve a successful alignment of impacted canines. Clinicians should be vigilant to diagnose retained primary canines. Early intervention can prevent impaction and avoid unnecessary surgery, time and expenses involved in treatment of impacted canines. In the present case, relocation of impacted teeth yielded good aesthetic and periodontal results after the end of treatment.

Bibliography

1. Shapira Y and Kuftinec MM. "Early diagnosis and interception of potential maxillary canine impaction". *Journal of the American Dental Association* 129.10 (1998): 1450-1454.
2. Sambataro S., et al. "Early predictive variables for upper canine impaction as derived from posteroanterior cephalograms". *Angle Orthodontist* 75.1 (2005): 28-34.
3. Coulter J and Richardson A. "Normal eruption of the maxillary canine quantified in three-dimensions". *European Journal of Orthodontics* 19.2 (1997): 171-183.
4. Langberg BJ and Peck S. "Adequacy of maxillary dental arch width in patients with palatally displaced canines". *American Journal of Orthodontics* 118.2 (2000): 220-223.
5. Nanda R. "Biomechanics in Clinical Orthodontics". Philadelphia, PA, USA: WB Saunders (1997).
6. Power SM and Short MB. "An investigation into the response of palatally displaced canines to the removal of deciduous canines and an assessment of factors contributing to favourable eruption". *British Journal of Orthodontics* 20.3 (1993): 215-223.
7. Abron A., et al. "Impacted permanent maxillary canines: diagnosis and treatment". *New York State Dental Journal* 70.9 (2004): 24-28.
8. Warford JH., et al. "Prediction of maxillary canine impaction using sectors and angular measurement". *American Journal of Orthodontics* 124.6 (2003): 651-655.
9. Ericson S and Kuroi J. "Radiographic examination of ectopically erupting maxillary canines". *American Journal of Orthodontics* 91.6 (1987): 483-492.
10. Ericson S and Kuroi J. "Early treatment of palatally erupting maxillary canines by extraction of the primary canines". *European Journal of Orthodontics* 10.4 (1988): 283-295.
11. Lindauer SJ., et al. "Canine impaction identified early with panoramic radiographs". *Journal of the American Dental Association* 123.3 (1992): 91-97.
12. Andreason JO., et al. "The impacted first and second molar". Textbook and color atlas of tooth 4 impactions. 1st edition. Copenhagen: Munksgaard (1997): 197-218.
13. Mc Sherry PF. "The ectopic maxillary canine: A review". *British Journal of Orthodontics* 25.3 (1998): 209-216.

Volume 17 Issue 11 November 2018

© All rights reserved by Jai Ram Kaundal and Sankalp Sood.