

## Orthodontic Traction of a Buccally Impacted Maxillary Canine with missing lateral: A case report.

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### Abstract:

A 14-year-old girl presented with complains of space in the right upper quadrant and irregular teeth. On intra-oral examination, she had missing right upper permanent lateral and the right upper permanent canine had taken the place of lateral incisor. On the left upper quadrant, she had retained deciduous lateral incisor and canine. On radiographic examination, the upper left permanent canine was impacted and was lying high up and there was no sign of lateral incisor. She had severe crowding in the lower arch with all permanent teeth present. The deciduous lateral incisor and the canine were extracted and more than a year was observed for spontaneous eruption of permanent canine. As the spontaneous eruption of canine did not occur, surgical exposure and orthodontic traction was done and canine was brought to occlusion satisfactorily and converted into lateral. This experience proves that although spontaneous eruption may take place in majority of cases after extraction of deciduous canine, surgical exposure and orthodontic traction is also needed at times. This is very beneficial in such a case with missing lateral as this provides an opportunity to have natural teeth without artificial prosthesis in addition to having acceptable esthetics.

### Introduction

Impacted teeth are those with a delayed eruption time or that are not expected to erupt completely based on clinical and radiographic assessment. Permanent maxillary canines are the second most frequently impacted teeth next to third molars. The prevalence of their impaction is 1-2%.<sup>1,2</sup> This is most likely due to an extended development period and the long, tortuous path of eruption before the canine emerges into full occlusion.<sup>1-3</sup> Labially impacted maxillary canines occur less frequently (15%) than those positioned palatally (85%).<sup>1, 3, 4</sup> According to Dachi and Howell, impacted maxillary canines are twice more common in girls than boys.<sup>5</sup> Approximately 8% of these patients have bilateral impaction.<sup>5, 6</sup> Although Guidance theory and Genetic theory have been proposed to explain the etiology of impacted canines, research works on labially impacted canines indicate a correlation to a maxillary arch length deficiency<sup>7, 8</sup>. The management of impacted canines is important because they cause root resorption of lateral

incisors to a great extent as well as central incisors and first premolars. Using computerized tomography method, Ericson and Kurol<sup>9</sup> found resorption occurring in 38% of maxillary lateral incisors.

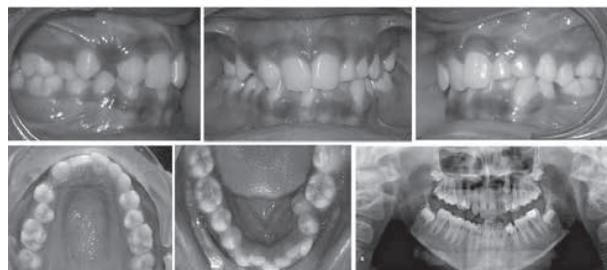
Eruption time of a maxillary canine varies from 9.3 to 13.1 years.<sup>9</sup> Because canines are palpable from 1 to 1.5 years before they emerge, the absence of the canine bulge after the age of 10 years is a good indication that the tooth is displaced from its normal position, and ectopic eruption or impaction of the maxillary cuspids is possible.<sup>9, 10</sup>

According to Power and Short<sup>11</sup>, 62% of the canine impaction gets resolved by interceptive extraction of the primary and another 17% show some improvement in terms of more favorable canine positioning. Similarly, according to Ericson and Kurol,<sup>12</sup> the eruption paths of 78% of palatally erupting cuspids normalize within 12 months. However, extraction of the primary cuspid does

not guarantee correction or elimination of the problem. If there is no radiographic evidence of improvement one year after treatment, more aggressive treatment, such as surgical exposure and orthodontic eruption, is indicated.<sup>11</sup>

### Case Report

A 14-year-old girl presented with space in the right upper quadrant and irregular teeth. On intra-oral examination, she had missing right upper permanent lateral. The right upper permanent canine had taken the place of lateral incisor. On the left upper quadrant, she had retained deciduous lateral incisor and canine. On radiographic examination, the upper left permanent canine was impacted and was lying high up. She had severe crowding in the lower arch with all permanent teeth present.



### Treatment Procedure

1. All deciduous teeth, right lower first premolar and left lower second premolar were extracted. Upper strapping was done on 17<sup>th</sup> May, 2009 and lower strapping was done after enough overjet was created.



2. Sufficient time was given for spontaneous eruption of canine after deciduous lateral and canine was extracted (almost 1 and half years). Spontaneous eruption did not occur to our expectation and so, on 24<sup>th</sup> December 2010, surgical exposure of the canine was done and orthodontic traction started and reactivated every 4<sup>th</sup> week. Orthodontic traction continued and tip of the canine is seen erupting. On 3<sup>rd</sup> September, 2011, coronal topography was done; the SS wire was replaced with Niti wire and tied to the Canine bracket.



3. After the canine was brought in alignment, Niti wire was replaced by SS wire again finishing and detailing done.



4. Deboning was done on 3<sup>rd</sup> May, 2013 and retainers were delivered.
5. On 23<sup>rd</sup> September, 2013 gingival contouring was done and the following changes were achieved.



### Discussion

As suggested by Power and Short<sup>11</sup> and Ericson and Kurol<sup>12</sup>, more than one year was observed for spontaneous eruption of permanent canine of deciduous canine after extraction of deciduous canine. As the spontaneous eruption of canine did not occur satisfactorily, surgical exposure and orthodontic traction<sup>11</sup> was decided. Accordingly, the procedure was undertaken and canine was brought to occlusion successfully and converted into lateral. Esthetic gingival recontouring was done by the Periodontist. This experience proves that although in majority of cases, spontaneous eruption may take place after extraction of deciduous canine, surgical exposure and orthodontic traction is mandatory in some cases. This treatment modality is very beneficial especially in such a case with missing lateral as the patient can have natural complement of teeth with acceptable esthetic, which is the desired goal of orthodontic treatment.

### References

1. Rayne J. The unerupted maxillary canine. Dent Pract Dent Rec. 1969; 19:194-204.
2. Bass TB. Observations on the misplaced upper canine tooth in the general population. Dent Pract Dent Rec 1967; 18:25-33.
3. Hitchin AD. The impacted maxillary canine. Br Dent J 1956; 100:1-14.
4. Ericson S, Kurol J. Radiographic examination of ectopically erupting maxillary canines. Am J Orthod Dentofacial Orthop. 1987; 91:483-92.

5. Dachi SF, Howell FV. A survey of 3874 routine full mouth radiographs. *Oral Surg Oral Med Oral Pathol*. 1961; 14:1165-9.
6. Bishara S E. Ectopic maxillary canines: a review. *American Journal of Orthodontics and Dentofacial Orthopedics* 1992; 101:159-71.
7. Stellzig A, Basdra EK, Komposch G. The etiology of canine tooth impaction—a space analysis [in German]. *Fortschr Kieferorthop*. 1994; 55:97-103.
8. Jacobs SG. The impacted maxillary canine. Further observations on etiology, radiographic localization, prevention/interception of impaction and when to suspect impaction. *Aust Dent J*. 1996;41(310-316).
9. Ericson S, Kurol J. Longitudinal study and analysis of clinical supervision of maxillary canine eruption. *Community Dent Oral Epidemiol*. 1986; 14:172-6.
10. Jacoby H. The etiology of maxillary canine impactions. *Am J Orthod Dentofacial Orthop*. 1983; 84:125-32.
11. Power SM, 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. *Br J Orthod* 1993; 20:217-23.
12. Ericson S, Kurol J. Resorption of maxillary lateral incisors caused by ectopic eruption of the canines. A clinical and radiographic analysis of predisposing factors. *Am J Orthod Dentofacial Orthop*. 1988; 94:503-13.