International Journal of Dental Research
www.dentaljournal.net
Online ISSN: 2664-9055, Print ISSN: 2664-9047
Received: 26-05-2023, Accepted: 12-06-2023, Published: 28-06-2023
Volume 5, Issue 2, 2023, Page No. 65-67

A case of unilateral labially impacted canine treated with orthodontic traction

Dr. Ruchita A Batra[1], Dr. Bhavesh Kothari[2]

[1] 3rd Year Post Graduate, Department of Orthodontics and Dentofacial Orthopaedics, Pacific Dental College and Hospital, Debari, Udaipur, Rajasthan, India

[2] Department of Orthodontics and Dentofacial Orthopaedics, Pacific Dental College and Hospital, Debari, Udaipur, Rajasthan, India

Abstract

The canines are important teeth as regards function, occlusion and aesthetics as they support the lip and facial muscles, as an important guidepost in occlusion, as tissue support at the corner of the mouth and their position is in the turning point of the dental arch. Impaction of maxillary canine affects the occlusion and may even influence the psychological development of the patient. In the literature, at present, different guidelines for management of impacted maxillary canines can be encountered. In this article, we report a case of orthodontically guided eruption of impacted maxillary canine on left side and alignment of highly placed canine on right side.

Keywords: Impacted canine, highly placed canine

Introduction

Maxillary canines are the 2nd most commonly impacted teeth, after third molars. In approximately 2% of the population maxillary canine impaction occurs and is twice as common in females as it is in males. The incidence of canine impaction in the maxilla is more than that in the mandible [1]. Although some cases have idiopathic or iatrogenic origins, potential causative factors include dentoalveolar discrepancies, transverse maxillary deficiencies, prolonged retention or early loss of deciduous canines, absence or anomalies of upper lateral incisors, abnormal positioning of dental buds, alveoloschisis, and physical obstacles such as supernumerary teeth, mesiodens, odontomas, neoplastic formations, cysts, and root dilacerations. Dental impaction has also been correlated with a high incidence of certain syndromes, and palatal canine impaction has been found to run in families. Palatal impactions are far more common than labial ones, accounting for 85% of impacted canines [2].

The diagnosis of the retained canine is normally performed by way of routine clinical examination and x-rays, or through the investigation of various complaints such as pain or missing teeth. Extraoral posteroanterior and lateral x-rays may be used[3], although, nowadays, CBCT is most commonly used to identify and locate the exact position of canine in all 3 dimensions [1].

The present article shows a patient treated with light and direct traction from an orthodontic wire deflected close to the impacted tooth and then completely covered by the flap, which is repositioned in its original location. The canine thus undergoes corono-buccal traction in the direction of the adjacent crowns. This method encourages better oral hygiene because of the absence of wires or elastic chains, which are excellent plaque receptacles and allows optimal soft-tissue healing. In addition, it reduces the likelihood of breakage that might require re-exposure of the tooth.

Diagnosis and treatment planning

A 12 year-old female presented with chief complaint of irregularly placed teeth in upper and lower arch. On extraoral examination, patient has mesoprosopic facial form, brachycephalic head form and a bilaterally symmetrical face with slightly convex profile and competent lips. On intraoral examination, patient had Angle's Class I malocclusion, crowding in upper and lower arch with highly placed permanent right maxillary canine and an over retained deciduous canine on left side. Patient also had crossbite in relation to permanent right maxillary lateral incisor with respect to permanent right mandibular canine and maxillary right 1st premolar was rotated. Patient had normal overjet and overbite. On Radiographic examination, it was revealed that permanent left maxillary canine was impacted. CBCT showed that the upper left canine was buccally impacted (Fig.2).

The treatment plan involved levelling and alignment of both the arches followed by extraction of deciduous canine and exposure of permanent left maxillary canine for the placement of bracket with closed flap technique.

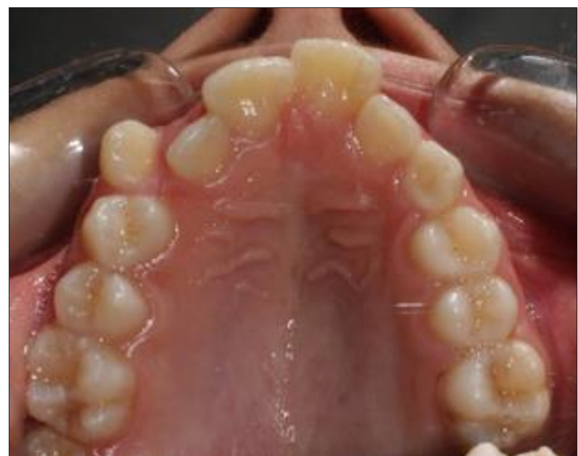

Fig 1: Pre-Treatment Intra Oral Photographs

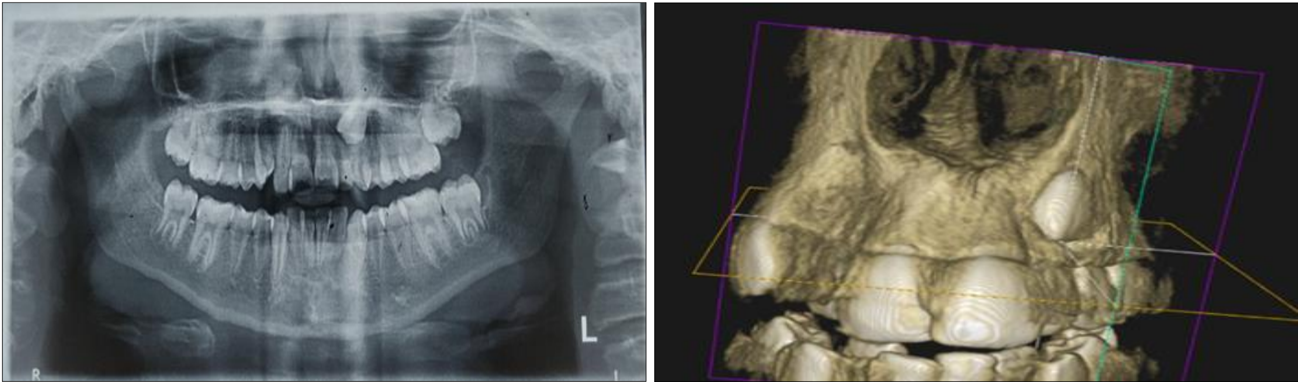

Fig 2: Pre-Treatment Lateral Cephalogram, OPG & CBCT Images

Treatment progress

Levelling and alignment of upper arch was started with the placement of pre adjusted edgewise brackets. Trans-palatal arch was placed in the upper arch for anchorage control. A button was placed on the lingual surface of maxillary 1st right premolar and an e-chain was placed with respect to permanent right maxillary 1st molar to correct the rotation. Lower arch was bonded after the initially levelling of upper arch was completed. After 7 months of levelling and alignment deciduous maxillary left canine was extracted and permanent left maxillary canine was surgically exposed. A bracket was bonded on the tooth and a monkey hook was attached to it (Fig.3). The flap was closed and sutured. After one week of exposure the sutures were removed and traction was started with the impacted canine. Within 3 months of traction the canine was visible in the arch 0.018" SS wire with overlay 0.012" NiTi wire was placed in upper arch to continue the traction (Fig.4).

Once the canine was sufficiently erupted in the arch, a continuous 0.012" Niti wire was placed followed by 0.014" NiTi, 0.018" NiTi, 0.016"x0.022" NiTi and 0.019"x0.025" NiTi wires to complete the alignment in upper arch. In lower arch, to relieve the crowding permanent right central incisor was extracted. The remaining space was closed using e-chain on 0.018" SS wire. The total duration of treatment was 18 months.

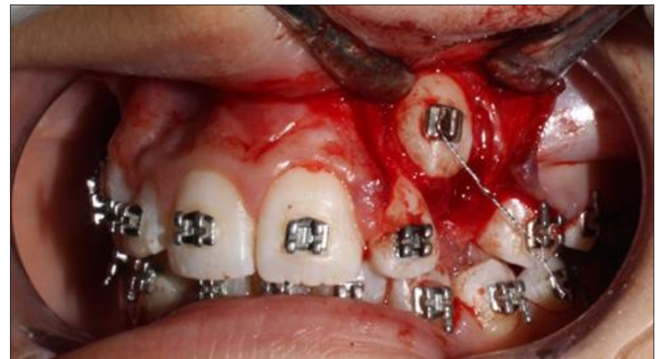

Fig 3: Surgical Exposure of Permanent Left Maxillary Canine, Placement of bracket and monkey hook

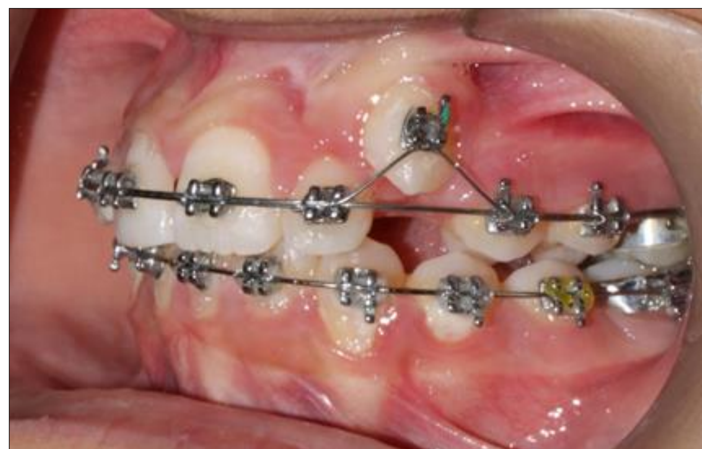

Fig 4: Traction with 0.018" SS and 0.012" NiTi Wire in Upper Arch

Discussion

It is recommended by Fournier and colleagues, that in a young patient, a labially impacted tooth with favorable vertical position should be surgically exposed without any application of orthodontic traction, whereas immediate traction is almost always needed in an adult patient [4]. Burden *et al* have stated similar opinion regarding palatally impacted canines [5]. Surgical exposure and free eruption are preferable to closed exposure and early traction was observed by Schmidt and Kokich [6].

On the other hand, labial impaction is generally thought to be more difficult to manage, although some surgeons use the vertical and horizontal position of the impacted tooth and the quantity of the surrounding gingiva as guidelines [2]. Before determining the appropriate intervention, the esthetic and functional sequelae—gingival attachment, height, width, scarring, clinical crown length, and relapse potential— must be carefully evaluated [7].

The only point of agreement by many authors is that a lack of attached gingiva around the erupting canine can lead to

inflammation and serious periodontal consequences during orthodontic traction. Because of this they prefer to close the flap in its original position after exposure of the tooth and attachment of a traction button, ensuring adequate gingival tissue around the canine. Other clinicians prefer to perform a partial-thickness flap and to reposition it apically so as to cover the cementoenamel junction and 2-3mm of the crown and preventing marginal bone loss and gingival recession [8]. The alternative method is applying direct orthodontic traction with a light wire rather than attaching a metal ligature or elastic chain from the archwire which pulls the crown of the impacted tooth in a buccal direction for more favorable realignment. It also promotes good hygiene at the affected site, minimizing the risk of inflammation to the mucosa. Constant traction from the round Copper NiTi segmental wire avoids the need for subsequent reactivations. A bond failure of the button or bracket on the impacted tooth could require further surgery, as with other traction procedures, but there is no concern about breakage of traction wires or elastic chains [2].

References

1. Manne R, Gandikota C, Juvvadi SR, Medapati Rama H, Anche S. Impacted canines: Etiology, diagnosis, and orthodontic management. J Pharm Bio all Sci,2012:4:234-8.
2. Gracco A, Maltoni I, Maltoni M, Zoli L. Eruption of a labially impacted canine using a closed-flap technique and orthodontic wire traction. J Clin Orthod,2012:46(10):625-30.
3. Martorelli SB, Lacerda ÉP, Andrade FB, Fonseca FL. Impacted canine in orbita: case report. RGO-Revista Gaúcha de Odontologia,2017:65:270-5.
4. Fournier A, Turcotte JY, Bernard C. Orthodontic considerations in the treatment of maxillary impacted canines. Am. J. Orthod,1982:81:236-239.
5. Burden DJ, Mullally BH, Robinson SN. Palatally ectopic canines: Closed eruption versus open eruption. Am. J. Orthod,1999:115:640-644.
6. Schmidt AD, Kokich VG. Periodontal response to early uncovering, autonomous eruption, and orthodontic alignment of palatally impacted maxillary canines. Am. J. Orthod,2007:131:449- 455.
7. Vermette ME, Kokich VG, Kennedy DB. Uncovering labially impacted teeth: Apically positioned flap enclosed-eruption techniques. Angle Orthod,1995:65:23-32.
8. Vanarsdall R, Corn H. Soft-tissue management of labially positioned unerupted teeth. Am. J. Orthod,1977:72:53-64.