

Guided Surgical Exposure of Impacted Maxillary Canine: A Case Report

Ravi Popat MDS¹, Sandip Thakkar MDS², Amit Patel BDS³¹Consultant Periodontist, Vadodara.²Dental Surgeon Class-1, General Hospital, Navsari.³Private Practitioner, Vadodara.***Corresponding author***Dr Ravi Popat***Article History***Received: 08.11.2017**Accepted: 15.11.2017**Published: 30.11.2017***DOI:**

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Abstract: The maxillary canines are the second most commonly impacted permanent teeth after the third molars. This case report describes the management impacted maxillary canine with over retained deciduous canine. Closed eruption technique was selected for exposure of impacted canine. First deciduous canine was extracted after incision & reflection of flap. Then second step included surgical exposure with closed eruption technique and traction of the impacted canine with fixed orthodontic appliance. As closed eruption technique replicates natural tooth eruption & therefore it can produce better esthetic & periodontal results.

Keywords: maxillary canines, permanent teeth, Impaction

INTRODUCTION

Impaction is defined as the failure of tooth eruption at its appropriate site in the dental arch, within its normal period of growth. The maxillary canines are the second most commonly impacted permanent teeth after the third molars. About one third of impacted maxillary canines are positioned labially or within the alveolus, and two thirds are located palatally[1,2]. Canines are cornerstone of oral cavity. Aside from their importance in an ideal mutually protected occlusal scheme, the maxillary canine also plays a key role in esthetics and continuity of the dental arch. Several complications may result from impaction including esthetic and phonetic compromises, loss in arch length, and referred pain[3]. Impacted canines also increase risk of infection, cyst formation and root resorption of adjacent teeth[1,3].

Various treatment alternatives have been suggested for impacted canine in literatures such as; Removal of impacted canine and movement of first premolar in its position, extraction and posterior segmental osteotomy to move buccal segment mesially, extraction and prosthetic replacement, surgical exposure and orthodontic alignment and no treatment at all [3]. Surgical exposure, placement of orthodontic attachment and orthodontic guidance to move in desired position is the most desirable treatment option over all other options. Present report describes the management of an impacted maxillary canine with over retained deciduous canine.

CASE REPORT

A 20 years old female patient referred and reported with over retained deciduous right maxillary canine (#53) and impacted right maxillary canine (#13). Patient was otherwise healthy without any relevant history systemic diseases. Clinical examination revealed no bulging of impacted maxillary canine in oral cavity along with adequate attached gingival around over retained deciduous tooth (Figure 1). Several radiographs were obtained prior to surgical procedure to

determine position of impacted canine. Consent was obtained before the surgical procedure.

After proper anesthesia was achieved in area to be operated, one crevicular incision around deciduous canine & two divergant vertical incisions extending beyond mucogingival junction were placed (Figure 2). Full thickness mucoperiosteal flap was reflected & deciduous canine was extracted (Figure 3). The bone covering over the crown of permanent canine was removed with burs and micromotor handpiece to expose permanent canine. Copious irrigation with normal saline was used during bone removal. Conservative approach was used during bone removal to preserve as much of buccal bone as possible. After sufficient amount of bone removed, area was properly cleaned and isolated to allow placement of orthodontic attachment. Curved orthodontic bracket & ligature wire were attached (Figure 4 and 5). The flap was replaced & sutured with 4-0 braided silk suture a wire extending from the bracket into the oral cavity (Figure 6). Light wire traction was applied over canine to move it into desired position in oral cavity. Post-operative instructions were given. Sutures were removed after a week and patient was instructed to maintain proper oral

hygiene (Figure 7). Patient recalled at monthly interval for clinical examination till crown is exposed in oral

cavity (Figure 8).



Fig-1 : Preoperative clinical photograph

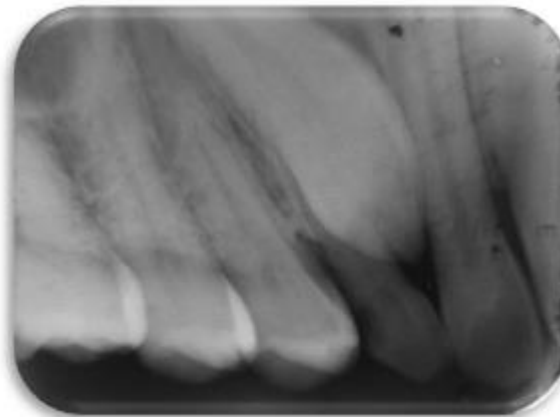


Fig-1 : Preoperative radiograph



Fig-2 : Incisions in place

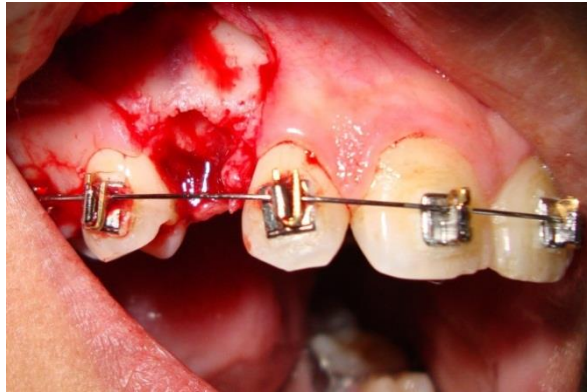


Fig-3: After removal of deciduous canine



Fig-4: View of maxillary permanent canine after bone removal for placing orthodontic attachment

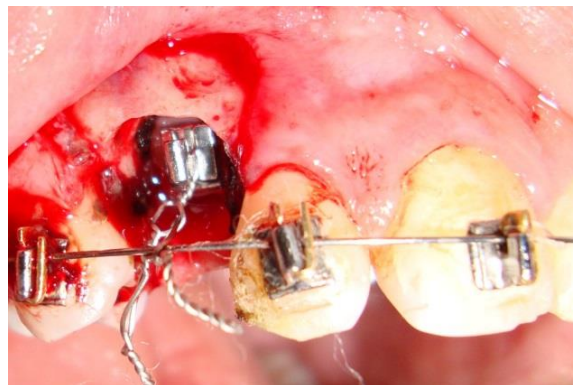


Fig-5: Orthodontic attachment in place



Fig-6: closure of surgical site with sutures with wire extending in to oral cavity



Fig-7: Uneventful healing after 7 days



Fig-8: Post-operative view after 6 months

DISCUSSION

The primary goal for treatment in this particular case was to provide adequate access for placement of orthodontic attachment and to move impacted canine in to desirable position in oral cavity with favourable tissue conditions (periodontal health) post operatively. There are 3 techniques for uncovering a impacted maxillary canine: excisional uncovering, apically positioned flap, closed eruption technique. Selection of one technique over another was determined by different criteria such as; labiolingual position of the crown of impacted tooth, vertical position of tooth relative to mucogingival junction, amount of gingiva in the area and mesiodistal position of impacted tooth [4].

Excisional method is generally preferred in limited conditions when impacted tooth crown is buccally with presence of adequate amount of attached gingiva. The advantages of the excisional uncovering include; Ability to observe the impacted tooth as it is moved and faster eruption. However, this method is associated with multiple periodontal concerns, including; gingival recession, bone loss, decreased width of keratinized gingival and gingival inflammation[4,5].

Vermette *et al.* found that with an apically positioned flap, the crown length of the impacted tooth is longer than normal, due to apical migration of the gingival margin. The crown lengths of teeth uncovered

with closed eruption were similar to contralateral nonimpacted teeth in the same mouth. Furthermore, high labial impactions uncovered with an apically positioned flap tend to reintrude after orthodontic treatment. This is due to the healing of the apically positioned flap to the mucosa adjacent to the impacted tooth at the time of uncovering[6].

In present case closed technique was chosen over other methods due position of impacted tooth and other local factors. Simultaneous removal of primary canine allows for minimum amount of bone reduction and also guides permanent tooth in oral cavity. It is important to avoid overzealous bone removal for the sake of postoperative tissue health[1]. No more than 2/3 of impacted tooth crown should be uncovered. Exposing cement enamel junction of impacted tooth results in more gingival recession and greater bone loss[7,8].

Closed eruption technique guides the impacted canine along an eruption pathway that simulates the physiologic one, produce better esthetic result and better periodontal health & long term stability as compared with open method[9,10].

CONCLUSION:

Impacted permanent canine has both esthetic as well as functional importance hence its correction and further maintaining surrounding tissue health postoperatively is always challenging. Proper treatment planning and careful execution will give satisfactory treatment outcome.

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