

# Management of Bucco-Palatal Placed Impacted Maxillary Canine: Case Report

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## Abstract

**Rationale:** The management of impacted maxillary canines depends on several factors. Among all teeth, maxillary canines are frequently impacted after the lower third molars. If there is enough space for the canine to erupt, a simple crown exposure followed by orthodontic management may be sufficient. However, in cases where sufficient space is unavailable and the tooth is in an unfavorable position, surgical removal of the impacted canine may be necessary. Patient concerns: The patient reported pain in the upper right front region of the jaw. Diagnosis: Based on orthopantomogram and cone-beam computed tomography findings, a final diagnosis of Class III maxillary canine impaction was made. Treatment: The clinicians in this study used buccal split and palatal pull-out methods to manage impacted canine. Outcomes: The method used proved to be successful in treating bucco-palatally impacted canines.

**Key words:** Buccal, Canine, Case report, Impacted, Palatal, Surgical approach

## INTRODUCTION

Tooth eruption alterations manifest as improper positioning within the oral cavity. Tooth impaction denotes a mature-rooted permanent tooth's failure to emerge. Among impacted teeth, maxillary canines rank high, particularly after third molars.<sup>[1]</sup> Maxillary canines traverse a longer path in the jaw before emerging, with a higher prevalence in females.<sup>[2-4]</sup> Number of factors can be attributed to the impaction of maxillary canines. These factors can be generally classified as local or genetic, posing a hereditary influence.<sup>[5]</sup> Variations in placement of impacted canine are - buccal, palatal, buccopalatal, or placed in arch.<sup>[6]</sup> Clinical and radiographic examinations aid in early detection, with cone beam computed tomography (CBCT) being more effective than conventional radiography.

Early detection is crucial due to potential complications such as root resorption, displacement, ankylosis, and cyst formation.<sup>[4,7-9]</sup>

This case presents a bucco-palatal impacted maxillary canine which was managed by the buccal split and palatal pull-out technique.

## CASE REPORT

A 27 years old female patient reported to the oral and maxillofacial surgery department with a chief complaint of pain in the upper right front region of the jaw. On eliciting history, the pain was dull aching, and continuous in nature. Intraoral examination revealed deep disto-proximal caries associated with over-retained 53 and on palpation, a buccal bulge was observed in buccal mucosa. Further radiological investigation using an orthopantomograph revealed an impacted right maxillary canine [Figure 1]. A CBCT of the facial skeleton was done for the exact localization of the impacted right maxillary canine. The CBCT revealed a bucco-palatal position with the crown positioned palatally and the root buccally [Figure 2].

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Surgical extraction under conscious sedation was planned. After obtaining the anesthetist's fitness for surgery and written informed consent from the patient, the surgical procedure was carried out under conscious sedation.

**Surgical Procedure**

Under conscious sedation, standard surgical scrubbing and draping was done. 2 mL of Lignocaine with 1:2,00,000 dilution of adrenaline was used for an infraorbital nerve block of the right maxilla and anterior palatine nerve block, anesthetizing 11–15 and the associated palatal and buccal mucosa. Local infiltrations were given labially in relation to 11,12 and 13. A crevicular incision was given with respect to 12,53,24,25 on buccal and palatal aspect with anterior releasing incision mesial to 12 and distal releasing incision distal to 25 buccally. A mucoperiosteal flap was reflected to expose the bone. Palatal bone guttering was done to completely expose the crown till the cemento-enamel junction (CEJ) [Figure 3]. This was followed by buccal

guttering to expose the root [Figures 4 and 5]. A horizontal split of the root was carried out at the apical 1/3<sup>rd</sup> level from the buccal side. The apical 1/3<sup>rd</sup> root was removed from the buccal aspect and palatal pull-out of the remaining tooth portion was carried out [Figure 6]. Hemostasis was achieved and closure was carried out using 4-0 vicryl suture [Figure 7]. Recovery was uneventful and the patient was stable. The patient was prescribed an analgesic and antibiotic regimen for 5 days. The patient was reviewed after 1 week and the healing was satisfactory.

**DISCUSSION**

Tooth impactions, supernumerary teeth, oligodontia, infra-occluded teeth, taurodontism, and ectopic eruption of mandibular canines are examples of dental anomalies that affect a significant number of people worldwide and comprise a group of dental manifestations that are frequently examined in patients with maxillary impacted

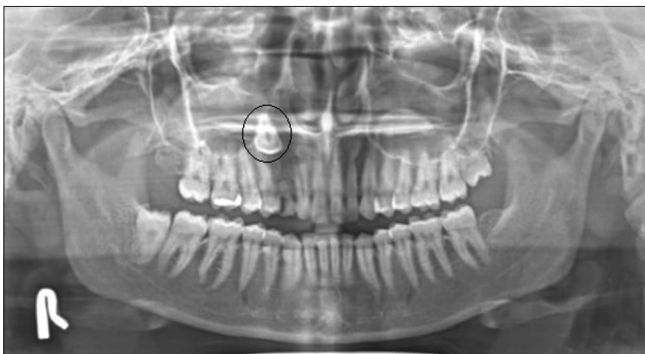


Figure 1: Orthopantomograph

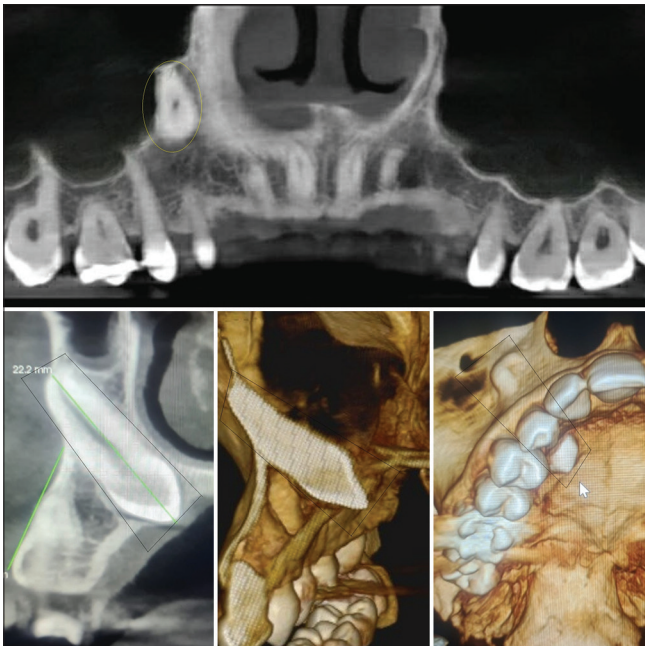


Figure 2: Cone beam computed tomography



Figure 3: Exposure of palatally impacted crown



Figure 4: Exposure of buccally placed root

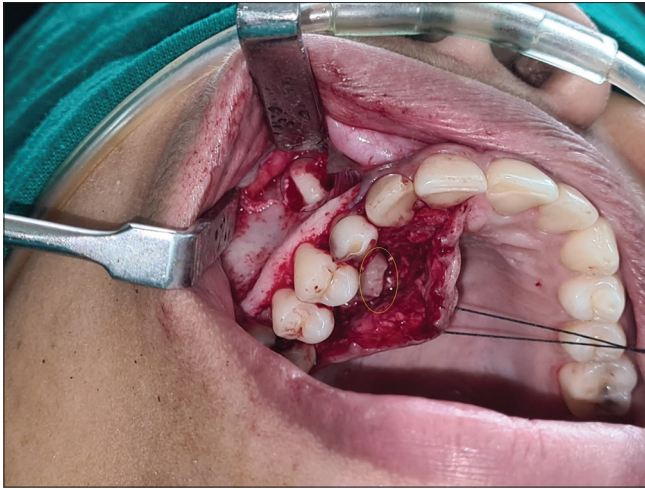


Figure 5: Complete exposure impacted canine



Figure 6: Extracted Canine



Figure 7: Closure

canines.<sup>[10]</sup> Because they are recognized earlier in the oral cavity, these dental anomalies may serve as risk markers for maxillary canine impaction and contribute to its early detection and treatment.<sup>[6]</sup>

There are various methods for the management of impacted canines. The method of management depends upon various factors such as the patient's age, stage of root formation, tooth position, presence of pathology, and general physical condition of the patient. The surgical method and orthodontic procedures used to treat impacted canines will differ based on the degree of impaction, horizontal overlap of the impacted tooth, canine angulation, and localized crowding.

No treatment is recommended if there is no evidence of resorption of neighboring teeth, absence of any pathology, or if there is presence of good contact between the lateral incisor and first premolar. In such cases, the patient is put on regular clinical and radiographic follow-up.

### Surgical Exposure of the Tooth Followed by Orthodontic Treatment

If enough space is available or can be generated by orthodontic therapy, the affected canine is surgically exposed followed by orthodontic bonding. Controlled and planned traction forces can return the canine to its normal position in the arch. Orthodontic management is difficult with palatally impacted teeth.<sup>[1]</sup>

### Surgical Removal of Impacted Tooth

Teeth in an unfavorable position that is likely to cause issues in the future should be removed as soon as possible. When a patient is unwilling or unable to pay for orthodontic treatment, even teeth in a favorable position may have to be sacrificed. The surgical method differs depending on the canine's position and the type of impaction. Buccal flap elevation and bone guttering are all that is needed for a buccally displaced canine, and vice versa for a palatally displaced canine. In the case of bucco-palatal impaction, however, a single-sided approach is associated with the requirement for significant bone resection.<sup>[1]</sup> This can be reduced by employing the bucco-palatal technique proposed in the current paper. In bucco-palately positioned oblique impactions, teeth are separated at the mid-root level from the opposing side. This shifts the center of rotation more cervically to the level of CEJ or cervical root segment, as opposed to the typical center of rotation, which is positioned in the mid-root level, making removal easier.

A novel technique is described in this case report that is, the root is split in the mid-root region through the buccal aspect and the remaining part of the tooth is pulled out palatally.

### CONCLUSION

Currently, not much literature on the approaches for surgical removal of canine is available. This case report

has discussed the management of bucco-palatal impacted canine with buccal split and palatal pull-out technique. The positive outcomes obtained in this case prove that this approach is effective in the management of bucco-palatal impaction of Maxillary canines without any complications.

### Informed Consent

The patient was provided with detailed information and an informed consent form was obtained.

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