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Periodontal Surgical Exposure and Fix Orthodontic combination for maxillary canine impacted treatment- A CASE REPORT

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Abstract

Objective: Impacted teeth, which are unable to emerge from the alveolar bone or are obstructed by gingiva, often lead to malocclusion. Canine teeth play vital roles in masticatory function, aesthetics, and the correction of malocclusion. A combination of surgery and fixed orthodontic appliances can be employed to retrieve impacted canines, restoring normal arch alignment and positioning.

Case report: A 16-year-old female patient at Bhojia Dental College and Hospital in Baddi was referred by the orthodontics department due to an impacted maxillary right canine located in the buccal region. The tooth's position was assessed using radiography and occlusal projections. The treatment involved performing periodontal full thickness flap surgery, opening the flap to access the crown of the impacted canine, inserting an orthodontic button, placing ligature wire, and finally repositioning and suturing the flap.

Management: The combination of periodontal surgical techniques and the application of orthodontic appliances effectively repositioned the impacted canines into their normal arches and suitable occlusal positions. Surgical exposure, alongside fixed orthodontic treatment for the impacted maxillary right canine, was successfully carried out.

Conclusion: The integration of surgical exposure and fixed orthodontic treatment for the impacted maxillary right canine yielded excellent results, particularly in achieving the proper positioning of the canines within the normal arch and enhancing aesthetic appearance.

Keyword: Impacted Tooth; Surgical Exposure; Fixed Orthodontics; Periodontal Surgery

INTRODUCTION

During the phases of primary and permanent dentition, the eruption of teeth into the oral cavity typically occurs as part of normal physiological processes. However, teeth can become impacted during this eruption phase. Various factors can contribute to tooth impaction, including obstruction from adjacent teeth, thick soft tissue, and dense layers of bone. Additionally, impaction can result from insufficient space in the dental arch to accommodate the complete length of the tooth, preventing it from aligning properly within the jaw arch.1,2

Among impacted teeth, canines are the second most commonly affected after third molars, with a prevalence ranging from 0% to 28%. Approximately 85% of impacted canines are found in the palatal region of the dental arch, while 15% occur on the labial or buccal side.3,4 Research by Bishara et al. indicates that both primary and secondary factors can contribute to the etiology of impacted canines. Primary causes may include trauma to the primary tooth germ, the rate of resorption of primary tooth roots, the sequence of tooth eruption being disrupted, insufficient space in the jaw arch, early closure of roots, and eruption issues associated with cleft palate. Secondary factors may involve abnormal muscular pressure, endocrine disorders, and vitamin D deficiency.4,5 Complications arising from impacted canines include pressure on adjacent teeth, which can lead to irritation and inflammation over time, as well as potential resorption of neighbouring teeth. Patients may experience symptoms such as pain, neuralgia, and headaches, along with the development of cysts around the impacted teeth.5 Achieving successful retraction of an ectopic canine is crucial for repositioning it into the appropriate dental arch.6

Case Overview

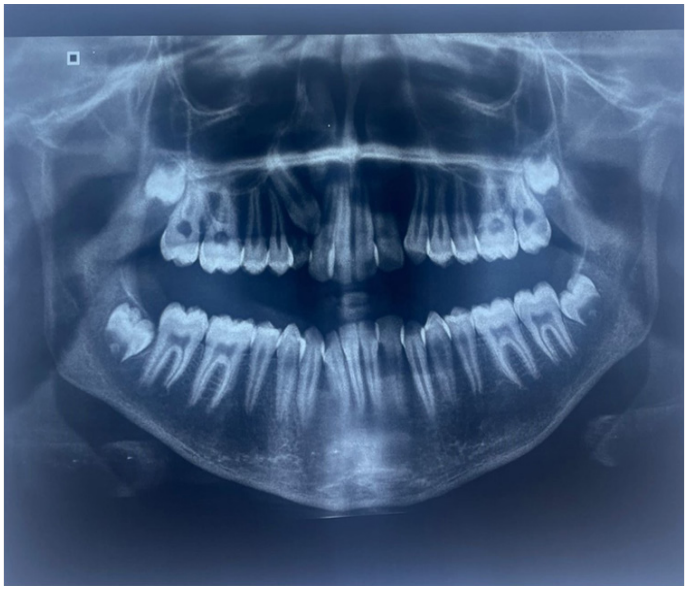
A 16-year-old female patient was referred from the orthodontics department to the Department of Periodontology and Oral Implantology at Bhojia Dental College and Hospital in Baddi for treatment of an impacted right maxillary canine. The patient was asymptomatic and unaware of the impaction. Upon extraoral examination, the findings were positive, and the patient's overall health was good. A retained deciduous canine was noted and the molar relationship was classified as Class I according to Angle's classification. The OPG radiograph indicated that tooth 13 was positioned apically relative to tooth 14, causing it to be pushed mesially. The treatment plan consisted of scaling and root planing, coupled with surgical exposure and orthodontic treatment to guide tooth 13 into proper arch alignment.

Informed consent was obtained from the patient.

Case Management

During the second appointment, starting with the preparation of instruments and surgery. The patient's vital signs were monitored. Povidone-iodine was applied to maintain sterility in the operative area. Local anesthesia was administered in the labial and palatine regions of tooth 13.Deciduous retained canine was extracted and periodontal full thickness flap surgical procedure was executed with the help of BP blade and periosteal elevator. A low-speed bone bur was utilized to remove bone from the buccal ridge down to the crown, and upon exposing tooth 13, the area required for button placement was carefully extended. The area around the tooth was cleaned and irrigated with saline. An orthodontic button was placed, and retraction wire was attached to it. The flap was then repositioned, and the incision was closed using interrupted sutures with 5-0 silk. A cold pack was applied for

30 minutes, and the patient was advised postoperative instructions, including to avoid excessive rinsing, touching the wound, or playing with the tongue post-surgery. Analgesics and anti-inflammatory medications were provided after the procedure. At the follow-up appointment on the seventh day, the wound healing was assessed, and the sutures were removed. Three months after the surgery, the canines began to show signs of downward movement.



FigNo.1: OPG

Fig. No.2: Retained deciduous canine

Fig. No.3: Incision

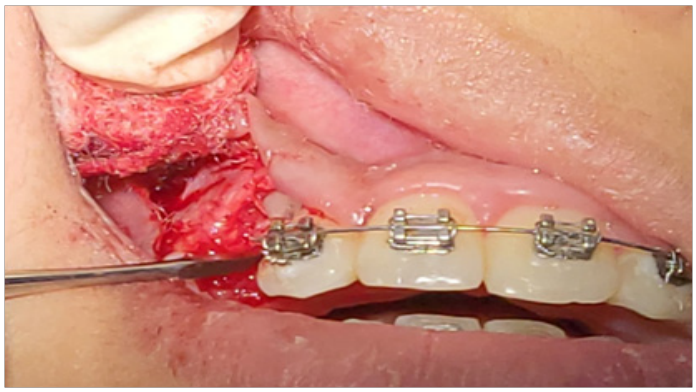


Fig No.4: Full thickness flap

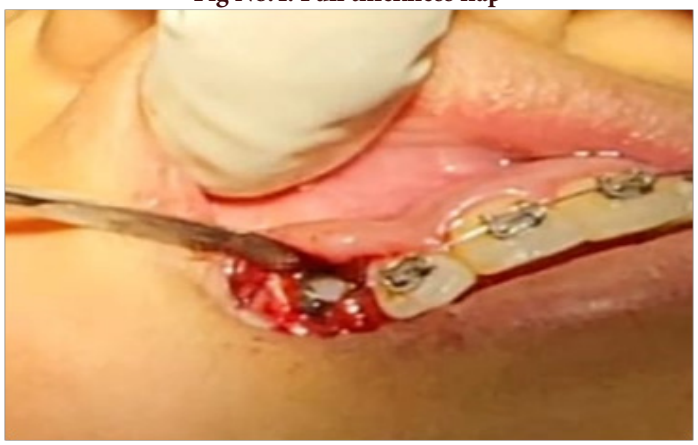


Fig No.5: Crown of canine exposed

Fig No.6: Orthodontic Button and ligature wire placement

Fig No.7: Suturing

Discussion

Canines play a vital role in facial aesthetics, dental appearance, jaw development, and functional occlusion. Various strategies are employed to manage impacted canines, including extraction, repositioning, exposure combined with orthodontics, and replantation.7-9 Exposure surgery coupled with orthodontic treatment is the most common approach for managing impacted canines. The success of placing impacted canines correctly within the dental arch can be variable and is influenced by several factors: the patient's age, the availability of space for eruption, the presence of crowding, vertical dimensions, crown positioning (ideally not more than 45 degrees off-axis), and potential issues like ankylosis or twisted roots. In this case, the patient's young, available space for eruption, and favourable crown and root positioning contributed to a favourable prognosis. Immediate treatment was necessary due to the impacted canine's pressure on the lateral incisor's root, risking resorption. Successful spontaneous eruption generally follows the removal of causative factors, exposure of the impacted tooth, and maintenance of space through surgical and orthodontic intervention. Fixed brackets are preferred as they provide better control over the impacted tooth's movement, tensile strength, and patient comfort. The combined approach of orthodontics and surgical exposure requires careful consideration of patient cooperation and various factors such as age, space availability, crowding, crown position, and root alignment. Early diagnosis of maxillary permanent canines can significantly reduce treatment time, complications, and costs.10-12

Conclusion:

Combining surgical and orthodontic treatments for impacted canines generally yields positive outcomes in preventing malocclusion. Key factors influencing the success of surgical exposure include the patient's age, available dental space, crown positioning, inclination, and root apex shape. The aim of this case report is to evaluate the impact of surgical exposure in routine dental practice.

SOURCE OF FUNDING

None

CONFLICT OF INTEREST

No Conflict of Interest

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