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Case Report

SURGICAL MANAGEMENT OF UNERUPTED CANINES: A CASE REPORT

SHIKHA DHIR[1]*, TEJASWIN POLEPALLE[2], LIPSA PATEL[3], DHWANI DAVE[4]

[1]Department of Periodontology, K. D. Dental College and Hospital, Ahmedabad, Gujarat, India. [2]Department of Periodontology, MAHSA University, Jenjarom, Selongor, Malaysia. [3]Darshan Dental College and Hospital, Udaipur, Rajasthan, India. [4]Goenka Research Institute of Dental Science, Ahmedabad, Gujarat, India.
***Corresponding author: Dr. Shikha Dhir; Email: dhirshikha004@gmail.com**

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ABSTRACT

Management of impacted canines includes an interdisciplinary approach to achieve desired esthetics, and functional, and occlusal treatment goals. The present case series included various surgical procedures, used for the management of impacted canines and it also highlights the periodontal and orthodontic considerations to be taken before surgical canine exposure. The surgical exposure of canine creates a sufficient space and view of teeth that helps in the proper orthodontic extrusion and traction of teeth into the dental arch.

Keywords: Orthodontic traction, Photographic method, Unerupted canines

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INTRODUCTION

Retardation or halt in the normal process of tooth eruption leads to the impaction of the tooth [1]. Impacted tooth can mostly be diagnosed at the time of orthodontic treatment planning [2]. The second most common tooth impaction can be seen among the permanent canines [3,4]. Labial and palatal impaction can be seen [3].

Reasons for canine impaction include [1,5]:

- Loss of primary teeth in the premature stage
- Mechanical obstruction within the path of the eruption
- Discrepancy in the dental arch
- Discrepancy in tooth size
- Microgranthia.

Untreated impaction can lead to [6]:

- Tooth malalignment
- Root resorption in the adjacent teeth
- Any infection
- Cyst formation.

After obtaining proper ethical approvals from the institution and consent from the patient, this study was performed.

Open or closed surgical techniques are performed for the impacted canine exposure. While performing the open technique, the canine is exposed from the crown portion by completely removing overlying hard tissue as well as soft tissue. After that, direct traction of canine is done by bonding an orthodontic attachment to the canine. Closed technique includes raising of full mucoperiosteal flap to expose the canine''s crown portion and bonding of an orthodontic attachment over it. After that, repositioning of the flap is done, followed by healing, and orthodontic traction is done until tooth eruption occur, followed by proper alignment within dental arch [2].

Periodontal health is a fundamental requirement for surgical canine exposure. It includes an adequate amount of keratinized gingiva and should be free of plaque. As the permanent teeth eruption occurs within the alveolar ridge, adequate keratinized gingival tissue surrounds it. Lack of keratinized gingiva can be due to abnormal permanent tooth eruption, leading to gingival recession. Gingival recession entertains the increased plaque accumulation and trauma while tooth-brushing the orthodontic treatment. A better understanding is required among the orthodontist and the periodontist and proper management of periodontal tissues to prevent such problems [7]. This case series included the surgical exposure of canines by closed and open methods using a scalpel as well as electrocautery. Afterward, orthodontic extrusion of exposed canines was done.

CASE REPORT-1

A boy aged, 16-yearcame to the Department of Orthodontics, Kanti Devi Dental College and Hospital, Mathura, had a chief complaint of spacing in upper anterior teeth. On intraoral examination, he presented, with unerupted maxillary canines along with midline diastema (Figs. 1a-e and 2a-b). His lips were incompetent lips. An occlusal radiograph was taken which showed the presence of impacted canines on both the left and right side of the maxillary arch.

Surgical procedure

A non-extraction treatment was planned. Then, the traction of the canine was done with orthodontic force. Local anesthesia containing lidocaine with 1:1,00000 epinephrine was injection. Both block as well local infiltration were given. The open window technique was used for canine exposure (Fig. 3a-d). Exposure was performed using electrocautery. After that, an attachment was bonded to the canine and tooth movement was initiated. Follow-up was taken for the 7th day, 14th day, and 21st day (Fig. 4a and b).

CASE REPORT-2

A girl, aged 17-year came to the Department of Orthodontics, Kanti Devi Dental College and Hospital, Mathura, who had a chief complaint of proclination with upper and crowding in lower teeth. Intraoral examination showed the presence of deciduous canines. The patient was asked to go for CBCT (Fig. 5). CBCT showed the presence of impacted canines on both the left and right sides of the mandibular arch (Fig. 6).

Surgical procedure

A non-extraction treatment was planned. Traction of the mandibular left canine with orthodontic force was to be done. Local anesthesia containing lidocaine with 1:1,00000 epinephrine was injection. Both block as well local infiltration were given. The closed window technique

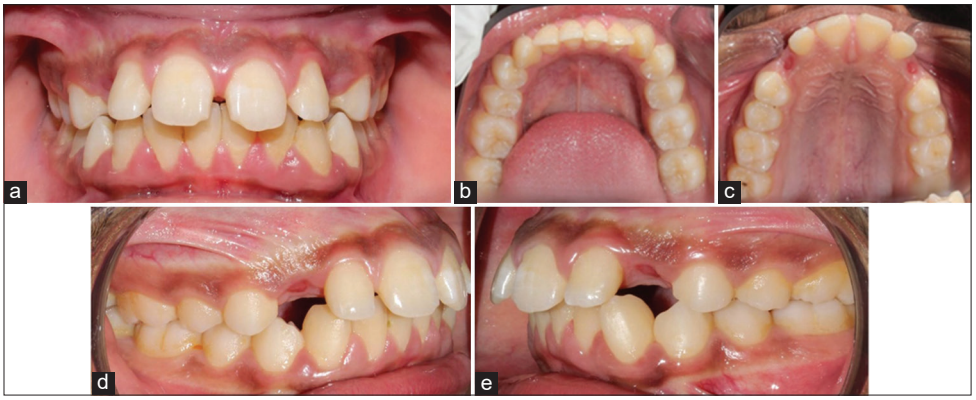

Fig. 1: Intraoral and extraoral views of a 16-year-old patient with palatally impacted maxillary canines. (a) Frontal view. (b and c) Occlusal view. (d) Right view. (e) Left view

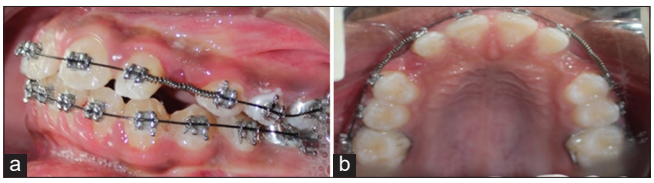

Fig. 2: (a and b) Pre operative view

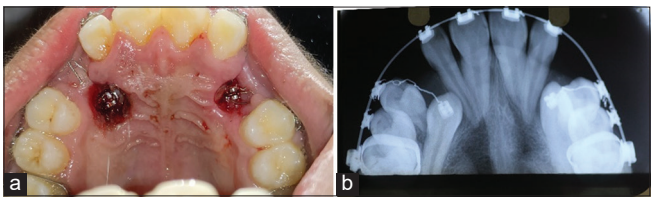

Fig. 3: Open window technique used for surgical exposure of maxilary canine. (a) Orthoddontic bracket bonded to the canine 1 week after canine exposure. (b) Radiographic view of the orathodontic bracket been placed for canine exposure

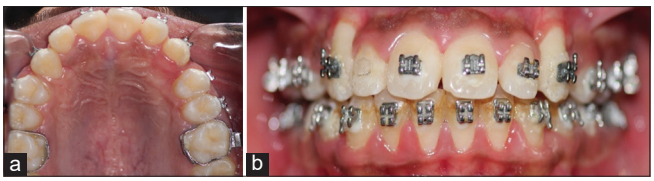

Fig. 4: (a and b) Fully erupted canine can be seen in dental arch

Fig. 5: Pre-operative

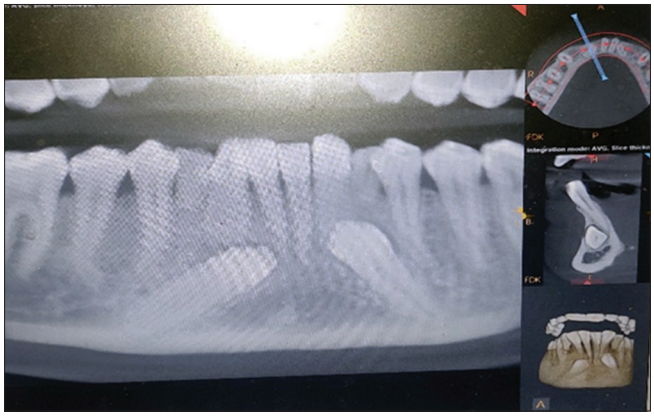

Fig. 6: CBCT of canine impaction

Fig. 7: Full thickness mucoperiosteal flap raised

was used for canine exposure. Full thickness mucoperiosteal flap was raise (Fig. 7). Bone removal was done (Fig. 8). After that, an attachment was bonded to the canine (Figs. 9-11), and tooth movement was initiated. Follow-up was taken for the 7th day, 14th day, and 21st day.

DISCUSSION

In the following case report, open as well as closed technique was used for canine exposure. The surgical procedure was done in two phases including the surgical phase and the orthodontic phases. Talking about the open technique in which exposure of the canine is done without elevating the flap. The pain threshold for open surgical procedure was more as compared to the closed technique. Our result coincided with the study done in the year 2014. Sajnani and King in

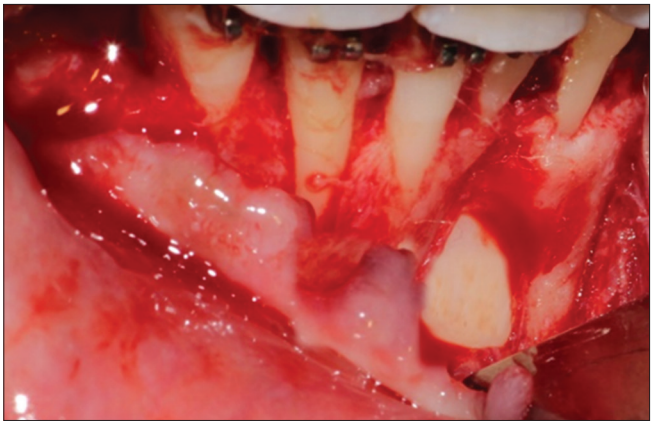

Fig. 8: Bone removal was done and the canine was exposed

Fig. 9: Bracket placed on canine

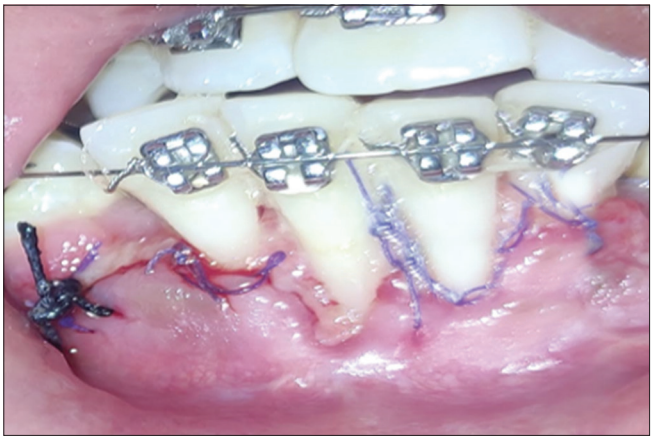

Fig. 10: 7 days after the sutures placement

year 2014 found that closed eruption technique group patients had severe pain for 3-days postoperatively [8]. As compared to patients who had undergone the open eruption technique, who reported 7 days of severe pain postoperatively. The time duration for the open surgical procedure was less as compared to closed technique. The result was similar to the study done by Gharaibeh and Al-Nimri in the year 2008 [9]. Another study done by Chaushu *et al*. in the year 2005 showed that severe pain was experienced by the patients in the open technique as compared to closed technique [10]. Increased bleeding was seen in closed technique as compared to open technique. This result was in accordance to the study done by Manivannan *et al*. in the year July 2013, in which they studied about the pre-operative

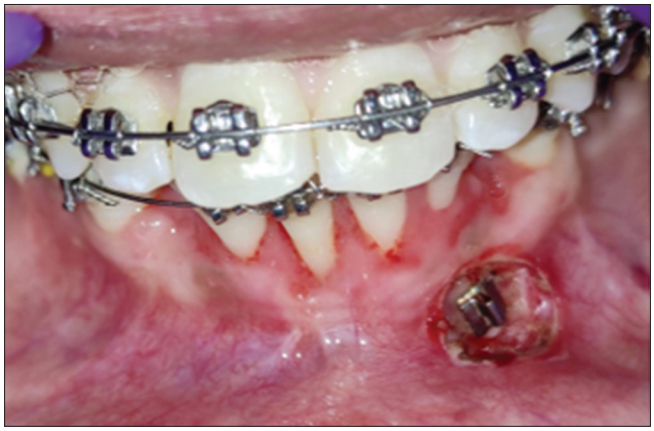

Fig. 11: Bracket was exposed using cautery

and post-operative gingival perfusion, and compared the use of electrocautery and scalpel, which showed that less bleeding was seen with the use of electrocautery [11].

CONCLUSION

Thus, both the techniques have their own advantages and disadvantages. Both techniques can be used for the canine exposure. Decision-making for the technique should be dependent upon the presence of keratinized gingiva and bone thickness as well as depth of the canine impaction. Increased depth of the canine impaction may require more amount of bone removal and thus a closed technique should be done for better healing. Further studies are requiring to evaluate the superiority of closed vs open technique.

CONFLICTS OF INTEREST

No.

SOURCES OF FUNDING

No.

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