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Research article

Management of Impacted Permanent Canine on Upper Jaw with Surgical Exposure: A Case Report

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Abstract.

Background: An impacted tooth is often left unidentified due to the lack of symptoms. It is generally found when the patient is examined by a dentist. The maxillary canine should be retained for strength masticatory functions, esthetics and child development.
Purpose: To report the treatment options of impacted canine in a 12-year-old girl.
Case Report: A 12-year-old girl presented to Kertosono General Hospital with the complaint that her upper left permanent canine had not erupted and had no history of pain. Panoramic radiograph showed the impacted position of vertical tooth 23. The shift sketch technique radiograph indicated the impacted canine located at the buccal site. Surgical exposure to the upper left maxillary canine was performed, followed by orthodontic treatment to direct tooth position into an occlusal line. A fixed orthodontic appliance used, which was a roth bracket with a straight wire technique. After surgery and orthodontic treatment, tooth 23 was in normal occlusion.
Conclusion: Surgical exposure followed by orthodontic treatment can be performed successfully with special consideration to the patient's age, dental space, location of dental crowns, dental inclination, apical root form of the impacted tooth and patient cooperation.

Keywords: impaction, surgical exposure, orthodontics, fixed appliance

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1. Introduction

Tooth impaction is the cessation of tooth eruption due to local and systemic factors. The anterior teeth that are often impacted are the maxillary canines.[1]Impacted canines can cause ectopic eruptions and are usually found in daily practice. The exact cause of this impaction is still unidentified, but it is possible due to multifactorial causes. One possibility is that the eruption pathway of canines is longer compared to other permanent teeth.[2]Also, arch length discrepancy, overcrowded teeth and diastema between teeth in early growth can cause ectopic canines.[3]

The management of impacted maxillary canines depends on the clinical and radiographic diagnosis. There are several treatments for such cases, for example, surgical

exposure and fixed orthodontic appliance, to name a view.The success rate of surgical exposure andthe fixed orthodontic appliance is quite high.[4]

This report discusses a case of the management of impacted maxillary canine in the buccal area by means of surgical exposure and fixed orthodontic appliance for a 12-year-old girl.

2. Case

A 12-year-old girl came to Kertosono General Hospital on April 11, 2019, with a complaint that the upper left maxillary canine had not yet grown while the upper right maxillary canine had grown.This canine tooth extraction was carried out one year ago. From the history obtained information that genetically there is no dental history like the patient. The general condition of the patient was excellent. On intraoral examination, all permanent teeth had grown except the upper left canine.Bones in the buccal and occlusal part of tooth 23 felt prominent and felt hard when palpated. Panoramic radiological features show that tooth 23 is located vertically between tooth 22 and tooth 24. The treatment plan includes Dental Health Education (DHE), exposure surgery, and orthodontic treatment by performing traction on tooth 23.

Figure 1: Intraoral examination.

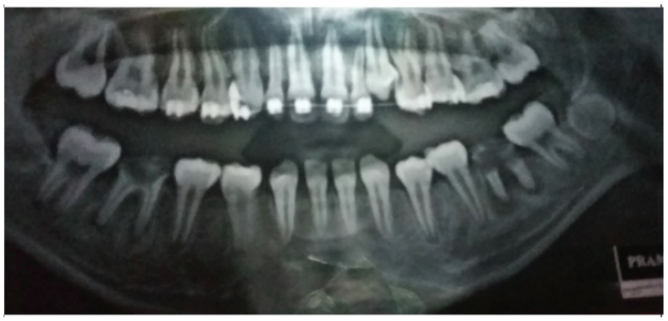

Figure 2: Photograph of panoramic radiograph.

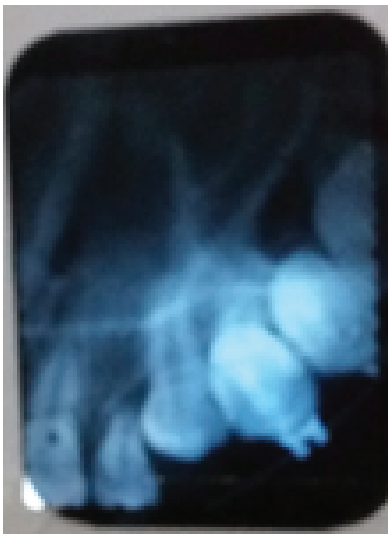

Figure 3: Photograph of occlusal tooth 23.

3. Case Management

On the first visit to Kertosono General Hospital, the Dental Health Education (DHE), scaling and root planning were carried out, and panoramic and occlusal radiography were taken. The patient has already using fixed orthodontic appliances from the dentist. At the second visit, the surgical exposure for tooth 23 was performed using an envelope flap technique.The procedure of surgical exposure for tooth 23 was carried out as follows:Oral antiseptic administration with povidone-iodine; Local anesthesia with citoject was performed on tooth 23 in the buccal and palatinal area (Figure 3); Incision on the ridge crest of tooth 23 with a blade number no 15c with full-thickness flap to form a trapezoid (Figure 4);Opening the cut with periosteal elevator (Figure 5);Cleaning the granulation tissue on tooth 23;Irrigating with saline and drilling the bone of tooth 23 with low speed (Figure 6);When tooth 23 was clear and visible, then the isolation around the teeth was carried out and the button was mounted;Ligature was attached to a button mounted to tooth 23 to the wire (Figure 7);The flap is returned to its original position and sutured by the interrupted method on the mesial and distal area of tooth 23 (Figure 8); Irrigating with saline then smearing with oxyfresh(Figure 9).

The wound was closed with tampons, and the bleeding was evaluated for about 10 minutes. Then, the tampon was removed after 30 minutes with an instruction to patient not to rinse too often, not to suck the wound, and not to play the tongue on the wound. After the surgery, oral antibiotics, analgesic, and anti-inflammatory medications were administered to the patient.

Surgical control was performed after two weeks which showed proper wound healing then stitches were removed consequently. Three months after the surgery, the canine began to move down (Figure 10)

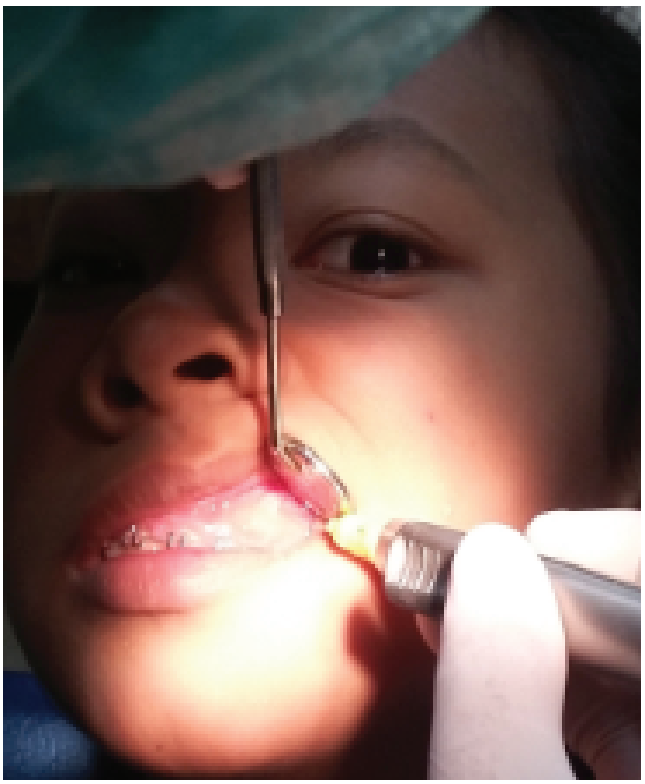

Figure 4

Figure 5

Figure 6

Figure 7

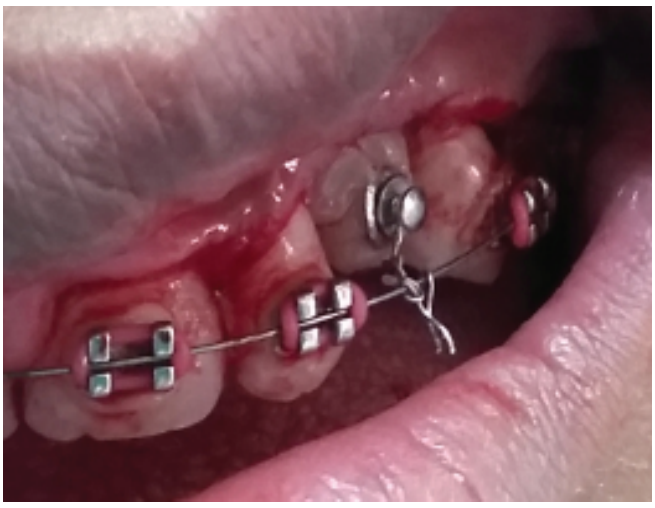

Figure 8

Furthermore, the wire was replaced in accordance with the provisions of alignment and leveling until the canine was in the correct place. Figure 11. Control on 6^{th} month.

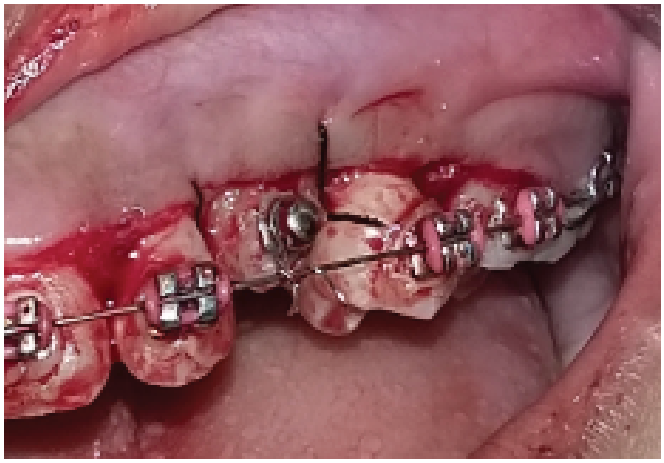

Figure 9

Figure 10

4. Discussion

Canines have a significant role in facial appearance, dental aesthetics, dental arch development, and functional occlusion, so they must be maintained in the oral cavity.[5] There are several options for impacted teeth treatment including: extracting the impacted teeth, repositioning, exposure and orthodontic surgery, and replantation. The conventional treatments for impacted anterior teeth are surgical exposure and orthodontic traction.[3]

Figure 11

Figure 12

The prognosis for the successful placement of ectopic canines to attach on the correct position in the dental arch depends on several factors. These factors include: the patient's age, the presence of diastema or space, the presence of overcrowded teeth, the vertical dimensions, crown position, the inclination of the tooth's position to the facial media line (no more than 45 degrees), having ankylosis, or having curved roots (dilaceration).[6]

In this case, the treatment progress is good because the patient is still young, there is sufficient room for the impacted canine to erupt after traction and to precisethe overcrowded teeth, the inclination of canine is no more than 450 degrees, the crown is not reversed, and the roots are not curved.[3]

It can be concluded that surgical exposure followed by orthodontic treatment can be carried out well with special consideration of the patient's age, the dental space, the crown location, the inclination, and the apex shape of the impacted tooth.

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