

# Step-by-Step on the Open-Window Technique for Upper Palatal Impaction

Beethoven Orthodontic Center



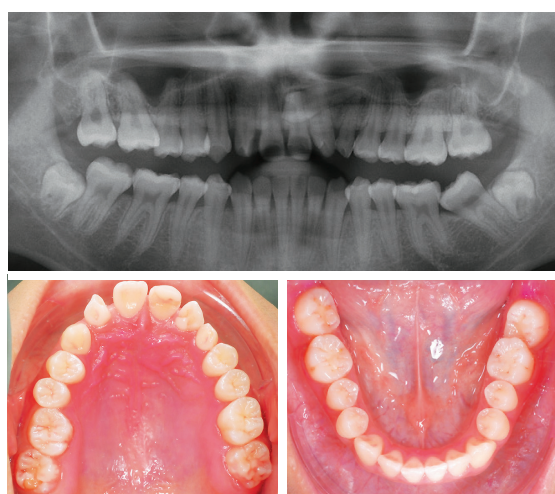
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## INTRODUCTION

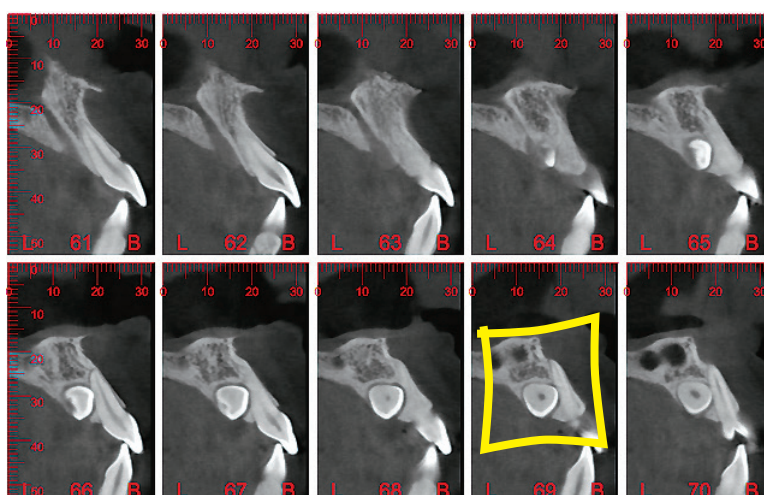
Open window technique is a commonly used surgical option to treat palatally impacted teeth. This article aims to provide step-by-step illustrations on the surgical procedures so doctors can use them as a checklist before approaching this type of cases.

## CASE STUDY

An 18-year 2 month old female came for consultation. The panorex film showed an upper impacted canine on the left side and a deciduous canine remaining (Fig. 1). CT scan (*slice view*) indicates that the impaction's crown was on the palatal side of the left central incisor (Fig. 2). This information was used for selecting an appropriate surgical technique. The drawing of the impaction marks the approximate position (Fig. 3). Detailed surgical procedures of this surgery are discussed at below.

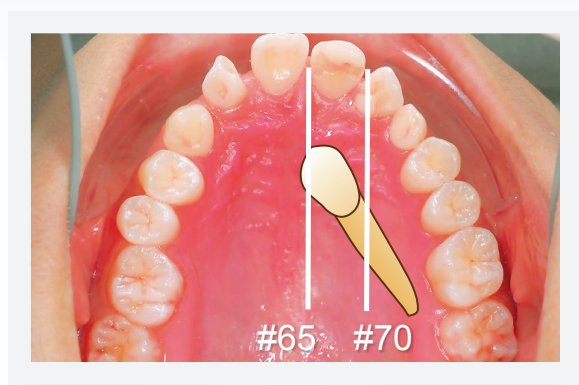


■ Fig 1.  
Pretreatment pano radiograph & intraoral photographs.

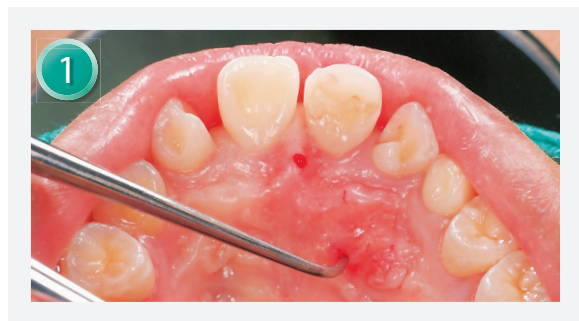


■ Fig 2.  
Pretreatment CT image. Slice #69 reveals that the crown of the canine is covered only with soft tissue, no bone on the top of crown.

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**Fig 3.**  
The drawing of the impaction marks the approximate position



**Fig 4.**  
After applying local anesthesia, use an explorer to mark the crown.



**Fig 5.**  
Use a #15 blade to make a cross incision.

## SURGERY PROCESS

First, local anesthesia was applied in the surgical site and an explorer was used to mark the location of the crown (Fig. 4). The sensation, when an explorer is in touch with teeth or bone, is different. When an explorer touches teeth, one will feel it is in contact with a smooth surface whereas when contacting bone, one will feel a rough surface.

Second, use a #15 blade to make a cross incision (Fig. 5).

The cross incision divides the surgical site into four quadrants.

Third, use a periosteum elevator to raise the flap (Fig. 6) to have visual access to the crown.

Fourth, use an explorer to confirm the outline of the crown. (Fig. 7). Although the CT image can provide rich diagnostic information on the location of the impaction, its depth from the soft tissue remains to be probed clinically.

Fifth, remove the soft tissue covering the impaction's crown with an electric knife (Fig. 8). In this step, there will be blood oozing that prevents good visual access to the surgical field. A high power suction and an electric knife that facilitates coagulation are helpful tools.

Sixth, use an explorer in a up-down motion to detect the depth and the margin of the covering bone (Fig. 9).

Seventh, remove the covering bone with a high speed handpiece and carbide round burs (Fig. 10). It is sometimes unavoidable to damage the incisive nerve during the surgery when it is near the impaction (Fig. 11). Fortunately, only a minority of patients notice and complain of a temporary loss of sensitivity in the medial anterior part of the palate.

Eighth, control bleeding with an electric knife and irrigation with normal saline (Fig. 12).

Ninth, cover the wound with COE-PAK, and use wet gauzes pressing on COE-PAK to adapt it closely to the wound while squeezing blood out. This way it

can be packed into the interdental space so it will be caught between the undercut. Before applying COE-PAK, spread some vaseline on the gloves as a coating to make them stick proof (Fig. 13, 14). COE-PAK can help stop bleeding and cover the wound. This way patients will feel more comfortable. Most importantly, it will delay soft tissue healing and prevent it from covering the impaction again. On average the epithelium grows at the rate of 1 mm per day, much faster than autoeruption of the impaction. Remove COE-PAK three days after the surgery and monitor the emergence of the impaction (Fig. 15).



■ Fig. 6.  
Use a periosteum elevator to raise the flap.



■ Fig. 7.  
Use an explorer to confirm the outline of the crown.



■ Fig. 8.  
Remove the soft tissue covering the impaction with an electric knife.



■ Fig. 9.  
Detect the depth and the margin of the covering bone.



■ Fig. 10.  
Remove the covering bone with a high speed handpiece and carbide round burs.



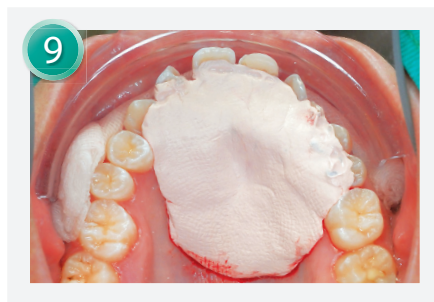
■ Fig. 11.  
The incisive nerve suffers some damage during the surgery due to its proximity to the impaction.



■ Fig. 12.  
Control bleeding with an electric knife.



■ Fig. 13.  
Spread vaseline on the gloves as a coating to make them stick proof.



■ Fig. 14.  
Cover the wound with COE-PAK and pack it into the interdental space so it will be caught between the undercut.



■ Fig. 15.  
One month after the surgery.

## CONCLUSIONS

In conclusion, this article attempts to standardize the surgery process of open exposure in order to help palatally impacted maxillary canines to auto-erupt. Furthermore, this standardized process will support research evidence documenting about palatally impacted maxillary canines .

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