

# CASE REPORT

## Surgical-Orthodontic Treatment of an Impacted Canine with a Dentigerous Cyst

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**A** dentigerous cyst can complicate the already difficult challenge of bringing an impacted tooth into the arch. The two principal methods of treating a dentigerous cyst are surgical excision and marsupialization (fenestration).<sup>1</sup>

Excision has the advantage of completely eliminating the cystic membrane, closing the residual osseous cavity and covering it with a mucoperiosteal flap. Its major drawback is the risk of damaging the adjoining teeth and interfering with distal tooth movement.<sup>2-4</sup>

Marsupialization creates a passage between the cystic membrane and the oral mucous membrane, arresting the growth of the cyst. The cyst shrinks while the bone regenerates. Left

untreated, the cystic epithelium is converted to oral epithelium.

Surgical excision is indicated when there is no likelihood of damaging such anatomic structures as apices of vital teeth, the maxillary sinus, and the inferior alveolar nerve. On the other hand, if the cyst is odontogenic, marsupialization can maintain the impacted tooth in its cavity and promote its eruption. Marsupialization is especially useful for isolated lesions and young patients. In older patients, a hybrid, two-phase procedure is recommended, with the cyst first reduced by marsupialization, then surgically excised without the risk of damaging adjacent structures.

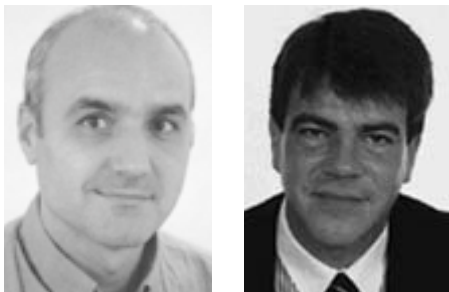
The type of surgical technique depends on whether the

impaction is labial or palatal. If it is labial, primary consideration should be given to locating a section of attached gingiva from which an apically positioned flap can be laid, whether or not an osteotomy is to follow. With a palatal impaction, if the tooth is supraosseous (through the bone) and can be palpated, a gingival window is recommended. If it is infraosseous or nonpalpable, surgical traction can be applied after laying the flap and creating a window. In any case, when performing an osteotomy, it is important not to disturb the radicular cementum to avoid the risk of ankylosis.

In the following case, an impacted canine with a dentigerous cyst was brought into the arch after marsupialization of the cyst.

### Diagnosis and Treatment Planning

A 17-year-old female presented with a Class II molar relationship, mild crowding of the mandibular arch, and unerupted maxillary right and left canines, which were in supraosseous, labial positions (Fig. 1). The radiographic image of the maxil-



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## Surgical-Orthodontic Treatment of an Impacted Canine



lary left canine indicated a growing odontogenic cyst (possibly dentigerous) contacting the apices of the adjacent lateral incisor and first premolar.

The treatment plan was to create space for the unerupted canines, then bring them into the arch using appropriate surgical techniques.

### Treatment Progress

Because the canines were supraosseous and positioned labially, a full-thickness flap was laid for each canine apical to the crown. On the left side, a portion of the cystic membrane was removed for biopsy, which confirmed the diagnosis of a dentigerous cyst.

Once the crown of the tooth was exposed, the flap was

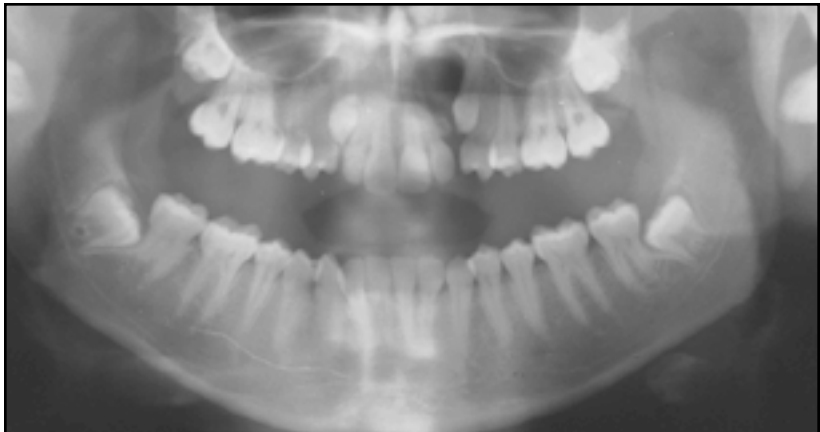


Fig. 1 17-year-old female with both maxillary canines impacted labially before treatment.

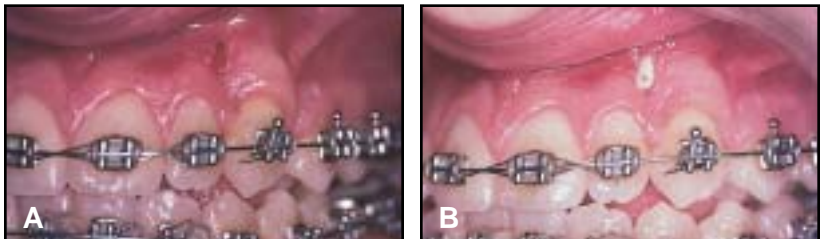


Fig. 2 A. Mucosal window. B. Flexible plastic catheter, 1mm in diameter, inserted into window.

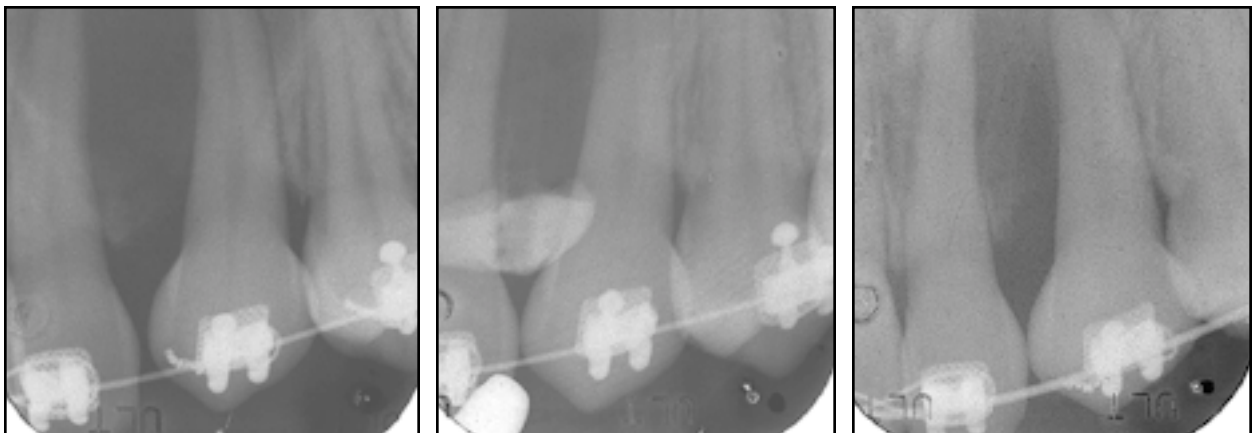


Fig. 3 Progressive cyst reduction during marsupialization.

sutured into place to create a window in the mucosa. Then a flexible plastic tube, 1mm in diameter, was inserted into the window (Fig. 2). An acrylic "stop" was added to the tube to keep it out of the cystic formation. The patient was instructed in daily hygiene of the catheter.

As the wound healed, the site was monitored with periapical x-rays (Fig. 3). After 17 months of marsupialization, sufficient healing had taken place to cut the tube and proceed with surgical excision without risk to the adjoining teeth (Fig. 4). Orthodontic appliances were removed four months later (Fig. 5).

### Discussion

In 24 months of treatment, we were able to position the canines in the arch and remove the residual cyst without damaging any of the adjoining structures, maintaining the pulpal vitality of the lateral incisor, canine, and



Fig. 4 Excision of residual cystic membrane.

first premolar. Total excision prior to orthodontic treatment would probably have damaged the apices of the adjoining teeth and the radicular cementum of the canine, increasing the risk of ankylosis and loss of bone necessary for distal tooth movement. Marsupialization made it possible to move the tooth through growing bone. Although a small amount of gingival recession remained at the end of treatment, this could still be corrected later by means of guided tissue regeneration.

### REFERENCES

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Fig. 5 A. Maxillary left canine in position four months after removal of orthodontic appliances. B. Canine three years after removal of appliances, showing bone regeneration.