

Marsupialization of Large Residual Cyst and Subsequent Dental Implant Insertion: Technical Note

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INTRODUCTION

Removal of the large cysts in the mandible has a risk of injury to the inferior alveolar nerve.¹ Removing large cysts under local anesthesia is bothering for the patient and has the risk of devitalizing the adjacent teeth or jaw fracture.² Marsupialization is a good option to prevent all the above-mentioned problems.³

In this article, a simple device is presented with the benefits of massive irrigation of the cystic cavity and easy adjustment of marsupialization device.

Surgical technique

The patient was a 14-year-old female with the periapical cyst in the mandibular left permanent first molar tooth. The radiolucent lesion had expanded the buccal and lingual cortices, but these structures were thin and intact. The inferior dental canal was displaced apically toward the inferior mandibular border.

Under local anesthesia, through the extraction socket of the left mandibular first permanent molar, first an incisional biopsy was obtained, and then a cut piece of 2 ml plastic hypodermic syringe was forcefully inserted into the cystic lumen. It was fit snugly with the periphery of the window without the need to any fixative device. Even sutures were not needed for soft tissue adaptation around the marsupialization device.

The patient was instructed to irrigate through the lumen of the cut hypodermic syringe, twice daily. It was done by soft angiocatheter attached to 5 ml plastic syringe. Normal saline was chosen as the irrigation fluid. The patient herself could irrigate through this wide irrigation port in front of a mirror. The amount of irrigation fluid was recorded every week. The length of the plastic syringe was decreased every month by the clinician. The cylinder was brought out of the cystic cavity, shortened with a scalpel, and then reinserted without discomfort for the patient. At the fifth month after surgery, it was discarded. Cone beam computerized tomography (CBCT), taken a year after marsupialization, showed complete bony healing except for slight subcrestal lucency. A wide

diameter and long dental implant was inserted under local anesthesia, and 2 months later, the implant was delivered to the prosthodontist successfully (Figure 1).

DISCUSSION

Marsupialization means creating a window into the lumen of a cyst for irrigation purposes.⁴ This procedure reduces the pressure of the cyst on adjacent bone, thereby stopping the bony resorption. New bone formation around the cyst gradually replaces the space s occupied by the cyst.⁵

Other options for treatment of this cyst, based on the pathologist report (residual cyst), was enucleation. In comparison with marsupialization, this method needs more extensive surgery with the possibility of injury to the inferior alveolar nerve with subsequent lip numbness or devitalizing adjacent teeth.

Biopsy is crucial when the surgeon decides to do marsupialization to treat a large cyst. Determining the nature of the cyst is important. Ameloblastic changes in cystic epithelium may have a strong influence on treatment planning.

In some cases, marsupialization alone is sufficient to eradicate the cyst completely, but in majority of the cases, it needs subsequent enucleation.^{6,7} Selecting the appropriate case is of paramount importance in success of the procedure. A unilocular large lesion with intact thin cortical plates, located in dental arch, is the best choice.

The irrigation fluid should reach all aspects of the cyst, and the presence of bone surrounding the cyst has an important role in depositing new bone after cyst shrinkage (Figure 2).

Disposable hypodermic syringes are sterile, inexpensive, readily available, and do not need impressions made or laboratory procedures for fabrication of a marsupialization device. The long treatment time needs high patient cooperation and a true understanding of the therapeutic mechanism.⁷

CONCLUSION

Marsupialization should be considered in treatment planning of the large residual cysts, especially in young patients. Dental implant insertion at the end of treatment restores the function.

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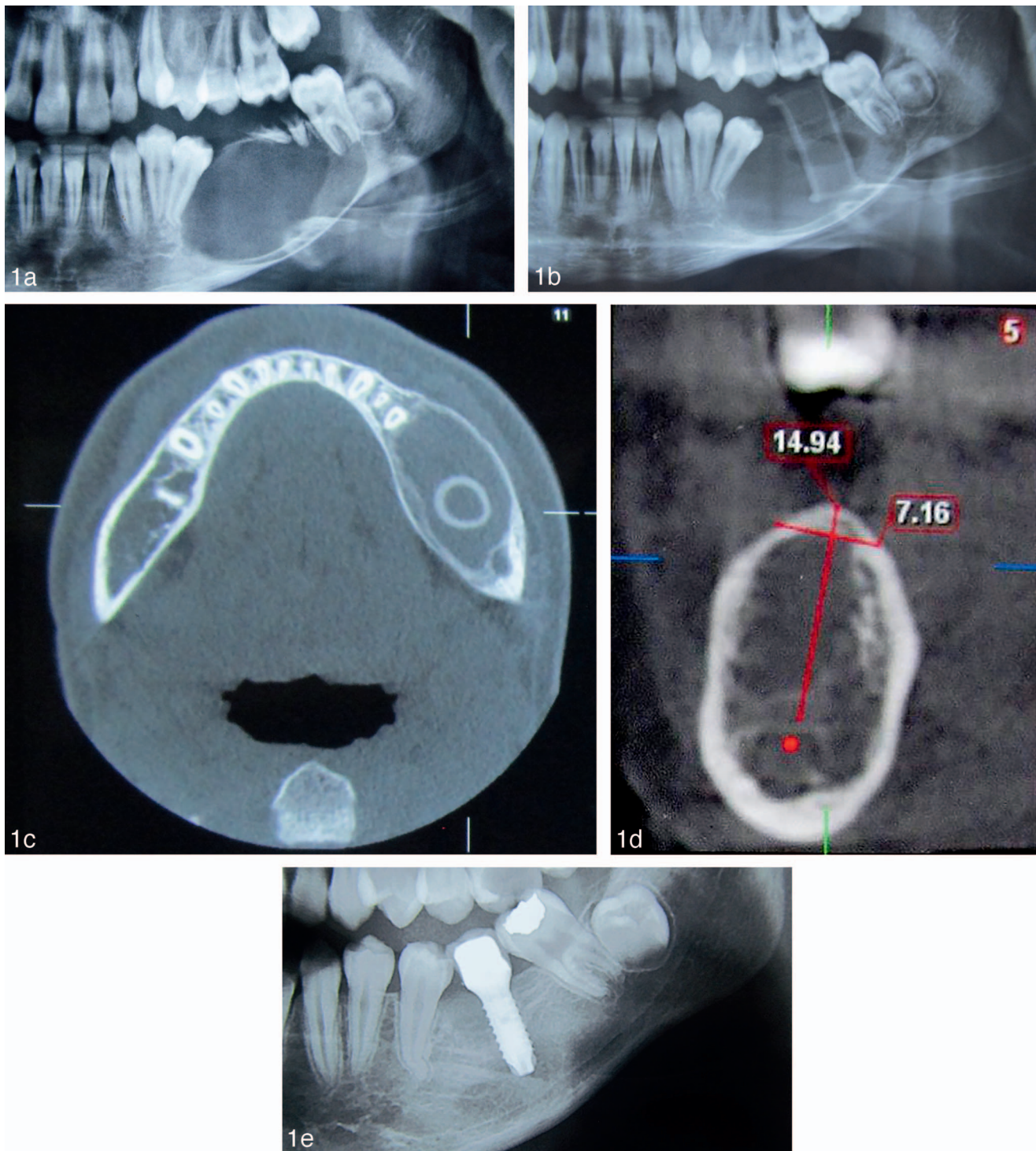


FIGURE 1. (a) Large periapical cyst. (b) Marsupialization device. (c) Postmarsupialization cone beam computerized tomography (CBCT) after 2 months. (d) CBCT 1 year after operation. The apically displaced inferior dental canal remained near the inferior border. This allows a long implant to be inserted. (e) A dental implant replaced the lost tooth. After removal of the marsupialization device, part of the space closes spontaneously.

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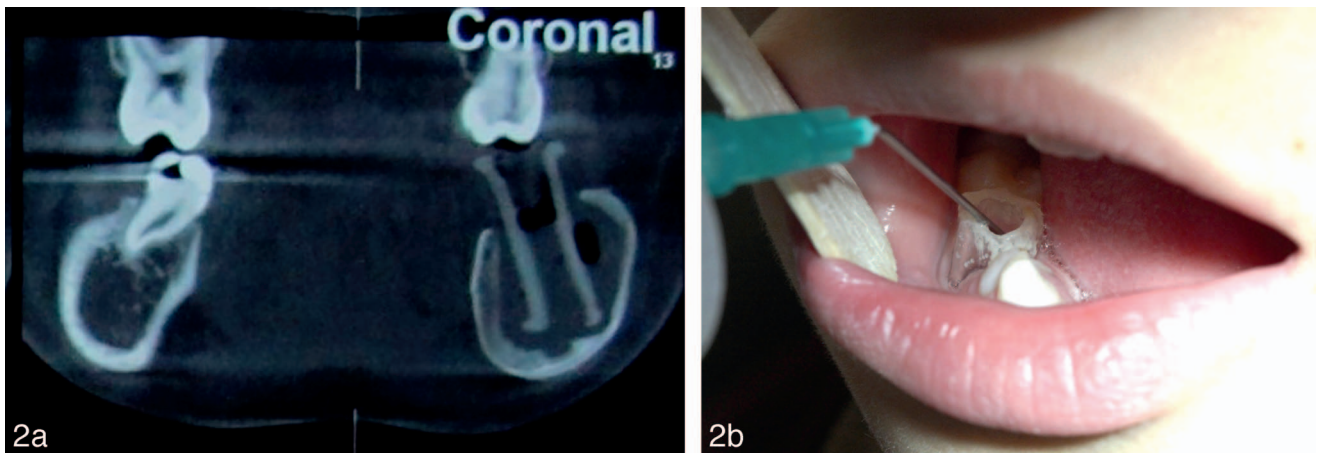


FIGURE 2. (a) Cross section of the marsupialization device. (b) Flow of irrigation fluid through the marsupialization device made from a plastic hypodermic syringe (another patient).

NOTE

The authors declare no conflicts of interest.

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