

Use of Marsupialisation for a Conservative Approach to Huge Cystic Lesions of the Jaws - A Report of three Cases

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Abstract

Rationale: The management of cystic lesions of the jaws presents a challenge to the surgeon. Marsupialisation, one of the conservative management options, has been used as a single or combined surgical treatment modality for the cystic lesions of the jaws. **Patient Concerns:** All patients presented with a complaint of a firm swelling of the face with one of the patients presenting with paraesthesia in the affected area. **Diagnosis:** Clinical and radiographic examination was carried out followed by aspiration cytology. All lesions were provisionally diagnosed with odontogenic cystic lesions. **Treatment:** Marsupialisation under general anaesthesia was carried out for all patients. Postoperatively, a customised obturator was fabricated. **Outcomes:** All the patients showed good radiological ossification postoperatively. **Take-Away Lessons:** The approach to larger cysts remains controversial. The long-term results following the marsupialisation of extensive cysts of this report may help surgeons to opt for a conservative approach to such lesions before aggressive options.

Keywords: Marsupialisation, odontogenic cysts and tumours, odontogenic keratocyst, radicular cyst, unicystic ameloblastoma

INTRODUCTION

Odontogenic cysts and unicystic variants of odontogenic tumours are the lesions formed from the tissues involved in odontogenesis that present as unilocular radiolucent lesions. The size of the lesion, its location and patient age determines the choice of treatment. The current treatment options are curettage, marsupialisation, enucleation and surgical resection, followed by reconstruction. Marsupialisation is a minimally invasive surgical technique used as the first stage or the definitive treatment for these lesions. It was first described by Patsch in the late 19th century for cystic lesions of the jaws, the treatment of which represents a challenge for surgeons, especially in large lesions.^[1] This technique is based on the externalisation of the cystic lesion through the creation of a surgical window in the oral mucosa and in the cystic wall.^[1]

CASE REPORTS

We report our findings of three patients with cystic lesions of the jaw who were treated by marsupialisation. Clinical and radiographic examination was carried out for all the

patients, followed by aspiration cytology. All the cases were provisionally diagnosed as odontogenic cysts based on the clinical and radiographic examination and aspiration cytology. Table 1 describes the clinical and radiographic features and histological type of each patient.

Case report 1

A 34-year-old male presented with a complaint of a slow-growing swelling on the left side of the face for the past 6 months. On examination, a diffuse, firm, tender swelling measuring 4 × 3 cm over the left side of the mandible was noted with no neurological changes. Radiographically, a well-defined, unilocular radiolucency with corticated borders in the mandibular body, angle and ramus region with the

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presence of an impacted mandibular left third molar was noted [Figure 1a]. The aspirate revealed a straw-coloured fluid.

Case report 2

A 33-year-old male presented with a complaint of a slow-growing swelling on the right side of the face for the past 1 year. On examination, a diffuse, firm, non-tender swelling measuring 5.5 cm × 3 cm over the right side of the mandible was noted with no neurological changes. Radiographically a well-defined, unilocular radiolucency with sclerotic borders in the mandibular body and angle region with the presence of an impacted mandibular right third molar was noted [Figure 2a]. Aspirate revealed a cheesy-white fluid.

Case report 3

A 54-year-old male presented with a complaint of a slow-growing swelling over the left side of the face for the past 3 months. On examination, a diffuse, firm, non-tender swelling measuring 6 × 4 cm over the left middle third of the face with paraesthesia in the infraorbital region was noted. Intraorally, a grossly decayed and non-vital left maxillary first molar was noted. Radiographically, a well-defined,

unilocular radiolucency with corticated borders in the left maxilla involving the maxillary sinus was noted [Figure 3a]. The aspirate revealed a straw-coloured fluid.

Procedure

After obtaining written informed consent for the procedure, all the patients underwent marsupialisation under general anaesthesia. The typical incisions were located at the minimal depth of the osseous wall, impacted/offending tooth was extracted. The tooth socket was then enlarged and trimmed using a large round burr to provide a window for marsupialisation [Figure 4a]. A part of the cystic lining was removed and sent for histopathological analysis. The cystic lining was then sutured to the adjacent oral mucosa to create an open cavity that communicates with the oral cavity. Special care was taken to avoid damaging any of the proximal vital structures. Following marsupialisation, ribbon gauze soaked in soframycin/metronidazole gel (Metrogyl) was packed. The ribbon gauze pack was replaced every 2 days following copious irrigation with saline and povidone-iodine. The pack was removed after a week and a customised obturator was fabricated before the discharge of the patient to keep the opening patent and to prevent food lodgement [Figure 4b]. Demonstration

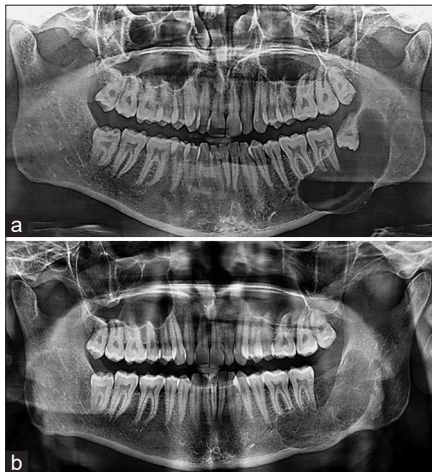


Figure 1: (a) Pre-operative OPG of Case 2, showing a well-defined, unilocular radiolucency with sclerotic borders in the mandibular body and angle of size 5.5 cm × 3 cm with the presence of an impacted mandibular right third molar. (b) Post-operative OPG at 3-month follow-up, showing peripheral ossification

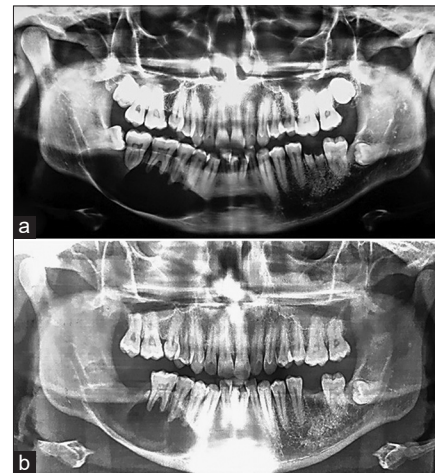


Figure 2: (a) Pre-operative OPG of Case 3, showing a well-defined, unilocular radiolucency with corticated borders in the left maxilla involving the maxillary sinus of size 6 cm × 4 cm. (b) Post-operative OPG at 9-month follow-up, showing well-defined trabecular bone formation

Table 1: Summary of clinicohistopathological characteristics of all patients

Age/sex	Clinical features	Radiographic features	Diagnosis
34/male [Figure 1]	Firm, tender swelling over the left side of the mandible for the past 6 months No paraesthesia	Well-defined, unilocular radiolucency with corticated borders in the mandibular body, angle and ramus region of size 4 cm × 3 cm with the presence of an impacted mandibular left third molar	Unicystic ameloblastoma
33/male [Figure 2]	Firm, non-tender swelling over the right side of the mandible for the past 1 year No paraesthesia	Well-defined, unilocular radiolucency with sclerotic borders in the mandibular body and angle of size 5.5 cm × 3 cm with the presence of an impacted mandibular right third molar	Odontogenic keratocyst
54/male [Figure 3]	Firm, non-tender swelling over the left middle third of the face for the past 3 months Paraesthesia in the infraorbital region Grossly decayed and non-vital left maxillary first molar	Well-defined, unilocular radiolucency with corticated borders in the left maxilla involving the maxillary sinus of size 6 cm × 4 cm	Radicular cyst

regarding regular irrigation of the cavity and maintenance of oral hygiene was given to all patients. None of the patients developed any early or late post-operative complications such as pain, paraesthesia, infection or recurrence. All the patients showed good radiological ossification in the follow-up visits [Figures 1b, 2b and 3b].

DISCUSSION

Cysts of the jaws are pathologic cavities within the bone of the maxilla or the mandible, lined by odontogenic epithelium. Cystic cavities enlarge over time, tend to expand, weaken the bone and endanger the vitality of neighbouring teeth.

The decision for cystectomy or cystotomy (marsupialisation or decompression) does not depend on the localisation (maxilla or mandible) but on the existence of viable bony walls and periosteum at the periphery, taking into consideration important structures at risk.^[2]

Although the terms marsupialisation and decompression of cystic lesions are interchangeably used in many articles, they have different technical meanings. Decompression includes all the options used to reduce the pressure from within a cyst, however, marsupialisation lies in the conversion of the cystic cavity into an open pouch, that communicates with the oral cavity.^[3]

In recent years, marsupialisation has been employed as one of the conservative treatment options for extensive cystic lesions of the jaws.^[4-7] As marsupialisation relieves the pressure within the cystic lesion, it regresses the cystic lesion while promoting peripheral osseous healing by decreasing the expression of interleukin-1 α and other inflammatory cytokines.^[1,4,5,7] Immunohistochemical studies conducted by Ninomiya *et al.* reported an increase in the thickness of the epithelial lining

and metamorphosis to a hyperplastic, non-keratinised stratified squamous epithelium in odontogenic keratocysts, following marsupialisation.^[8]

The technique of marsupialisation has always been called ‘less aggressive’ for several reasons. When compared with the often-mutilating radical treatment options such as primary cystectomies or surgical resection, it minimises the damage to the conterminous vital anatomical structures.^[4,5] Consequently, it minimises post-operative morbidity and functional deficits, thus, maintaining the quality of life of the patient. The functional and prosthetic rehabilitation following marsupialisation is less troublesome as the structural integrity of the mandible is maintained. It also allows the eruption of the involved teeth, avoids damage to the developing tooth buds and maintains the developing dentition by minimising any disturbance, thus, should be considered the first therapeutic option in paediatric and young adult patients, with extensive cystic lesions.^[6,9] In addition, it avoids the burden of high treatment costs and social stigma to the patient.

After the regression of the cystic cavity, the management plan may need a second surgical, non-belligerent, intervention to eliminate the residual pathological tissue.^[1,10] Moreover, if the cystic lesion fails to regress, a second surgery is still possible which may be difficult in the case of primary radical surgical options.

The use of marsupialisation is limited by its long healing period and discomfort to the patient, especially at the early stages.^[1] The irrigation of the cystic cavity is obligatory and requires regular, long-term follow-ups. It requires high patient compliance, which has a major impact on the success rate of this treatment plan.

CONCLUSION

Marsupialisation could be used as a single or combined surgical procedure with other treatment modalities for cystic lesions in

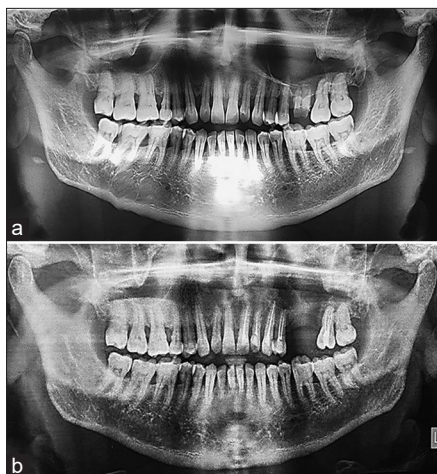


Figure 3: (a) Pre-operative orthopantomogram (OPG) of Case 1, showing a well-defined, unilocular radiolucency with well-defined corticated borders in the mandibular body, angle and ramus region of size 4 cm \times 3 cm with the presence of an impacted mandibular left third molar. (b) Post-operative OPG at 9-month follow-up, showing well-defined trabecular bone formation

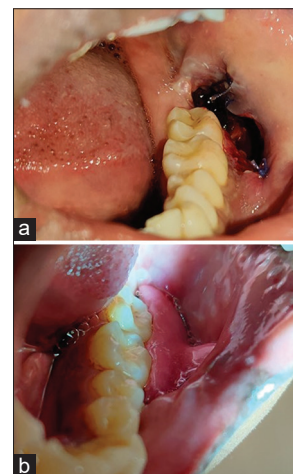


Figure 4: (a) Marsupialisation site, (b) Customised obturator was fabricated before the discharge of the patient to keep the opening patent and to prevent food lodgement

different sites of the jaws. It has been accepted as a conservative and non-invasive surgical option in patients of all age groups, especially in young adults, and in the presence of large cystic lesions. Long-term observation is required to ensure its effectiveness.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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