Management of Ranula in a Child by Modified Micro-Marsupialization Technique: A Case Report

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Ranulas pose a challenging situation, both clinically and surgically, because of their location on the floor of the mouth, an area that exhibits tightly-netted vital structures. Several treatments have been proposed, including excision with or without removal of the sublingual gland, marsupialization with or without cauterization of the roof of the lesion, drainage of the lesion, and micro-marsupialization. It has been suggested that a modified micro-marsupialization technique can establish drainage of saliva and formation of new permanent epithelized tracts along the path of sutures, thereby reducing the recurrence. This paper presents a report of a ranula in a 12 year-old child that was successfully managed using a modified micro-marsupialization procedure.

Key words: *Ranula, marsupialization, modified marsupialization*

INTRODUCTION

Ranulas pose a challenging situation, both clinically and surgically, owing largely to their location on the floor of the mouth, an area that exhibits tightly-netted vital structures. The management of ranulas has been quite controversial with several modalities being applied. These include i) excision of the ranula only, ii) marsupialization with or without cauterization of the lesion lining, iii) excision of the oral part of the ranula along with the involved sublingual gland or rarely the submandibular gland, iv) incision and drainage of the lesion via an intraoral approach and v) excision of the lesion via an extraoral approach combined with excision of the sublingual gland in certain cases.[1-7] Although marsupialization has been found to be effective, a high rate of recurrence has been reported with this technique.[8] Excision of the ranula along with the involved sublingual gland has been the most accepted method because of the low recurrence associated with the technique.[4,8,9] There remains, however, a need for a less aggressive approach for the management of ranulas, especially in children. Suitable non-invasive alternatives that have been suggested include micro-marsupialization or modified micro-marsupialization. Micro-marsupialization,[2,3] involves the placement of a single suture passed internally through the lesion along its widest diameter. In modified micro-marsupialzation,[10] multiple sutures are passed internally through the lesion. This paper presents a report of a ranula in a 12 year-old child that was successfully managed using a modified micro-marsupialization procedure.

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Case Report

A 12 year old girl presented at our pediatric dental facility with a chief complaint of a painless soft mass below the tongue on the right side since ten days. The child reported a similar swelling in the same area five months earlier, which gradually decreased in size and disappeared without any treatment. There was no history of associated paresthesia. Examination revealed a fluctuant swelling measuring 2 x 2 cm and extending from the distal aspect of the mandibular first molar up to 2 cm behind the commissure of the lip in the right sublingual region of the floor of the mouth (Figure 1). The swelling was non-tender, soft to the touch, and non-compressible. No secondary changes such as ulceration, fistula formation, infection or discharge were observed. The lymph nodes were not enlarged. Mandibular occlusal radiograph revealed no evidence of a sialolith obstructing the submandibular salivary gland ducts (Figure 2). The swelling was diagnosed as a ranula.

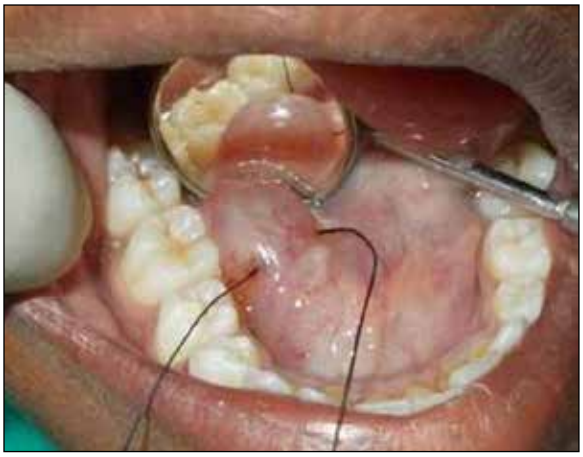
After routine pre-operative investigations, the area was disinfected with a 0.1% povidone iodine solution. A topical anesthetic gel (benzocaine 20%) was applied over the entire surface of lesion for approximately 3 minutes. Five interrupted sutures were placed by passing number 3.0 silk suture material from one side of the lesion to the other. Surgical knots were tied, leaving space between the knots and the lesion (Figures 3 and 4). When the lesion was punctured,

there was drainage of mucin mixed with blood, which confirmed our diagnosis of ranula. The ranula was compressed with finger pressure to drain all the accumulated saliva. The patient was advised application of 0.5% chlorhexidine gel to the area of surgery for 7 days post-operatively to prevent secondary infection. The patient was examined 1 week, 15 days and 30 days after the treatment to ensure that the sutures were not lost. In the event of loss of the sutures, the patient was instructed to visit the operating pediatric dentist immediately. In the present case, the sutures were maintained for 30 days, by which time complete healing had occurred. The patient was told to return if there was any suggestion of recurrence. The patient was followed up every 3 months. No recurrence has been reported in the one year since surgery (Figure 5).

Figure 1: Ranula on the right side of the floor of the mouth

Figure 2: Radiograph shows no evidence of sialolith obstructing the salivary gland duct

Figure 3: Suture passed from one side of the lesion to the other



DISCUSSION

Ranulas are important pathological conditions of all the oral mucus retention phenomena, because of the lack of consensus regarding their treatment. Several treatment modalities have been proposed, generating indecision regarding the best option.[1-7] Although marsupialization has been a popular choice of treatment, Crysdale *et al* [8] have reported a 61-89% rate of recurrence following conventional marsupialization. Therefore, they and other investigators recommend the excision of the ranula together with the sublingual gland to avoid recurrence of the lesion.[4,8,9] However, other authors opine that this radical technique may put the submandibular duct and lingual nerve at risk and is best reserved for plunging ranulas and recurrent cases.[6,11] Instead, they recommend the more conservative approach of marsupialization followed by packing of the entire ranula cavity with gauze to reduce the rate of recurrence.[5,6]

In 1995, Morton and Bartley[2] suggested the placement of a silk suture in the dome of the ranula. Later, in 2000, Delbem *et al*[3] used the micro-marsupialization technique which consisted of draining the accumulated saliva by passing and maintaining for 7 days a single long 4.0 silk suture through the internal part of the lesion along its widest diameter. This would create a new epithelialized

Figure 4: Multiple sutures placed along the length of the lesion

Figure 5: Post-operative photograph shows good healing

tract along the path of the suture. The technique is minimally invasive and can be carried out under topical anesthesia. The procedure is quick, taking approximately 3 minutes, causes practically no tissue damage or inflammation, and is particularly suitable for young children who cannot tolerate long or invasive procedures.[3]

This classical micro-marsupialization technique, however, has been reported to have unsuccessful outcomes. The lesions treated by only a single suture and for periods of less than 15 days were observed to either not heal or reappear within 30 days.[10] Hence, in 2007, Sandrini *et al* [10] proposed modifications to this technique such as, i) an increase in the number of sutures, ii) decreased distance between the entry and exit of the needle, and iii) a longer period of maintenance of the sutures. The authors recommended the use of as many sutures as possible, the exact number varying according to the size of the lesion, to increase the number of new epithelialized drainage pathways. The distance between the entrance and exit of the needle was decreased in order to reduce the length of the drainage tracts and facilitate epithelialization of the new pathways formed by the sutures. The sutures were maintained for a period of 30 days to allow the formation of new permanent epithelialized tracts. Caution must be exercised when tying the knots on the suture. Excessive compression of the membrane of the lesion can cause loss of blood flow which could result in necrosis of the tissue between the entry and exit of the suture and lead to loss of the suture.[10]

Piazzetta *et al,*[12] however, observed that children would find it difficult to keep the sutures in place. Sutures left for a long period would be also more likely to cause discomfort and secondary infections because of inadequate oral hygiene in pediatric patients. These authors obtained full regression in most of their cases with sutures kept for 7 days only. In the present case, sutures were maintained for 30 days with uneventful healing. Follow-up for at least a 6-month period is advised, although recurrence of ranulas, if any, occurs within a maximum of 50 days after the initial procedure.[10]

The present case was treated using the modified micro-marsupialization technique and no recurrence was observed even 12 months after surgery. The simplicity and low invasiveness of the procedure, the minor post-operative discomfort experienced and the minimal need for post-operative care make this technique a good treatment option for the management of ranulas, especially in pediatric patients. The only disadvantage may be that micro-marsupialization does not enable a biopsy to be conducted, and the diagnosis remains exclusively clinical.[12]

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