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Dental and surgical controversial practices during the marsupialization procedure for the treatment of nasopalatine duct cysts

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ABSTRACT

Background: Marsupialization procedure is a recognized treatment modality for larger nasopalatine duct cysts, before a secondary enucleation is performed. However, reported practices of tooth extraction, root canal therapy on vital teeth adjacent to the cyst, and the post-operative packing of the cystic cavity, appear to be questionable.

Methods: This clinical study reviewed the chart of 20 patients following a standardized marsupialization procedure, for the treatment of large nasopalatine duct cyst. A large fenestration was created in the cystic wall. The vitality of all teeth adjacent to the cyst was preserved. Extraction of and/or root canal therapy of adjacent vital teeth were absolutely avoided. No postoperative packing of the cystic cavity was performed. Digital panoramic radiographs were used for pre and postoperative monitoring of the lesion.

Results: All the cystic opening remained patent postoperatively for several months/years, without the use of any packing. The large cystic cavities steadily reduced in size.

Primary and permanent teeth continued their normal eruption process in final positions in pediatric patients. All teeth adjacent to the cystic cavity remained vital after marsupialization. Clinical and radiological realignment of displaced teeth was observed.

Conclusion: The preservation of vital teeth adjacent to the nasopalatine cyst remains a critical objective during marsupialization, irrespective of the lesion's size. Root canal therapy and extraction of vital teeth are unnecessary in the management of this non-odontogenic lesion. We found no rationale to support the postoperative packing of the cystic cavity.

1. Introduction

Nasopalatine duct cysts (NPDCs) are reported in the literature as the most common non-odontogenic cystic lesions in the maxilla [1–4].

Enucleation of NPDCs with primary closure remains the treatment of choice for small and medium size lesions [1–3]. The marsupialization technique is also a recognized modality treatment for larger lesions, with the aim of performing a secondary enucleation on a

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reduced cavity [3,5–7].

However, some of the dental and surgical practices associated with the marsupialization technique during the management of NPDCs, as mentioned in the literature, remain subjects for debate. The most controversial aspects are the performance of root canal treatment (RCT) and/or the extraction of adjacent vital teeth during the procedure, as well as the postoperative packing of the cystic cavity with various materials [5,8–12]. On the one hand, the performance of RCT on vital adjacent teeth appears to be contrary to good basic dental practice, as NPDCs are not odontogenic pathology. On the other hand, the postoperative packing of the cystic cavity may maintain a positive intra-cystic pressure that precisely opposes the original reason behind the performance of the marsupialization procedure. Therefore, it may interfere, for example, with the objective of achieving a steady reduction of the cystic cavity size.

The aim of this case series report is to debate specific dental and surgical practices as mentioned in the literature and to add value to a well-known management of larger (“neglected”) NPDCs i.e., the marsupialization technique.

The following questions are debated.

- Is there a need for extraction of vital teeth adjacent to a NPDC?
- Is there a need to perform RCT on vital teeth adjacent to a NPDC?
- Is it necessary to postoperatively pack the cystic cavity during marsupialization of a NPDC?

2. Materials and methods

This retrospective case series was based on the records of 20 patients who consulted a Maxillofacial Surgery center in South Africa, for the treatment of large NPDCs (Fig. 1).

A standardized marsupialization technique was performed by a single operator on all 20 patients. The procedure entailed the creation under local anesthesia, of either medial or lateral vestibular opening that needed to remain patent for several months or years. The cystic cavity was not packed and no obturator was used.

Root canal treatment and/or extraction of adjacent vital teeth were avoided during the procedure for all 20 patients. The junctional margin of the cystic membrane and the oral mucosa was sutured with a continuous type of suture using absorbable material (cat gut chromic 3–0 or vicryl® 3–0).

The patients were instructed on how to maintain the empty cavity clean by regular flushing with warm salty water initially, and later normal water from the tap, especially after every meal. A 20ml plastic syringe was provided to the patient for this purpose. The clinical post-operative monitoring period extended from three to 24 months. The primary and permanent dentitions were allowed to erupt normally in younger patients after marsupialization. Digital panoramic radiographs were used for monitoring purposes.

3. Results

All 20 patients had the following identifiable symptoms at the first consultation: swelling in the palate and/or the vestibular sulcus of the maxillary frontal segment and tooth displacement, especially in pediatric patients (Fig. 1). Facial disfigurement and change in the naso-labial profile were found in large-sized (≥ 30 –50 mm) cystic lesions that presented with vestibular swelling. The estimated horizontal biggest diameter of the lesions ranged from 11.3 to 86.7 mm on digital panoramic radiographs.

All adjacent teeth in the 20 operated patients remained vital after marsupialization. Significant clinical re-alignment of the displaced teeth was observed in younger patients without implementation of any orthodontic treatment (Fig. 2A and Fig. 2B). However, displaced teeth in adult patients responded poorly to marsupialization.

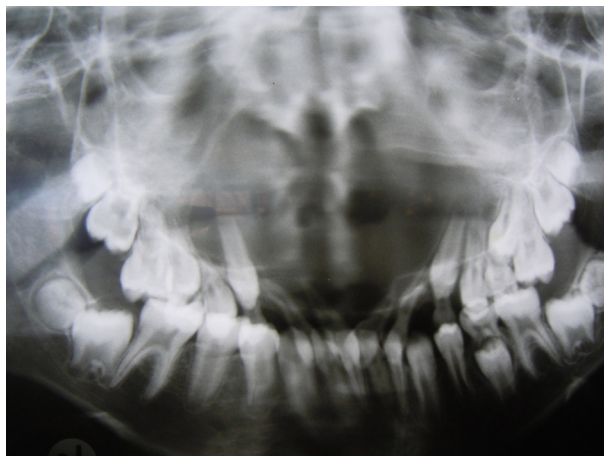


Fig. 1. Panoramic view radiograph of a NPDC showing a massive osteolytic lesion extending horizontally from tooth 16 to tooth 26. Note the presence of mixed dentition and the grossly destroyed alveolar bone of the anterior segment.

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