J Oral Med Oral Surg 2024;30:35
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https://doi.org/10.1051/mbcb/2024025

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JOMOS
Journal of Oral Medicine and Oral Surgery

Case Report

Surgical management of a large maxillary non-odontogenic cyst using Le Fort I osteotomy: a short case report

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(Received: 7 April 2024, accepted: 9 October 2024)

Keywords: Non-odontogenic cysts / Le Fort I osteotomy / cleft palate

Abstract – Introduction: Non-odontogenic epithelial cysts are rare and are typically treated by enucleation. The choice of surgical approach is influenced by factors such as lesion size, location, and patient-specific anatomy. **Observation:** This case involves a 62-year-old male with a large (33 × 36 mm) maxillary epithelial cyst complicated by a history of cleft palate. A Le Fort I osteotomy was selected due to the lesion's size, posterior location, and the anatomical limitations imposed by the cleft. Alternative approaches, such as cyst decompression, marsupialization, or endoscopy, were considered but ruled out due to the lesion's posterior position and volume. The osteotomy provided optimal access for complete enucleation while minimizing the risk of complications. **Conclusion:** Despite being more invasive, the Le Fort I osteotomy offered superior visibility and access, ensuring complete removal of the cyst.

Introduction

Non-odontogenic epithelial cysts are uncommon lesions that are typically managed through surgical enucleation. However, the approach to enucleation depends on several factors, including the lesion's size, location, and the patient's individual anatomy. Several studies have describe the Le Fort I osteotomy for access to certain lesions, such as voluminous naso-palatine cysts or keratocysts, apico-dental cysts with difficult access and ectopic wisdom teeth [1–8]. While decompression, marsupialization, and endoscopic approaches are common alternatives, access to large posterior maxillary cysts often necessitates more invasive techniques. The Le Fort I osteotomy, as described in previous studies, offers improved visibility and access for resecting large cysts in challenging anatomical locations, such as the posterior maxilla or in cases complicated by pre-existing conditions like cleft palate.

This case report describes the management of a large non-odontogenic cyst located in the maxilla of a 62-year-old male with a history of cleft palate. The selected surgical approach, a Le Fort I osteotomy, was chosen based on the lesion's posterior location, its size, and the limitations posed by the patient's anatomical condition.

Observation

A 62-year-old male patient presented with complaints of difficulty swallowing, nasal obstruction on the right side, and a palpable mass on the palate.

His medical history was notable for a cleft lip and palate, which had been treated with multiple surgeries in childhood. Additional conditions included chronic bronchitis and nasal polyposis, with no known allergies. On clinical examination, there was a large swelling of the hard and soft palate on the right, which was supple, with apparently healthy mucosa opposite.

Clinical examination revealed a large, soft swelling of the hard and soft palate on the right side, covered by intact mucosa. The patient's oral condition was poor, with multiple decayed, the loss of a maxillary anterior bridge and missing teeth. Panoramic radiography revealed an osteolytic lesion extending from tooth 12 to 23, reaching the nasal cavities, without any adjacent teeth (Fig. 1). Preoperative nasofibroscopy confirmed the nasal mucosa had been displaced by the lesion (Fig. 2).

Magnetic Resonance Imaging (MRI) was performed to further assess the lesion's extent and content, as MRI is superior for soft-tissue evaluation in cases where the nature of the lesion is unclear. MRI showed a large cystic mass measuring 33 × 36 mm, located in the hard palate and extending posteriorly (Figs. 3 and 4). Given the absence of bone in the cleft area, there was no anatomical barrier to contain the

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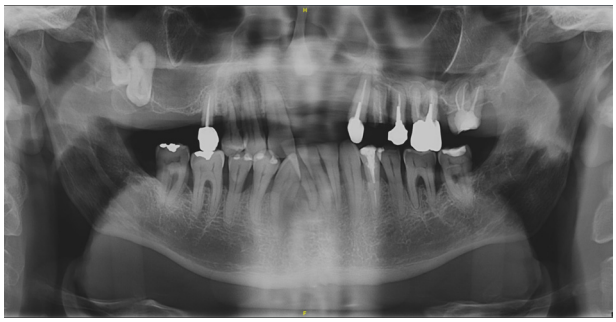

Fig. 1. Panoramic radiography showing a large osteolytic lesion in the maxilla extending into the nasal cavity.

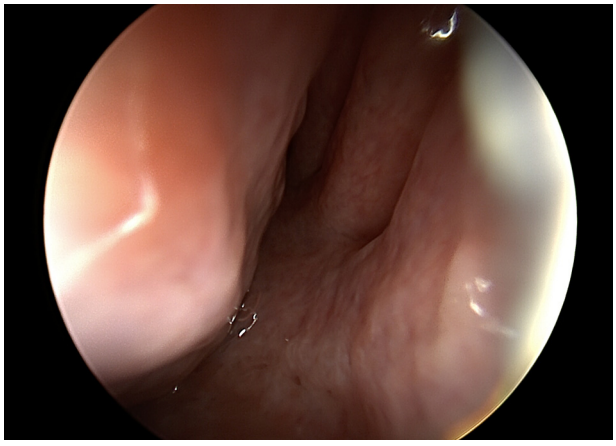

Fig. 2. Nasofibroscopic image of the nasal cavity. The mucosa is blown away by the presence of the lesion.ttage

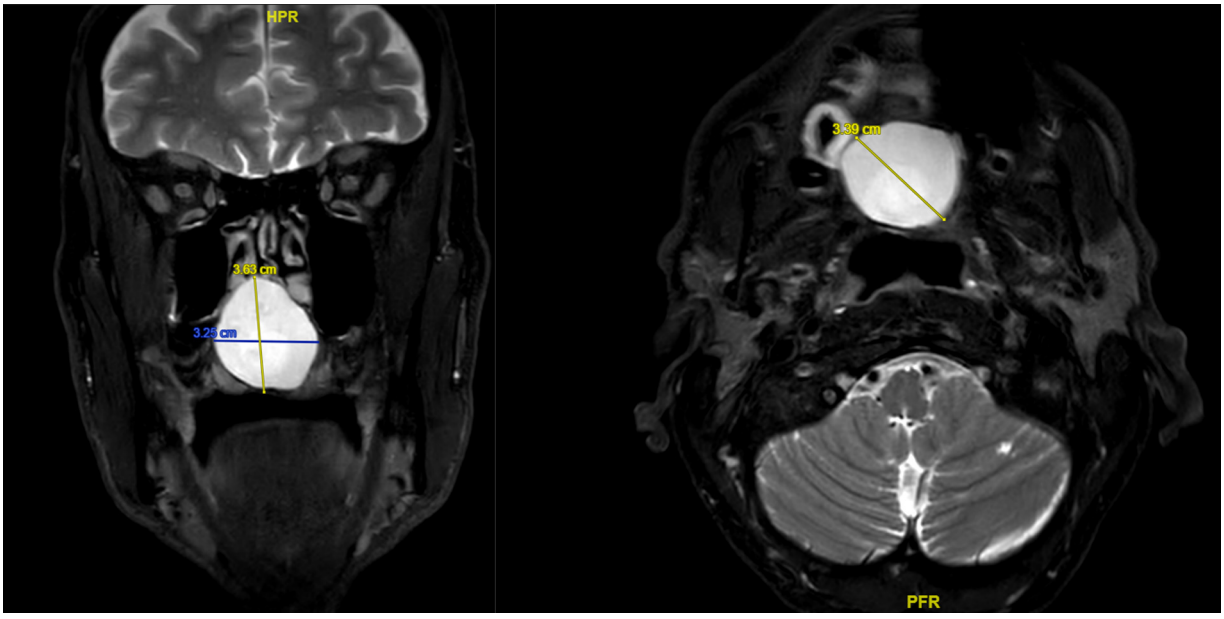

Fig. 3. MRI T2 coronal and axial view, the lesion appears hypersignal, liquid, measuring 36 mm by 34 mm.

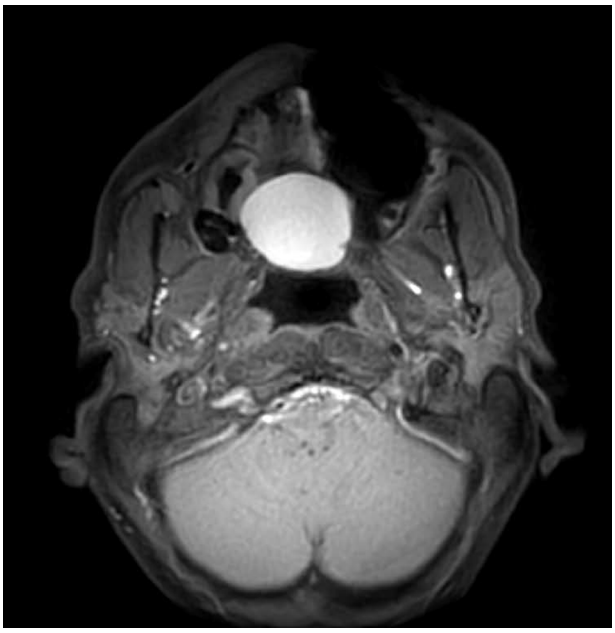

Fig. 4. T1 MRI axial view, the lesion appears as a spontaneous hypersignal suggestive of protein content.

lesion's growth. The presumed diagnosis was a mucocele originating from an accessory palatine salivary gland.

Due to the cyst's large size, its posterior position, and the anatomical constraints imposed by the cleft palate (fragile mucosa, risk of breaches and bucco—sinus or bucco-nasal communication), a Le Fort I osteotomy was selected. Other surgical approaches, including decompression, marsupialization, and endoscopy, were considered. However, the lesion's posterior location and volume made an endoscopic approach, such as a meatotomy, impractical, as it would not provide adequate access for complete removal. Marsupialization was similarly rejected, due to the localisation of the cyst and the necessity of a surgical approach in a second time.

The Le Fort I osteotomy was performed under general anaesthesia. The osteotomy line was marked, we performed the osteosynthesis with mini-plates and screw on site (before the down fracture). Four conventional plates were placed: two L-shaped plates on the right canine buttress and on the right maxillo-zygomatic buttress and the same on the left with J-shaped plates. The material used was Ortrautek® (Global D®, France). Then plates were removed and stored. After the downfracture, the mass could be visualised. The cyst was covered by a thin layer of palatal bone (except on the midline) which was pushed into the maxillary sinus. After removal, the bluish appearance of the cyst also suggested a mucocele (Fig. 5).

The lesion was decompressed to allow for one-piece removal and sent for histopathological analysis (Fig. 6). Following thorough sinus lavage, the mini-plates were repositioned, and the surgical site was closed without altering maxillary position (Fig. 5).

Postoperative recovery was uneventful, resuming a mixed diet on Day 1 and discharged shortly thereafter. Nosewashes with physiological saline were prescribed.

Histological analysis of the piece, measuring 3.5 mm × 2.8 mm × 0.5 mm, revealed a malformative cyst with a respiratory lining, of the non-odontogenic epithelial cyst type (fissural cyst).

Follow-up was regular, there were no complications and no recurrences to date.

Discussion

The LeFort I osteotomy, although more invasive than other approaches, was justified in this case due to the lesion's posterior location, the size and the patient's history of cleft palate. This approach offers superior visibility and access, reducing the risk of incomplete resection and recurrence, as shown by Quirino et al. [9].

Non-odontogenic developmental epithelial cysts (formerly fissural cysts) are composed of an epithelial membrane derived from epithelial residues related to the development of maxillofacial buds. They are rare, accounting for only 5% of maxillary cysts. The most common of these cysts is the nasopalatine cyst [10,11].

Cavalcante et al described a similar approach with a naso-palatine cyst which was removed by LeFort I because of its large size [2].

Rare cases have been described of epithelial cysts due to orthognathic surgery with sequestration of respiratory cells [12]. In this case, faulty development and cleft surgery lead to tissue disorganisation and the appearance of this cyst with epithelial origins.

The potential for complications such as oro-nasal or oro-sinus communications was minimized by selecting this approach over a direct palatal entry, which would have been challenging given the lesion's posterior position and the fragile tissues associated with the patient's cleft palate.

Indeed, detachment around the cleft would have been complicated, with poor visibility and an increased risk of leaving part of the lesion in contact with the mucosa or, on the contrary, of creating a breach. The creation of an oral-nasal communication at this point would have been difficult to close in this context of reworked tissues after the multiple surgeries associated with the presence of the cleft palate.

Conclusion

The Le Fort I osteotomy is a reliable approach for the enucleation of large posterior maxillary cysts, particularly in patients with complex anatomical situations such as a history of cleft palate. This technique offers enhanced visibility and access, reducing the risk of recurrence and complications.

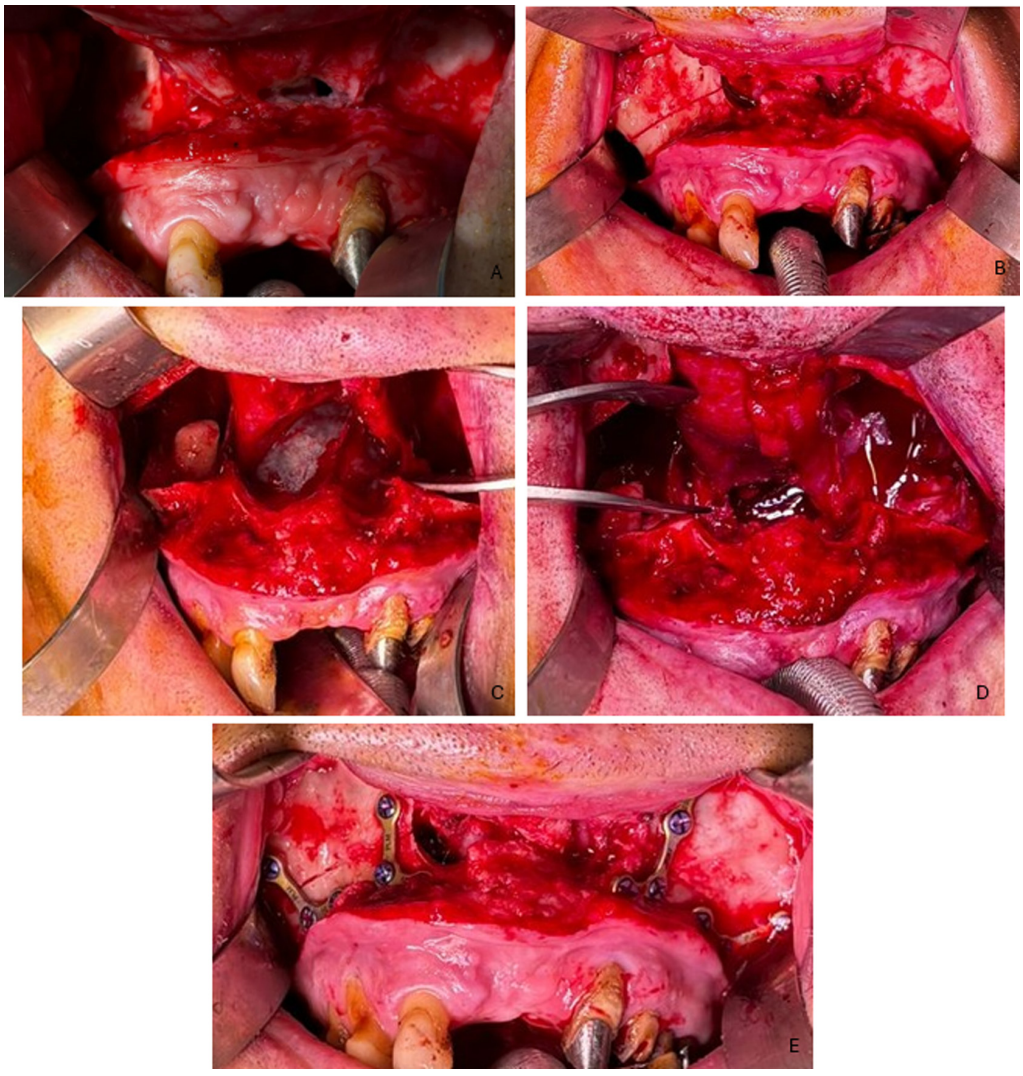

Fig. 5. Surgical steps: A: Visualisation of the cleft palate, B: LeFort I osteotomy, C: Down fracture of the maxilla with visualisation of the lesion, D: Monobloc removal of the lesion, E: Placement of osteosynthesis plates.

Fig. 6. Monobloc removal of the lesion.

Funding

This research has not received any specific funding.

Conflicts of interest

The authors declare that they have no conflict of interest.

Data availability statement

All data analyzed during this study are included in this published article. Additional datasets used during the current study are available from the corresponding author upon request.

Author contribution statement

L. Grzelczyk: Methodology, Writing original draft.
M. Daurade: Supervision, Validation.

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Cite this article as: Grzelczyk L, Daurade M. 2024. Surgical management of a large maxillary non-odontogenic cyst using Le Fort I osteotomy: a short case report. *J Oral Med Oral Surg*. 30: 35. https://doi.org/10.1051/mbcb/2024025