

## Case Report

# Surgical Management of an Extensive Nasal Mass in an Adolescent: Insights from Diagnostic Imaging and Histopathology

Sebastian Castillo, Carlos Diaz Q\*, Javier Alarcon and Vanessa Godinez

Universidad Francisco Marroquín, Department of Research, Guatemala City, Guatemala

## Abstract

A 17-year-old female presented with a mass in the right nasal fossa and ipsilateral eye protrusion. Imaging revealed a large osseous mass (65 × 44 × 39 mm) originating from the right turbinates, remodeling the medial wall and floor of the orbit, causing exophthalmos without tissue invasion. A partial resection was performed via the Caldwell-Luc approach, but hemodynamic instability halted the procedure, leaving a residual mass. Histopathology showed osteoblasts in a hypocellular stroma with thinned trabeculae, consistent with an osseous lesion. Postoperatively, the patient required two transfusions but recovered well with antibiotics and supplements. She was discharged after mild postoperative nausea was managed successfully.

**Keywords:** Nasal mass; Adolescent patients; Ocular proptosis; Exophthalmos; Differential diagnosis

## Introduction

Nasal masses in adolescent patients are a rare pathology that can present with a variety of symptoms depending on the size, location, and impact on surrounding structures. The presence of a nasal mass accompanied by ocular proptosis (exophthalmos) requires a differential diagnosis ranging from benign lesions to malignant neoplasms. This case describes a 17-year-old female patient referred to an otolaryngology center due to the presence of a mass in the right nasal fossa and ipsilateral eye protrusion. Clinical examination and tomography findings are detailed, emphasizing the key role of imaging in the evaluation and management of such conditions.

## Case Presentation

A 17-year-old female patient was referred to an otolaryngology center due to the presence of a mass in the right nasal fossa and ipsilateral eye protrusion. Upon examination of the oral cavity and larynx, no abnormalities were observed, nor were lymphadenopathies found in the neck region. Rinne and Weber tests were performed to assess auditory function, and no impairments were observed. Inspection of the nasal region, showed an occlusive mass on the right nasal fossa with no concomitant signs of hemorrhage. The remainder examination was unremarkable and no abnormal signs were observed in overall health.

## Laboratories/Imaging findings

A tomography was performed to assess the extent of the mass

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**\*Corresponding author:** Carlos Diaz Q, Universidad Francisco Marroquín, Department of Research, 13 av Guatemala City, 01011, Guatemala, Tel: +502 3037 0100

inside the right nasal cavity. The imaging findings (Figure 1), were consistent with a large mass (65 × 44 × 39 mm) originating from the right turbinates that was heavily remodeling the medial wall and the floor of the right orbit, compromising internal aspects of the maxillary and ethmoid bones; leading to a superior lateralization of the right eye causing exophthalmos, but conserving its normal anatomy. Muscular and neural tissue were conserved intact but displaced.

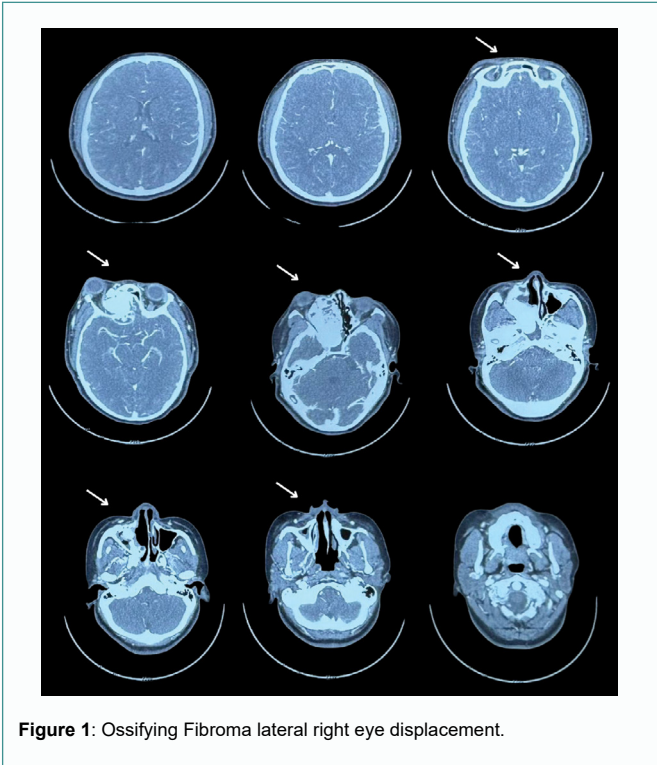
## Surgical intervention

According to the information gathered, the surgeon decided to perform a partial resection of the maxillary neoplasia. The chosen approach upon evaluation was the Caldwell-Luc procedure, gaining access to the maxillary sinus. Dimensions and anatomic relationships of the mass were established, determining an extension up to the sphenoid bone covering the ipsilateral choana. A predominantly osseous tumor was observed, with a significant contribution of trabecular bone, vascularized, exhibiting a tendency to hemorrhage. Partial resection of the tumor was accomplished, leading to visualization of the peripheral orbit but not decompressing it totally due to hemodynamic instability during intervention. A residual mass was left at the sphenoidal level and cranial base, a future reintervention was considered.

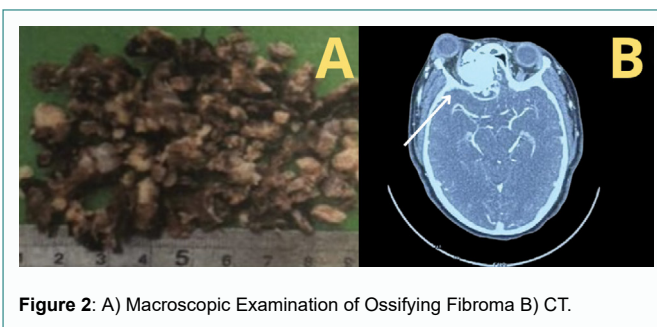
## Postoperative outcomes and pathology report

A biopsy was performed during the intervention and sent for pathological evaluation. A set of multiple brown fragments with both osseous and soft consistency (Figure 2) revealed the presence of osteoblasts scattered in a hypocellular stroma surrounding thinned trabeculae.

Following the procedure the patient was transferred to recovery. At this time, the patient received two transfusions following exit from the operating room. The following days the patient recovered well, she referred nausea at this time, vitals were within normal limits and she was conscious and oriented. An episode of vomiting occurred, which was treated with dimenhydrinate, and no nausea was reported in the following days. Laboratory tests for hematocrit and hemoglobin levels were conducted for transfusion assessment, an educational plan



**Figure 1:** Ossifying Fibroma lateral right eye displacement.



**Figure 2:** A) Macroscopic Examination of Ossifying Fibroma B) CT.

was provided and the patient was discharged with a prescription for amoxicillin-clavulanate and supplementation with iron and folates.

#### Follow-up Surgery for Complete tumor removal

A second intervention was performed with the Caldwell-Luc approach for complete tumor removal.

#### Discussion

Nasal masses in adolescents, though rare, present significant diagnostic and therapeutic challenges due to their potential impact on surrounding structures like the orbit and cranial base. This case involves a 17-year-old female with a large mass in the right nasal fossa causing exophthalmos, prompting differential diagnoses including inverted papillomas, fibrous dysplasia, and osteomas. Imaging revealed a predominantly osseous lesion from the turbinates, remodeling adjacent bony structures but not invading neural or muscular tissues, which guided the surgical approach.

The Caldwell-Luc procedure was employed for partial tumor resection, providing essential access to the maxillary sinus. Despite this, the mass's extension to the sphenoid bone and ipsilateral choanae required leaving residual tissue due to hemodynamic instability during surgery. Preservation of orbital structures was prioritized, but complete decompression was not achieved [1].

Histopathological analysis showed osteoblasts in a hypocellular stroma with thinned trabeculae, consistent with a benign but locally aggressive lesion like an osteoma or fibrous dysplasia. Such lesions are prone to recurrence, necessitating close postoperative follow-up and potential reintervention [2]. The patient's postoperative course was largely uneventful, with recovery following blood transfusions and management of mild nausea. Discharge with antibiotics and supplementation was appropriate due to the risk of infection and anemia. Monitoring of the residual mass at the cranial base is crucial, with future surgical reintervention planned to achieve complete resection if needed [3].

This case highlights the importance of a multidisciplinary approach in managing large nasal masses, especially those affecting critical anatomical regions. Collaboration among otolaryngologists, radiologists, and pathologists is vital for accurate diagnosis and treatment planning. Additionally, it underscores the need for intraoperative flexibility and long-term follow-up to address potential recurrence or progression. The Caldwell-Luc procedure, while effective, should be considered alongside less invasive alternatives when appropriate [4].

#### Conclusion

This case highlights the challenges in managing large nasal masses in adolescent patients, particularly when they cause significant structural remodeling and displacement, such as exophthalmos. A comprehensive clinical evaluation, along with advanced imaging and histopathological analysis, was crucial in diagnosing an osseous neoplasm originating from the right turbinates. Surgical intervention via the Caldwell-Luc procedure allowed for partial resection of the tumor, although a residual mass remained due to intraoperative hemodynamic instability. The patient had an uneventful postoperative recovery, responding well to medical management. This case underscores the importance of a multidisciplinary approach in managing rare and complex nasal tumors, focusing on patient safety, continuous monitoring, and long-term follow-up to ensure optimal outcomes and minimize recurrence risks.

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