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Case Report

Surgical management of juvenile nasoangiofibroma extending into adjacent structures: a case report

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ABSTRACT

This case report describes the surgical management of a 16-year-old male diagnosed with a large juvenile nasoangiofibroma extending into the nasal cavity, maxillary sinus, infratemporal fossa, and surrounding structures. The patient presented with a history of progressive facial swelling, nasal obstruction, epistaxis, and left aural fullness. Preoperative imaging, including magnetic resonance imaging (MRI) and angiotomography, demonstrated extensive, highly vascular tumor involvement with critical neurovascular structures. A multidisciplinary surgical approach was employed, combining a Weber-Ferguson transfacial incision with endoscopic sinonasal procedures such as septectomy, turbinectomies, and sphenoidectomy. The operative findings confirmed a large, irregular tumor with attachments to nearby bones and vessels, which was successfully resected with clear margins. Histopathology confirmed juvenile nasoangiofibroma. The postoperative course was favorable, with no complications, and ongoing follow-up was planned to monitor for recurrence. This case highlights the importance of preoperative embolization, tailored surgical strategies, and multidisciplinary collaboration in managing extensive juvenile nasoangiofibromas to achieve optimal outcomes while minimizing morbidity.

Keywords: Juvenile nasoangiofibroma, Endoscopic surgery, Transfacial approach, Skull base, Intraoperative embolization, Maxillectomy, Infratemporal fossa, Skull base surgery, Tumor resection, Multidisciplinary management

INTRODUCTION

The surgical management of juvenile nasopharyngeal angiofibroma (JNA) with extension into adjacent structures—including the infratemporal fossa, orbit, and intracranial compartment—requires a tailored, multidisciplinary approach that considers tumor extent, vascularity, and involvement of critical neurovascular structures.[1-4] We present the surgical management in a 16-year-old male diagnosed with a nasal tumor, specifically a juvenile nasoangiofibroma.

CASE REPORT

A 16-year-old male diagnosed with a nasal tumor, specifically a juvenile nasoangiofibroma, presented with a

family history of diabetes mellitus in his mother, sister, and paternal grandmother. His personal history included origin and residence in Piedras Negras, being a high school student in his second semester, single, Catholic with no smoking, alcohol, or drug use reported. His previous medical history was unremarkable, but he had undergone two biopsies of a mandibular tumor on October 28, 2024, which were diagnosed as lipoma. He reported a progressive increase in volume on the left cheek since December 2023, initially painless, which led to dental evaluation in March 2024, followed by a computed tomography (CT) scan, and subsequent follow-up with ear, nose and throat (ENT), including two biopsies confirming lipoma. About five months prior, he experienced episodes of epistaxis, with eight episodes in total, recent episodes occurring three months earlier, and also developed bilateral nasal obstruction, left aural fullness, and decreased hearing threshold on the same side, with persistent bilateral nasal congestion as of February 2025. Physical examination revealed no respiratory difficulty or bleeding; a noticeable deformity in the maxillofacial region approximately 10 cm in size was observed, fixed, non-fluctuant, without redness or warmth. Otoscopy identified a patent external auditory canal on both sides, with a receptive, intact tympanic membrane in the right ear and an opaque membrane in the left with retrotympanic occupancy. Intraoral examination revealed crowded dentition and intact palate, with indurated swelling in the left cheek without active discharge. The neck was supple, with no palpable masses. Endoscopic nasal examination showed a reddish, lobulated, smooth tumor extending from area IV of Cottle, in contact with the right middle turbinate, extending to the nasopharynx on the same side, with septal deviation. MRI imaging demonstrated an extensive, exophytic lesion measuring approximately 6×6×10 cm, involving the nasal cavities, maxillary, ethmoidal, and sphenoidal sinuses, displacing nearby structures, and encasing critical neurovascular components (Figure 1).

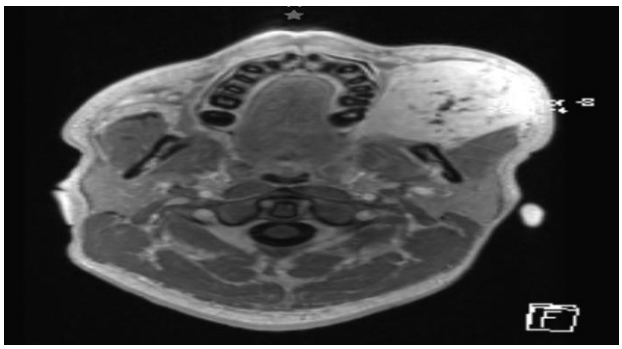

Figure 1: MRI imaging demonstrated an extensive, exophytic lesion measuring approximately 6×6×10 cm, involving the nasal cavities, maxillary, ethmoidal, and sphenoidal sinuses, displacing nearby structures, and encasing critical neurovascular components.

Head and neck angiotomography confirmed the tumor's relationship with vital arteries (Figure 2).

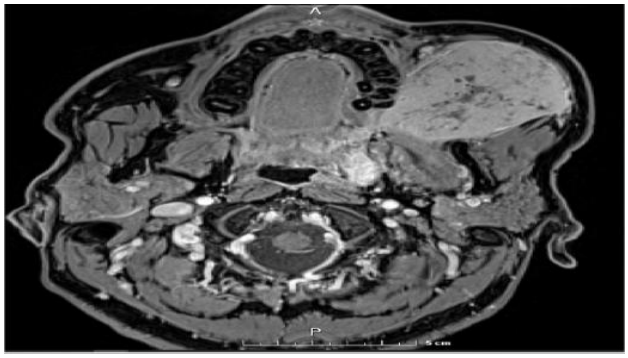

Figure 2: Head and neck angiotomography confirmed the tumor's relationship with vital arteries.

The patient's laboratory studies were within normal limits, except for some variation consistent with the tumor's mass effect. Following multidisciplinary planning (Figure 3), the patient underwent surgical intervention on 25 February 2025, consisting of a left infraorbital maxillectomy via the Weber-Ferguson approach combined with endoscopic sinonasal procedures, including septectomy, inferior and middle turbinectomies, and total sphenoidectomy (Figures 4a and b).

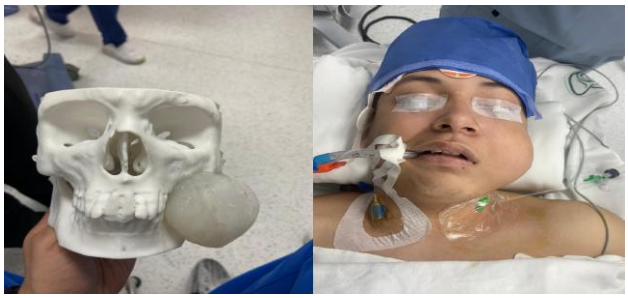

Figure 3: Preoperative planning.

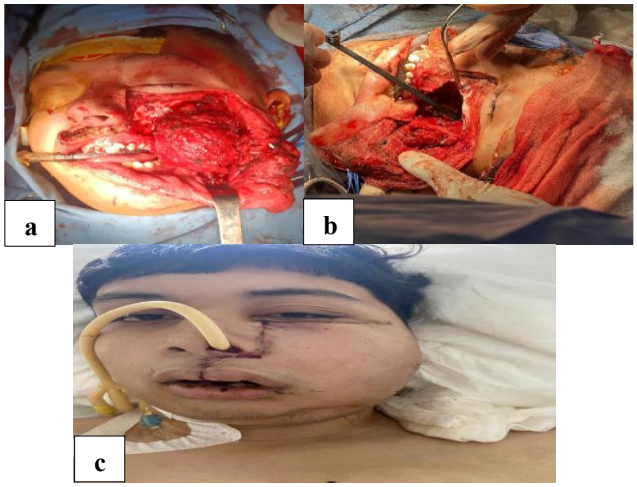

Figure 4: (a and b) Left infraorbital maxillectomy via the Weber-Ferguson approach combined with endoscopic sinonasal procedures, including septectomy, inferior and middle turbinectomies, and total sphenoidectomy; and (c) immediate postoperative.

The surgical findings revealed an approximately 15×10 cm tumor occupying the nasal cavity, extending into the maxillary sinus and adjacent regions with irregular borders, attached to the pterygoid process and involving the lateral pterygoid plate, the dura, and vascular structures. Histopathological examination of the resected specimen confirmed juvenile nasoangiofibroma measuring 8×6.3×5 cm with clear surgical margins. The postoperative course was favorable, with no complications reported, and ongoing follow-up was planned to monitor for recurrence (Figure 4c).

DISCUSSION

Preoperative planning and embolization

Preoperative angiographic embolization of feeding vessels, typically branches of the external carotid artery, is standard to minimize intraoperative blood loss and facilitate resection, especially for high-stage or extensively vascular tumors.[1-3] Multimodal blood conservation strategies, including antifibrinolytic therapy and acute normovolemic hemodilution, are also recommended to further reduce transfusion requirements.[2]

Surgical approaches

The choice of surgical approach is dictated by the tumor's anatomical extent.

Endoscopic endonasal approach

For most JNAs, including those with moderate extension into the pterygopalatine and infratemporal fossae, the endoscopic endonasal approach is preferred due to superior visualization, reduced morbidity, and improved cosmesis.[4,5] This approach can be extended with a transmaxillary (Caldwell-Luc) corridor or sublabial access to address lateral or inferior extension.[6]

Combined and multicorridor approaches

For tumors with significant lateral, inferior, or intracranial extension, a combined approach is often necessary. This may include: endoscopic endonasal plus sublabial transmaxillary approach for infratemporal fossa and skull base access; endoscopic endonasal plus transoral approach for extensive lateral or inferior extension, particularly when the infratemporal fossa or buccal space is involved; and transcranial (e.g., orbitozygomatic, extradural, transcavernous) approaches combined with endoscopic corridors for tumors with intradural or cavernous sinus involvement. These may be performed as single-stage or staged procedures, depending on tumor complexity and patient factors.[6-8]

Open approaches

Open transfacial approaches, such as midfacial degloving, remain an option for very large tumors with extensive involvement of the infratemporal fossa, orbit, or cavernous sinus, particularly when endoscopic access is limited or expertise is unavailable.[8,9] However, these are increasingly reserved for select cases due to higher morbidity.

Intraoperative considerations

Intraoperative navigation, meticulous dissection, and careful management of vascular structures are critical. Blood loss can be substantial, especially in advanced tumors, and may necessitate transfusion despite embolization.[8]

Management of intracranial extension

Extradural intracranial extension

Most extradural extensions can be addressed via endoscopic or endoscope-assisted transfacial approaches.[8]

Intradural or cavernous sinus involvement

Tumors with intradural extension or significant cavernous sinus involvement may require tailored craniotomy in addition to endoscopic or transfacial approaches. In cases where complete resection is not feasible due to involvement of critical neurovascular structures, adjuvant radiotherapy or stereotactic radiosurgery (e.g., gamma knife) is considered for residual disease.[8]

Postoperative management

Close follow-up with imaging is essential to detect residual or recurrent disease. Adjuvant radiotherapy is reserved for unresectable or recurrent tumors, particularly those involving the cavernous sinus or other critical areas.[8]

CONCLUSION

The management of juvenile nasoangiofibroma, especially with extensive involvement into critical adjacent structures, requires meticulous preoperative planning, often including embolization to reduce intraoperative bleeding. A multidisciplinary approach utilizing endoscopic, combined, or open surgical techniques should be tailored to the tumor's extent and anatomical involvement. In this case, a combined Weber-Ferguson approach with endoscopic sinonasal procedures enabled complete resection of a large, highly vascular tumor with favorable postoperative outcomes. Advances in surgical approaches and intraoperative navigation have improved the ability to effectively and safely remove extensive juvenile nasoangiofibromas, reducing morbidity and preserving function. Close follow-up remains essential to monitor for recurrence, with adjuvant therapies considered for residual or unresectable disease.

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REFERENCES

1. Singh R, Thorwarth R, Bendok BR, Lal D. Endoscopic Endonasal and Transmaxillary Resection of a Nasopharyngeal Angiofibroma. World Neurosurg. 2021;155:180.
2. Longacre MM, Seshadri SC, Adil E, Baird LC, Goobie SM. Perioperative Management of Pediatric Patients Undergoing Juvenile Angiofibroma Resection. A Case Series and Educational Review Highlighting Patient Blood Management. Paediatr Anaesth. 2023;33(7):510-9.
3. Meher R, Kathuria S, Wadhwa V, Ali MR, Shah B, Bansal A, et al. Preoperative emobilisation of juvenile nasopharyngeal angiofibroma. Am J Otolaryngol. 2022;43(5):103532.
4. Liu JK, Husain Q, Kanumuri V, Khan MN, Mendelson ZS, Eloy JA. Endoscopic graduated multiangle, multicorridor resection of juvenile nasopharyngeal angiofibroma: an individualized, tailored, multicorridor skull base approach. J Neurosurg. 2016;124(5):1328-38.
5. López F, Triantafyllou A, Snyderman CH, Hunt JL, Suárez C, Lund VJ, et al. Nasal juvenile angiofibroma: Current perspectives with emphasis on management. Head Neck. 2017;39(5):1033-45.
6. Marshall C, Agosti E, Peris-Celda M, Pinheiro-Neto CD. Combined Endoscopic Endonasal and Sublabial Transmaxillary Approaches for Resection of Intracranially Extended Juvenile Nasopharyngeal Angiofibroma. Acta Neurochirurgica. 2023;165(7):1773-80.
7. Lao WP, Lagabon KJ, Arom GA, Walker PC, Lee SC. Combined Endoscopic and Transoral Resection of a High-Staged Juvenile Nasopharyngeal Angiofibroma: A Pictorial Essay. Head Neck. 2021;43(2):719-24.
8. Hameed N, Keshri A, Manogaran RS, Srivastava AK, Chidambaram KS, Aqib M, et al. Intracranial extension of juvenile nasopharyngeal angiofibroma: patterns of involvement with a proposed algorithm for their management. J Neurosurg Pediatr. 2025;35(4):407-16.
9. Scholfield DW, Clarke P. Midfacial Degloving for Juvenile Angiofibroma: A Case-Series of 21 Adult Males: An Alternative to the Endoscopic Approach and When It Should Be Considered. Clin Otolaryngol. 2021;46(3):659-64.

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