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Intraosseous Capillary Hemangioma of the Nasal Dorsum in an Adolescent

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Abstract

Hemangioma is a benign vascular tumor that commonly occurs in children, but its presentation on the nasal dorsum is rare, especially among adolescents. This case report describes a 16-year-old male patient with a progressively enlarging, painful nasal mass over seven months. Clinical workup including CT-scan, angiography, and FNAB revealed a vascular lesion suggestive of hemangioma. The patient underwent pre-operative embolization followed by surgical excision. Histopathological and immunohistochemical evaluations confirmed the diagnosis of intraosseous capillary hemangioma. Postoperative follow-up showed good aesthetic and functional outcomes with no recurrence. This report highlights the importance of comprehensive diagnostic and surgical approaches for managing rare hemangioma of the nasal dorsum to minimize complications and preserve facial structure.

Keywords: capillary hemangioma; dorsum nasi; embolization; nasal tumor; surgical excision.

Abbreviations: FNAB (Fine Needle Aspiration Biopsy), CT (Computed Tomography), CD (Cluster of Differentiation)

INTRODUCTION

Hemangioma is a benign vascular tumor characterized by the abnormal proliferation of blood vessels. It is most commonly observed in infants and young children, with a prevalence estimated at approximately 5% to 10% in neonates, particularly among Caucasians (Manjula et al. 2017; Huang et al. 2024). Although hemangiomas predominantly affect the skin, mucosa, and soft tissues, they can also involve deeper structures such as bone, including facial bones like the nasal bone. Hemangiomas occurring on the nasal dorsum are rare, particularly in adolescents and adults, and often present diagnostic and therapeutic challenges due to the unique anatomical and aesthetic relevance of the nasal region (Sarafoleanu et al. 2022).

In general, hemangiomas are classified histologically into three major types: capillary, cavernous, and mixed (Kurniawan 2022). Capillary hemangiomas are composed of closely packed small capillary vessels, and their intraosseous variant is uncommon, accounting for less than 1% of all primary bone tumors (Eksal et al. 2005). When involving the nasal dorsum, hemangiomas may manifest as slow-growing, painless masses. However, in some cases, symptoms such as facial deformity, nasal obstruction, or localized pain may occur. The differential diagnosis includes other soft tissue and vascular tumors, necessitating thorough clinical and radiological assessments (Kadriyan et al. 2020).

The diagnostic process often includes non-invasive imaging modalities such as computed tomography (CT) and magnetic resonance imaging (MRI), which can delineate the lesion's extent, vascularity, and relation to adjacent structures. Angiography may be employed for both diagnosis and pre-operative planning, especially in large or hypervascular lesions where embolization is considered to reduce intraoperative bleeding risk (Farisa 2017). Definitive diagnosis is based on histopathological and immunohistochemical analysis, including markers such as CD34 and CD31, which are commonly expressed in vascular endothelial tumors (Sasaki et al. 2019).

Therapeutic approaches vary depending on the size, location, and stage of growth. While conservative and pharmacologic treatments such as corticosteroids or propranolol are effective for some infantile hemangiomas, surgical excision remains the treatment of choice for nasal dorsum hemangiomas that compromise facial aesthetics or function, especially in older children and adolescents (Keller et al. 2017; Rotter and de

Oliveira 2017). Preoperative embolization can significantly aid in reducing intraoperative complications and improving surgical outcomes.

This case report aims to describe the clinical features, diagnostic workup, surgical management, and histopathological findings of a capillary hemangioma involving the nasal dorsum in a 16-year-old male patient. By reporting this rare presentation, we intend to contribute to the clinical understanding and management strategies for hemangiomas in anatomically and cosmetically sensitive regions.

MATERIALS AND METHODS

Study area

The case was handled at the Department of Otorhinolaryngology – Head and Neck Surgery, Dr. Saiful Anwar General Hospital, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia, from September 2024 to February 2025.

Clinical Evaluation and Diagnostic Procedures

A 16-year-old male presented with a firm, non-pulsatile nasal mass located on the right dorsum nasi. The lesion measured approximately 4 × 4 × 3 cm and had developed progressively over the previous seven months. Initial clinical evaluation included comprehensive anamnesis, physical examination, and anterior rhinoscopy. Nasoendoscopy revealed superior nasal compression without mucosal disruption or purulent discharge.

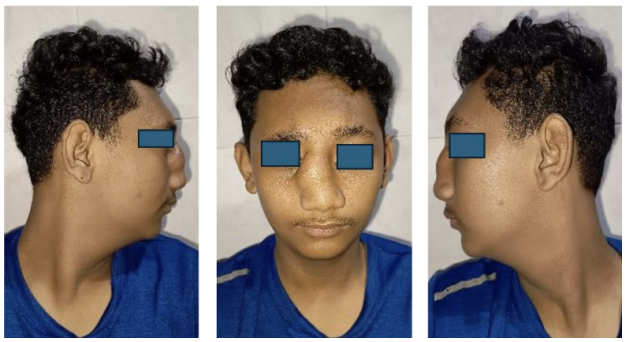


Figure 1. clinical picture of the patient before surgery.

Imaging diagnostics included a contrast-enhanced CT scan of the head and neck, which showed a solid hypervascular mass eroding adjacent nasal bones, suggestive of a benign soft tissue tumor (hemangioma). CT angiography further confirmed the presence of feeder vessels originating from both right and left lateral nasal arteries. No intracranial abnormalities were detected.

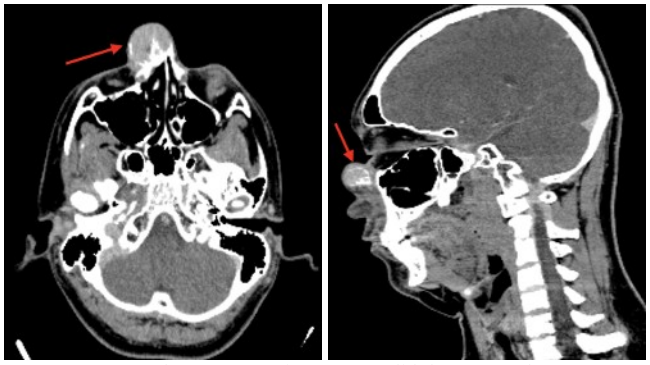
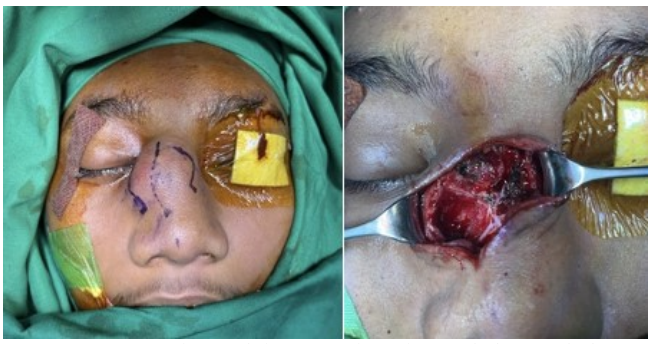


Figure 2. From the CT scan image, a solid hypervascular mass was obtained in the right nasal region with erosion of the nasal bone around it (red arrow), suggesting a suspected benign soft tissue tumor, e.g. hemangioma, which is fed via the right lateral nasal artery.

A fine needle aspiration biopsy (FNAB) was performed on the lesion, yielding findings consistent with a benign vascular lesion. Given the vascular nature of the mass, preoperative embolization was conducted by the interventional radiology team to reduce intraoperative bleeding. Blushing was observed on angiography with tumor supply from the lateral nasal artery branches.

Surgical Procedure

Surgical excision was performed on January 14, 2025, under general anesthesia using a lateral rhinotomy approach. During the procedure, 21 mL of blood was aspirated from the tumor capsule. The total intraoperative blood loss was approximately 300 mL. A drain was placed postoperatively and removed after stabilization of the wound site.



Figire 3. Preoperative and intraoperative views of the nasal dorsum hemangioma excision.

Histopathological and Immunohistochemical Analysis

Tissue samples were sent for histopathological examination, which revealed an ossifying capillary hemangioma. Immunohistochemical (IHC) staining was subsequently performed using CD34 and CD31 markers on paraffin blocks to confirm the vascular endothelial origin. The immunophenotype supported a diagnosis of capillary hemangioma.

Ethical Consideration

This case report was conducted in accordance with institutional ethical standards. The patient and his legal guardian provided informed consent for clinical treatment, investigation, and publication of anonymized data and images.

RESULTS AND DISCUSSION

The patient underwent successful preoperative embolization, significantly reducing intraoperative bleeding and allowing for complete tumor excision. The hypervascular lesion located in the right nasal dorsum measured approximately 3 × 3 cm intraoperatively. Grossly, the mass was encapsulated and firm. Histopathological examination showed characteristic features of a capillary hemangioma, including small capillary-sized vascular channels lined by flattened endothelial cells. Bony spicules and fibrous tissue components were also observed, consistent with an ossifying variant.

Immunohistochemical staining revealed strong positivity for CD34 and CD31, confirming the vascular nature and endothelial origin of the tumor. These markers are widely recognized for their role in identifying vascular neoplasms and help distinguish hemangiomas from other vascular malformations or neoplasms.

This case supports existing literature that surgical excision remains the gold standard in managing hemangiomas with localized growth and aesthetic compromise, particularly in regions like the nasal dorsum where conservative therapy may not be optimal. Kadriyan et al. (2020) and Sarafoleanu et al. (2022) also reported favorable outcomes with early surgical intervention. Preoperative embolization, as performed in this case, offers a significant advantage by minimizing operative complications.

Notably, the patient experienced no postoperative complications, and one-month follow-up showed no recurrence. Functionally, nasal patency was preserved, and cosmetically, the outcome was acceptable. The integration of imaging, angiography, pathology, and immunohistochemistry was critical in achieving accurate diagnosis and effective management.

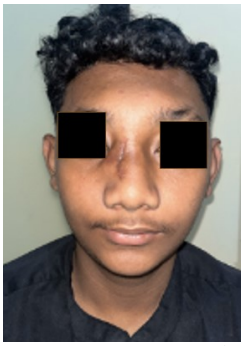


Figure 4. Postoperative appearance at one-month follow-up after surgical excision of nasal dorsum hemangioma.

This case contributes to a growing understanding of the rare presentation of ossifying capillary hemangioma in the nasal dorsum and reinforces the value of multidisciplinary treatment approaches.

CONCLUSIONS

This case illustrates the clinical importance of recognizing and appropriately managing rare vascular tumors such as intraosseous capillary hemangioma of the nasal dorsum. A thorough diagnostic approach involving imaging, angiography, biopsy, and immunohistochemistry is essential for accurate diagnosis. Surgical excision following preoperative embolization provided an effective and safe therapeutic strategy, with favorable functional and aesthetic outcomes. Early identification and multidisciplinary intervention are key to minimizing complications and ensuring optimal results in managing vascular nasal tumors.

Competing Interests: The authors state that there are no competing interests.

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