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CONSERVATIVE MANAGEMENT OF PEDIATRIC LINGUAL CAVERNOUS HEMANGIOMA WITH POLIDOCANOL SCLEROTHERAPY: A RARE CASE REPORT

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Abstract

Background: Cavernous hemangiomas are infrequent vascular malformations occurring within the oral cavity of pediatric patients. When present on the tongue, these lesions can disrupt essential functions such as articulation, chewing, and swallowing, thereby creating both functional impairments and therapeutic complexities.

Case Presentation: We describe a 12-year-old boy with a cavernous hemangioma on the left side of his tongue, successfully treated with intralesional polidocanol sclerotherapy. This non-surgical approach helped preserve tongue function and led to noticeable improvement of the lesion.

Conclusion: Sclerotherapy with polidocanol is a safe and effective first-line treatment for low-flow vascular malformations in the oral cavity. This report emphasizes the importance of conservative, image-guided management for vascular anomalies in pediatric patients.

Keywords: Cavernous hemangioma, arteriovenous malformation, polidocanol sclerotherapy, non-surgical treatment.

Introduction

Vascular anomalies are divided into two broad categories: vascular tumors (such as infantile hemangiomas) and vascular malformations (such as venous, lymphatic, or arteriovenous malformations), based on endothelial characteristics and growth patterns [1,2]. Hemangiomas are the most common benign vascular tumors in children, with 60–70% involving the head and neck region [3]. However, cavernous hemangiomas, characterized histologically by large dilated vascular channels, represent a less common subset of these lesions [4].

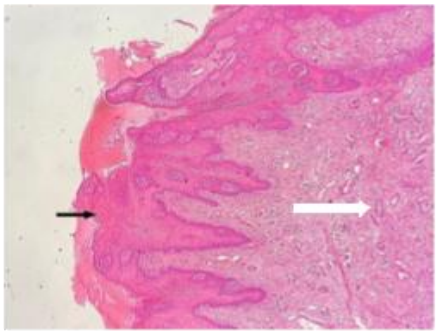
Lingual involvement is rare and may present as part of low-flow AVMs or mixed-type vascular malformations [5]. Clinically, these lesions may manifest as bluish, compressible masses that may blanch under pressure and cause speech, mastication, or airway disturbances depending on size and location [6,7].

Historically, surgical excision was the primary treatment modality; however, the high risk of bleeding, recurrence, and post-operative morbidity in functionally important areas like the tongue has led to the evolution of sclerotherapy as a minimally invasive alternative [8,9]. Among various sclerosing agents, polidocanol is gaining popularity for its efficacy and safety in treating low-flow lesions [10].
We present a rare pediatric case of cavernous hemangioma of the tongue managed conservatively with polidocanol sclerotherapy, highlighting its clinical outcomes and therapeutic advantages.

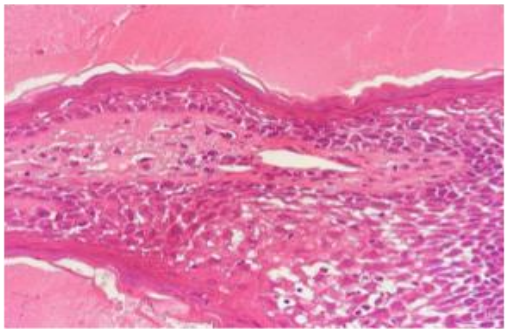
Case Report

A 12-year-old male presented to the Surgery OPD with a 3-year history of swelling over the left lateral border of the tongue. The lesion was insidious in onset, progressive in size, and associated with occasional bleeding and difficulty in chewing.
Intraoral examination revealed a 3 × 5 cm hyperpigmented, dome-shaped lesion on the left lateral border of the tongue. The mass was soft, non-tender, compressible, non-pulsatile, and blanched on digital pressure. Fissures were noted across the tongue surface, but there was no ulceration, active bleeding, or discharge. The oral mucosa was otherwise normal.

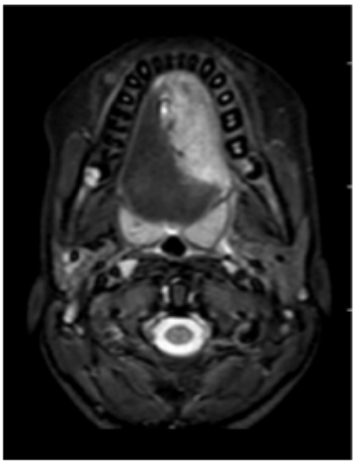
Wedge biopsy was taken from the lesion which suggestive of – Cavernous Hemangioma



Black arrow depicts the hyperplasia of stratified squamous epithelium.
White arrow shows the marked proliferation of capillaries which are dilated and congested with flattened epithelium.



Shows Lymphoplasmacytic infiltrates in between intervening stroma



MRI revealed a hyperintense lesion on T2-weighted imaging and homogenous post-contrast enhancement suggestive of a low-flow vascular malformation involving the left side of the tongue.

A plan for weekly intralesional sclerotherapy was formulated. Under sterile conditions, 3% polidocanol (2 mL) was injected into the lesion using a fine-gauge needle without sedation or general anesthesia. The procedure was repeated weekly for a total of four sessions.

Day 1 of injection Polidocanol

1 **week follow up**

After 1 month treatment

\Post-procedure follow-up at one month showed a marked reduction in lesion size and resolution of discomfort.No complications such as necrosis, ulceration, or recurrence were noted. The child regained full tongue mobility and resumed normal dietary habits.

Discussion

Cavernous hemangiomas account for approximately 6–8% of all benign vascular tumors of the head and neck in children, but oral cavity involvement remains rare (<1%) [3,6,11]. Lingual hemangiomas are particularly significant due to potential impact on airway, speech, and swallowing. AVMs, when present, show complex vascular architecture and require detailed evaluation to avoid intraoperative hemorrhage [12].

Treatment strategies for vascular anomalies like arteriovenous malformations and cavernous hemangiomas are determined by factors such as the lesion's dimensions, anatomical depth, and associated clinical symptoms. Small, asymptomatic lesions—particularly in infants—can often be managed conservatively through observation alone. Surgical excision, while potentially curative, is generally reserved for localized lesions due to risks such as
intraoperative bleeding, postoperative scarring, and potential impairment of tongue function (13). Laser therapies, including Nd:YAG and CO_2 lasers, offer benefit in managing superficial lesions but have limited efficacy in treating deeper cavernous variants (14). Cryotherapy and electrocautery are less commonly used, largely due to the risk of collateral tissue injury (15). Similarly, systemic or intralesional corticosteroids have fallen out of favor due to their limited long-term effectiveness and side effect profile (16). In contrast, sclerotherapy has emerged as a favorable treatment, especially for low-flow vascular malformations (17). It is minimally invasive, cost-effective, and can be safely repeated in cosmetically or functionally sensitive areas. Among sclerosants, polidocanol—a non-ionic surfactant—has demonstrated superior outcomes. It acts by disrupting the vascular endothelium, thereby inducing thrombosis and subsequent fibrosis without provoking significant inflammatory responses. Polidocanol offers several clinical advantages: injections are typically well-tolerated with minimal discomfort, systemic toxicity is rare, and it is particularly suited for diffuse lesions of the oral cavity where surgical approaches may be challenging (10,18,19). A comparative study by Yamashita et al. reported lesion regression in over 80% of oral hemangiomas treated with polidocanol sclerotherapy, without notable adverse effects (20). Consistent with these findings, our case demonstrated complete lesion resolution with no recurrence observed during short-term follow-up.

Conclusion

This case highlights the therapeutic value of intralesional polidocanol sclerotherapy as a minimally invasive and effective first-line intervention for cavernous hemangiomas of the tongue in pediatric patients. Accurate radiologic assessment, histopathological verification, and individualized treatment strategies are essential to optimize outcomes. Sclerotherapy presents a favorable alternative to surgical excision by preserving oral function and aesthetics while minimizing procedural morbidity.

Declarations

Funding: None.
Conflict of Interest: None declared.
Patient Consent: Obtained from the guardian.
Ethical Approval: Not required for a single case report.

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