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Case Report

Giant slow flow vascular malformation of the posterior pharyngeal wall: a rare entity

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ABSTRACT

Arteriovenous malformations (AVMs) involving the posterior pharyngeal wall are sporadic and pose significant clinical and surgical challenges due to their proximity to vital airway and vascular structures. We report a case of a large posterior pharyngeal AVM in a 52-year-old male, presenting with stertor, progressive dysphonia, dysphagia, and oropharyngeal swelling. Imaging revealed a non-infiltrative vascular lesion occupying the oropharynx and extending from the lower nasopharynx up to the valleculae level. The lesion was successfully excised via microscope-assisted intraoral surgery following elective tracheostomy. Postoperative follow-up showed complete recovery without recurrence. It is the largest size of slow-flowing AVM in the posterior pharyngeal wall reported in the English literature till date. This case underscores the importance of early recognition, imaging, and a multidisciplinary approach for managing complex vascular lesions of the upper aerodigestive tract (posterior pharyngeal wall).

Keywords: Arteriovenous malformation, Vascular malformation, Posterior pharyngeal wall, Oropharyngeal mass, Stertor, Tracheostomy

INTRODUCTION

Vascular malformations (VMs) are congenital lesions resulting from errors in angiogenesis. They are present at birth but may not manifest clinically until later in life, often following trauma, infection, or hormonal changes.[1] VMs are classified based on their flow characteristics into low-flow (venous, capillary, lymphatic) and high-flow (arteriovenous) lesions.[2] Arteriovenous malformations (AVMs) are high-flow anomalies characterized by direct arterial-to-venous connections without an intervening capillary bed, resulting in turbulent flow, expansion, and potential haemorrhage.[3]

Head and neck AVMs account for less than 0.5% of vascular anomalies and typically involve the skin, subcutaneous tissues, and facial bones.[4] Involvement of the posterior pharyngeal wall is exceedingly rare, with very few documented cases in the literature. Lesions in this region may go unnoticed until they cause airway obstruction, dysphagia, and difficulty in speech.[5,6] We present a rare case of a giant posterior pharyngeal AVM successfully managed with surgical excision via an intraoral approach.

CASE REPORT

A 52-year-old male presented with a 12-year history of a progressively enlarging throat swelling accompanied by difficulty in speech, difficulty breathing, nasal obstruction, and solid-food dysphagia over the preceding 4 years. The patient denied any history of trauma, fever, bleeding, or systemic symptoms.

Clinical examination

Oral cavity examination revealed a large, firm, non-pulsatile, non-tender, broad-based mass measuring approximately 8.5×6 cm in size, occupying the oropharynx. The lesion displaced the uvula and soft palate anteriorly, touching the base of the tongue, narrowing the oropharyngeal inlet. Superiorly, it extended into the

nasopharynx; inferiorly, it reached the vallecula and laterally reached up to the lateral pharyngeal wall (Figure 1a). On probing, it was soft to firm in consistency without bleeding. There was no overlying mucosal ulceration or cervical lymphadenopathy.

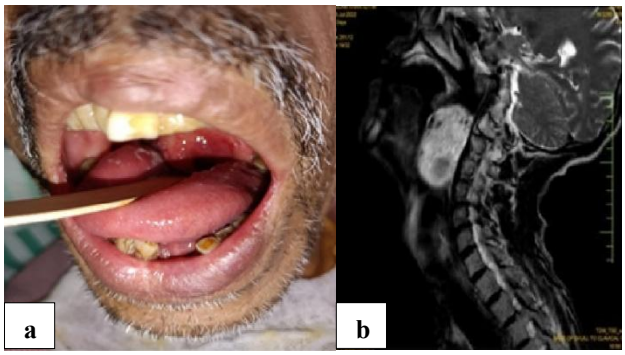

Figure 1: (a) Preoperative clinical, and (b) radiological photograph.

Investigations

Imaging

Contrast-enhanced magnetic resonance imaging (MRI) demonstrated a large space-occupying lesion noted in the posterior wall of the oropharynx projecting into the supraglottic space and occlusion of the oropharynx. The lesion shows internal hyperintense T1 changes suggestive of a haemorrhagic component. The lesion shows signal enhancement on the post-contrast study, with no underlying vertebral involvement (Figure 1b).

Histopathology

Gross specimen

Irregular soft tissue mass measures 9×7×5 cm. The external surface is partly encapsulated and circumscribed. Cut surface dusky, congested with sieve-like areas.

Microscopy

Polypoid lesion, composed of variably dilated capillary and large cavernous vascular channels of variable wall thickness of medial and elastic layers. Many vessels show mural thrombus. The stroma is comprised of fibrous tissue and shows foci of haemorrhage and minimal mononuclear infiltration. Microscopy is suggestive of a benign vascular lesion- arteriovenous malformation.

Treatment

Owing to the lesion's size and airway obstruction risk, elective tracheostomy was performed to secure the airway preoperatively. Under general anaesthesia, microscope-assisted transoral excision of the lesion was successfully carried out without significant bleeding. The surgical defect was closed primarily. A nasogastric tube was inserted for nutritional support postoperatively. Oral physiotherapy was given to the patient for soft palate mobility, which was compromised due to a long-standing lesion. Our centre's speech therapist assessed the patient's recovery in terms of speech, and the patient responded well. Clinically, swallowing was assessed after removal of the nasogastric tube postoperatively on day 21.

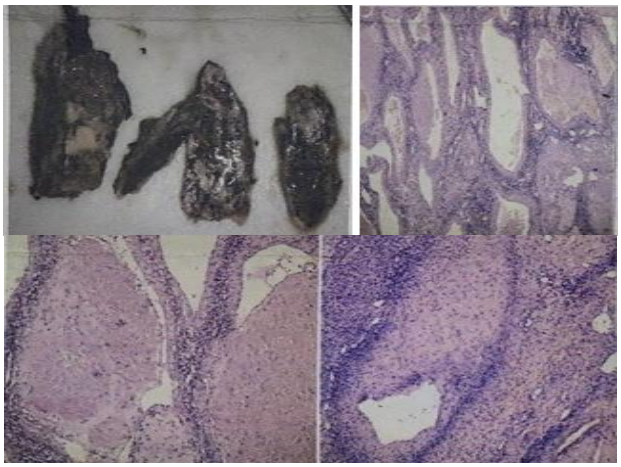

Figure 2: Gross specimen and histopathological micrographs (H&E staining).

Outcome and follow-up

The patient was decannulated on postoperative day 7 with an uneventful recovery. Oral examination on day 25 revealed complete mucosal healing. Follow-up MRI at 3 and 6 months confirmed no residual or recurrent lesion, and the patient remained symptom-free.

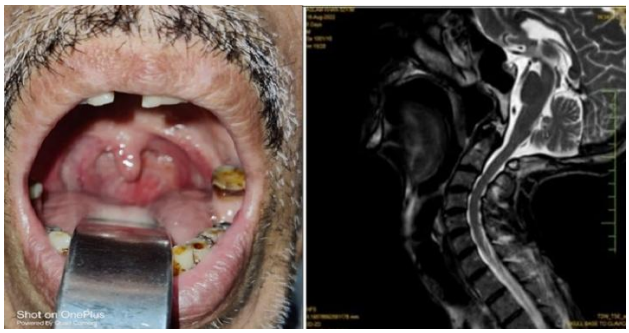

Figure 3: Postoperative MRI and oral cavity status.

DISCUSSION

AVMs of the upper aerodigestive tract, particularly those involving the posterior pharyngeal wall, are rare and complex. These lesions, with their intricate vascular networks and direct arteriovenous shunts, often present with nonspecific symptoms, leading to a diagnostic challenge and potential complications such as airway compromise or haemorrhage. In our patient, the initial presentation with progressive dysphagia and subtle speech

change mimicked benign lesions, further underscoring the complexity of these cases.

Clinical manifestations of posterior pharyngeal wall AVMs typically include dysphagia, throat discomfort, voice alterations, and potentially life-threatening airway obstruction as lesions enlarge. In our case, the mass effect caused progressive dysphagia and hot potato voice, with the potential for acute airway compromise if the lesion rapidly expanded or bled, highlighting the urgent need for effective management.

MRI remains the gold standard for identifying AVMs, offering excellent soft tissue resolution, visualization of flow voids, nidus morphology, and spatial relationships with surrounding structures. Magnetic resonance angiography (MRA) further characterizes the feeding arteries and draining veins; digital subtraction angiography (DSA) provides real-time vascular mapping and facilitates preoperative embolization planning.[7] In our patient, MRI with flow-sensitive sequences demonstrated a slow-flow nidus in the posterior pharyngeal wall.

Treatment of head and neck AVMs should be tailored to the lesion size, flow dynamics, anatomical location, and symptom severity.[8,9] Management options include preoperative embolization or sclerotherapy followed by surgical excision, standalone embolosclerotherapy, or radiosurgery.[7] Surgical resection remains the definitive treatment for localized lesions, allowing for the direct removal of the nidus; embolization assists by reducing the risk of intraoperative bleeding.[7] In our patient, intraoral excision was performed under controlled airway conditions.

Airway management in such cases can be highly complex. Extensive lesions may distort anatomy, engorge vessels, and bleed during manipulation, thereby complicating intubation or mask ventilation.[9] Awake fibreoptic intubation is preferred but may not be feasible, as seen in reported cases where patient cooperation or anatomical distortion hinders its use.[9] Advanced strategies—including inhalational induction, use of video laryngoscopy, suction techniques such as the suction-assisted laryngoscopy and airway decontamination (SALAD) method, and readiness for surgical airway (tracheostomy or cricothyroidotomy)—are essential. In one paediatric case of intraoral AVM, multiple airway attempts failed, and successful intubation was ultimately achieved after 40 minutes using video laryngoscopy with suction assistance.[9]

In our case, due to anticipated airway compromise from mass effect and vascularity, an elective tracheostomy was performed pre-operatively to secure the airway, allowing for safe intraoral excision with minimal bleeding and preserving postoperative function. No intraoperative hemodynamic instability occurred, and the patient tolerated extubation and decannulation uneventfully.

Limitations

Other modalities, like MR angiography, were not performed preoperatively due to the patient's financial constraints. Preoperative embolization was not performed as per our radiologist; the tumour was a slow-growing mass, so it was not required. At our centre, there was a lack of advanced modalities for objective speech assessment.

CONCLUSION

Posterior pharyngeal wall AVMs are exceedingly rare and potentially life-threatening lesions requiring prompt recognition and tailored management. Advanced imaging modalities and preoperative airway protection are cornerstones of successful surgical treatment. This case highlights the importance of maintaining a high index of suspicion and employing a multidisciplinary approach to achieve optimal functional outcomes.

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