Cervical AVM- A Case Report

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PRESENTATION OF CASE

We report a case of 27-year-old female patient who presented with swelling on the right side of neck for 6 months. On examination the swelling was soft compressible non tender, with no local rise of temperature, roughly 2*3 cm in size. MRI of the neck showed a small 2.2*0.8*2.4 cm sized well defined T2W and STIR hyperintense and T1W hypointense lesion in the subcutaneous plane over the lateral aspect of the middle third of the neck. Posteriorly it was abutting the right external jugular vein without any thrombosis. Medially abutting the right sternocleidomastoid muscle.

The patient was taken up for resection of the AVM under general anaesthesia. Round 5 cm linear vertical incision was put on the right side along the anterior border of sternocleidomastoid muscle at the level of greater cornua of hyoid bone. A vascular 2*2*2 cm mass was noted abutting the sternocleidomastoid muscle medially and internal jugular vein laterally. Blunt dissection was done. The mass was excised completely by separating from sternocleidomastoid muscle and internal jugular vein. All the feeding vessels from the internal jugular vein were individually identified and ligated and the mass was removed completely with minimal intra-operative bleeding. The bed was inspected thoroughly for any bleeding and after achieving haemostasis the wound site was closed in layers. The tissue was sent for histopathological examination. Histopathology was consistent with that of arteriovenous malformation showing admixture of malformed capillaries, arteries and venules with involvement of submucosa but not muscularis propria. The patient was asymptomatic at 3 months follow up and wound site showed complete healing with no scarring.

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DIFFERENTIAL DIAGNOSIS

Lipomas, haemangiomas, neuromas, and fibromas.
They are all characterized by slow growth and lack of invasion. Lipomas are soft masses and isodense with a fat signal on magnetic resonance imaging. Haemangiomas typically occur with cutaneous manifestations and are relatively easy to recognize. Neuromas may arise from nerves in the neck and rarely present with sensory or motor deficits. Most of these benign masses are diagnosed at the time of surgical excision.[1]

DISCUSSION

Arteriovenous malformations (AVMs) of the head and neck are defects of the blood vessels. AVMs lack the capillary bed that normally exists in the common

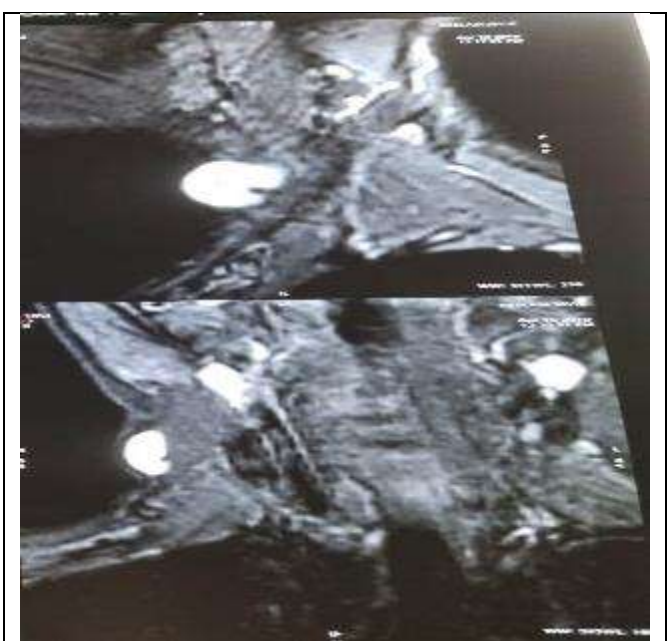
area where the arteries and veins lie in close proximity Arteriovenous malformation of the head and neck is a rare vascular anomaly but when present is persistent and progressive in nature and can represent a lethal benign disease.[1] Traumatism is a frequent cause of arteriovenous malformations, but most of the time the AVMs are congenital.[2] Defects in TGF-beta signalling and a genetic two-hit hypothesis are the prevailing theories to the pathogenesis. Trauma, ischaemic event secondary to thrombosis, ectasia, hormonal changes, and puberty can induce proliferation of the AVM and trigger the growth of the lesion and manifestation of its troublesome symptoms.

These lesions present as a pulsatile mass with a thrill, bruit, and occasionally local hyperthermia, ulceration or bleeding, functional impairment due to arterial steal, and ischaemia.[3] Shunting of blood diminishes nutritive flow, which may result in skin necrosis, ulceration, and bleeding.[2] Many lesions have either a warm erythematous blush or a true port-wine stain in the overlying skin. Operative bleeding is one of the most hazardous complications in the surgical management of high-flow vascular malformations. In the cervical region, the presence of vital vascular structures, such as the carotid artery and jugular vein, may increase this risk. The localization of arteriovenous malformation on the neck induces surgical difficulties. The complete excision of the mass without nerve or vascular injury or major bleeding is a surgical challenge.[4]

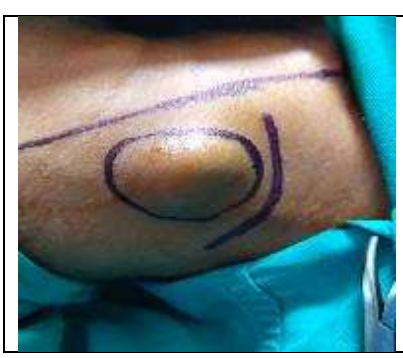
Radiological investigation prior to surgery is very important for knowing the vascular origin. MRI, CT angiography are the imaging modalities preferred to diagnose and plan management of the malformations. Angiography, combined with MRI, allows separation into low-flow lesions (haemangiomas, venous, and lymphatic malformations) and high-flow lesions (arteriovenous malformations and invasive, combined lymphovascular malformations).[5] Primary surgical correction by ligation and resection gives good results. The resection should be as complete as possible because recurrence rate is high.[6,7] The recurrence of the mass makes the redo intervention difficult because of fibrosis and scarring of the neck leading to altered anatomy loss of landmarks.

Embolization is done before surgery to reduce the inflow, to permit formation of thrombus before the resection. Some authors describe the use of embolization at the same time of surgery. Various sclerosing agents (sodium morrhuate, boiling water, nitrogen mustard, etc.) have been used to treat these high-flow lesions but have proven ineffective because they were displaced from their site of action by the speed of the blood flow.[5] This problem can be overcome by using preoperative embolization of the feeding arteries which reduces the hypervascularity and therefore aids in surgical resection of these lesions. At present, the embolic materials generally employed are absorbable gelatine foam, polyvinyl alcohol (PVA), and absolute alcohol. Complications from embolization although uncommon but include necrosis of adjacent tissues. Hence, patients must be adequately treated with broad-spectrum antibiotics.[8] AVMs present a therapeutic challenge because of their haemodynamic characteristics and their modality of growth. Surgical resection is often associated with extensive blood loss and an incomplete resection frequently leads to regrowth of the tumour to sizes that are often larger than its original size. Proximal ligation of the parent vessel should be avoided as it is ineffective and may aggravate the problem making future endovascular therapy difficult or impossible.[8] Complete excision of the mass forms the cornerstone of the treatment in order to prevent recurrence. Thus, the rareness of AVMs along with the morbidity associated with them necessitate urgent treatment once detected all circumstances. A high degree of suspicion leads to their diagnosis and considerably reduces the risks of complications once identified.

Picture 1. 3*2 cms Mass in the Right Neck Along Upper One Third of Sternocleidomastoid Muscle

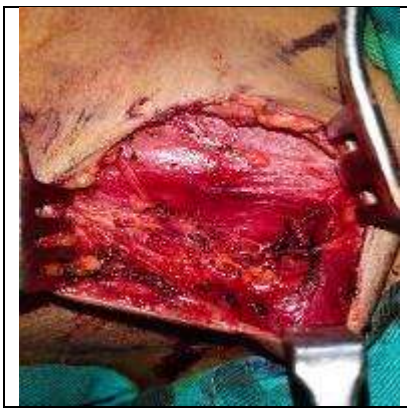


Picture 2. MRI Neck Showing Left Sided Hypointense Mass



Picture 3. Intraoperative Image of the Marked Mass

Picture 4. Intra Operative Appearance of the Mass Seen Abutting the IGV and SCM



Picture 5. Completely Resected Mass with Clear Bed

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