

MANAGEMENT OF LARGE ARTERIO-VENOUS MALFORMATION OF UPPER LIP: A CASE REPORT

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ABSTRACT

Vascular lesions of head and neck region have been classified as either hemangiomas or vascular malformations. These can lead to various cosmetic problems and life threatening hemorrhages. Hemangioma are usually noticeable at birth, rarely involve the bone, are self limiting and don't lead to catastrophic hemorrhage. Whereas in adults similar appearing lesions are AV malformations which necessitate extensive reconstructive procedures and can lead to massive hemorrhage. The management of AVM is complex and requires integrated team approach including surgeons, interventional radiologists and critical care specialists. Current treatment options for high flow vascular malformations are surgical resection with endovascular embolization. Surgical treatment of AVM has been associated with significant morbidity and mortality due to potential for excessive hemorrhage. In our case of A-V malformation in the upper lip we used a technique of circumferential ligation along with bulk reduction and partial resection. This technique came to be a successful intervention for the above problems.



FIG 1: Pre-op Upper lip swelling (Frontal View)



FIG 2: Pre-op Upper lip swelling (Profile View)



FIG 3: Pre-op Upper lip swelling (Intra Oral View)

INTRODUCTION

Lesions that are result of neoplastic or hemartomatous overgrowth of vascular tissue are of importance to oral and maxillofacial surgeons as the area of

head and neck are highly vascularised.¹ There has been confusion regarding the proper nomenclature for vascular lesions Mulliken, Glowacki and Kaban have proposed a biological classification of vascular birthmarks based on clinical behaviour and endothelial cell characteristics which classifies vascular lesion into haemangioma and vascular malformations.^{2,3} Vascular malformations are further subdivided as slow flow and fast flow lesions.

Hemangioma represents the most common tumours of infancy and 75% of them are noticeable at birth, grow rapidly until the infant reaches the age of 6-8 months² and 85% are recognized at one year.⁴ and 70% involute by seventh year of life. Hemangiomas usually do not involve the skeleton They usually do not require treatment unless there is some cosmetic reason. On a cellular level, hemangiomas are characterised by increased endothelial turnour and increased number of mast cells.

Arteriovenous malformations in contrast though congenital, may be obvious in 2nd to third decade and usually keep on enlarging with the age of the patient to attain a big size. These lesions can lead to massive life threatening haemorrhage due to trauma, after routine extraction or even spontaneously. Management of these malformations involve extensive reconstruction and are plagued with significant morbidity and mortality.⁵ 35% of AV malformations are present in skeleton.⁶ On a cellular basis, these anomalies are characterised by a normal endothelial cell cycle and nor-

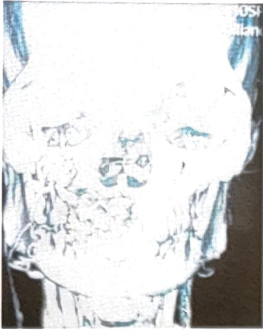


FIG 4

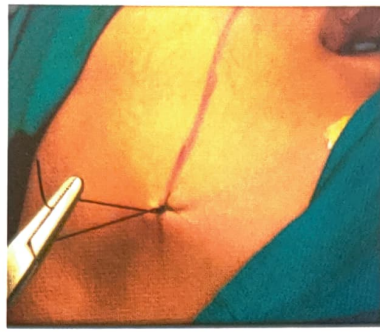


FIG 5: Ligation of Facial artery before excision

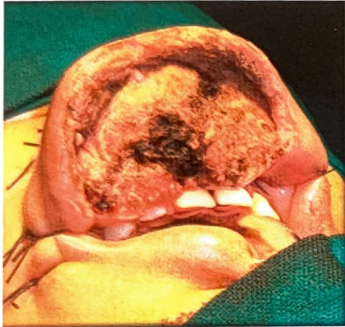


FIG 6



FIG 7

mal number of mast cells.²

Vascular malformations occur as a result of aberrant vessel angiogenesis during embryogenesis.⁵ They are classified clinically by their blood flow characteristics as "high flow" or "low flow" lesion^{2,3}. Lesions composed of arteries such as arterial and arteriovenous malformations are generally high flow whereas low flow lesions are of capillary, venous or lymphatic variety. Pathophysiology of arteriovenous malformations is consistent with enlarged tortuous arteries and veins with collateralisation from neighbouring vessels. Low pressure channel in the centre lead to proliferation of collateral vessels.⁵

Vascular malformations on the other hand keep on enlarging with age and may lead to life threatening complications. Vascular malformation are confirmed by arteriogram and feeding vessels are identified. High flow lesions are most difficult to manage because of their potential to lead to massive haemorrhage and they are known for high morbidity and mortality and high recurrence rate. Superselective embolization have been used to decrease blood flow to vascular malformation but when used alone it usually lead to recruitment of collateral vessels from contralateral

circulation. The most ominous situation arises when collateral blood supply develops from internal carotid arterial system through ophthalmic artery; then superselective embolization may not be used due to potential for ischaemia or embolic stroke. Dislodgement of embolus in systemic circulation can cause serious complications.

Presently the high flow lesions are embolised followed by ablative surgery whereas low flow lesions are managed by excision, laser or sclerosing agents.⁵ Residual lesion may be treated by excision, laser or sclerosis.

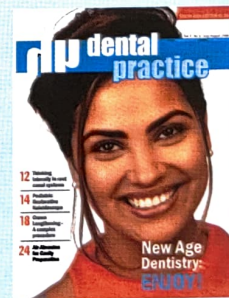
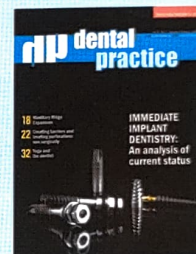
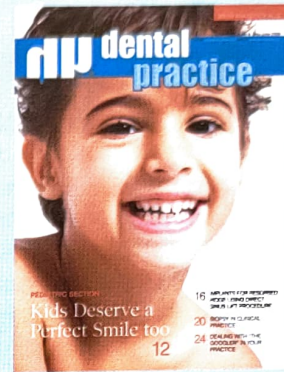
Hemangiomas usually don't require treatment and involute completely by 7 to 9 year of age. Life threatening proliferation of haemangioma which is rarely encountered is treated by high dose steroids and interferon.⁶ Hemangiomas have been treated by injection of corticosteroids and sclerosing agents.⁷; selective ligation of peripheral vessels; and embolisation with steel coils, gel foam, dura, silicone beads, alcohol and cyanoacrylate.^{8,9,10,11,12}

Resection of large sized AV malformation is associated with common complication of massive hemorrhage and extensive reconstruction. In our case involving upper lip AV malformation local circumferential ligation was used to debulk the lesion and to avoid above mentioned problems and preserving the skin and muscles.

CASE REPORT

A 34 year old housewife reported with a complaint of slow growing swelling on right side of upper lip (**Fig. 1, 2**). There

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FIG 8



FIG 9

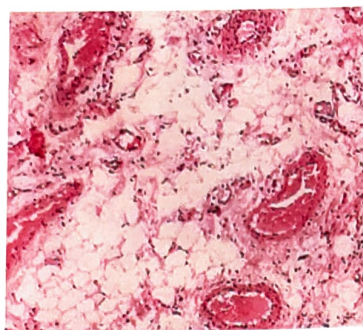


FIG 10

was no history of pain, bleeding or spontaneous change in size. No relevant family history or medical history was reported. On examination 5×3 cm, non-tender, smooth surface swelling was noticed with pulsations and involving almost whole of upper lip. Pulsations were felt on right side facial artery. (**Fig.1,2,3**).

Angiogram was advised which confirmed the diagnosis of high flow arteriovenous malformation having facial artery as main feeder artery. (**Fig.4**).

Surgery was planned after all preparations of possibility of excessive hemorrhage. Hypotensive anaesthesia was used. After usual scrubbing and draping feeder vessel was identified and marked (**Fig.5**).

Circumferential ligation and compression of all feeder vessels was achieved by inserting several stitches all around the lesion at a short distance from the boundary (**Fig 5**). After ligation tumour was safely debulked via intra oral translabial approach. Partial excision was achieved to preserve the skin and sufficient muscle tissue (**Fig. 6**), and the excised resected mass was sent for biopsy.

Wound was sutured maintaining the cupid's bow (**Fig. 7**).

Lesion has regressed completely after 12 weeks with normal muscle function and contour (**Fig. 8 & 9**).

The post operative histopathological reports confirmed it to be a vascular malformation (**Fig.10**). Main advantages with this type of procedure is its simplicity, minimal hemorrhage and easy debulking requiring no primary or secondary reconstruction.

DISCUSSION

Vascular lesions of the face with extensive enlargements are considered to be difficult and challenging to treat because of involvement of high flow major vessels which can lead to extensive bleeding during surgery and their removal may require extensive reconstruction. In our case which involved the technique of localized circumferential ligation around the lesion and debulking with reduction of enlarged mass proved to be a more conservative technique where lip reconstruction was avoided with no visible scarring. This technique can easily be performed in well accessible and visible areas as compared to areas where the lesion is difficult to locate for ligation, like intraosseous lesions involving the jaw bones and lesions presented intra orally. The muscle was not excised completely and the integrity of the neuromuscular component was maintained leading to post operative retention of lip function and aesthetics. In this patient the technique was considered beneficial as the chance of recurrence was negligible considering the age of the patient.

CONCLUSION

This type of lesions in head and neck region can be effectively managed esthetically and with fewer complications with the conservative & minimal invasive procedures, but should be carried by efficient and highly skilled surgeons and keeping in view about the regional vascular anatomy in consideration.

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