Arteriovenous Malformation of Nose-Revision Surgery

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Abstract Arteriovenous malformations are rare in the head and neck region and generally arise from intracranial vessels. We present one rare case with spontaneous arteriovenous malformations related to the nose.

Keywords A-V malformations · Ultrasonography · MRI · Doppler · Haemangiomas · Embolisation

AVM's are related to errors of vascular morphogenesis, almost always present at birth [3], manifests late in life and require treatment. They must be differentiated from haemangiomas, which are neoplastic, affect females more than males and may regress spontaneously. Histologically, haemangiomas show endothelial proliferation in contrast to AVM which have none [1].

AVM's are rare in the nasal region and divided into fast flowing and slow flowing lesions. Fast flowing lesions are predominantly AV fistulas, whereas venous, capillary and lymphatic lesions produce slow flowing lesions [2]. AVM is composed of a central nidus with anomalous AV shunts and a network of surrounding collateral vessels [3].

AVM can increase rapidly secondary to infection, trauma, ligation, attempted excision or via hormonal influences such as pregnancy and puberty [4]. Diagnosis is by USG, MRI is the choice of investigation [1]. CT and X-ray has no role practically.

Herewith we present a case report which came to OPD and we had to deal it with a revision surgery.

A 16 year old male patient came with swelling on the tip of the nose from age 5, which was insidious in onset, gradually progressing in size, no pain and was operated 4 years back. Patient also gives history of having been treated with injecting medicine into the swelling which resulted in the scar. No similar swelling was found elsewhere in body and there was no trauma.

On examination of nose, a scar was present on the right alae of the nose, irregular hyperpigmented measuring 2×3 cm. Diffused smooth swelling present on the tip of the nose extending on to the ala of the nose to the dorsum measuring about 2.5×2.5 cm. Surface was smooth with no erythema and pulsations. Skin over the swelling was stretched and shiny on palpation, swelling was soft cystic with diffused margin. Surface was smooth, non tender and there was no local rise in temperature. Skin covered bulge was seen in the right vestibule. DNS to the right with caudal dislocation to the left was noted. Neck examination revealed no palpable lymph nodes (Fig. 1).

Routine investigations were insignificant. Ultrasound of the swelling showed a highly vascular soft tissue mass on the tip of the nose.

Patient was posted for excision of the mass under general anaesthesia after pre-anaesthetic evaluation.

Differential diagnosis of haemangioma of the nose was kept in mind.

The mass was approached by external rhinoplasty incision. The intraoperative findings were—a soft tissue mass seen prolapsing between the septum and the medial crus of the alar cartilage into the right nasal cavity (Figs. 2, 3).

The feeding artery was probably the nasal branch from the infra orbital artery which was ligated (Figs. 4, 5, 6, 7).

After dissection of the mass the cavity was obliterated with gel foam. Post-op period was uneventful. Mass was sent for histo-pathological examination.

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Fig. 1 Pre operative pictures

Fig. 2 Mass seen prolapsing into nasal cavity

HPE-Report: histopathology revealed thick and thin tortuous vessels embedded in fibrocartilagenous tissue admixed with adipose tissue. There was disruption of the internal elastic lamina, fluctuation of medial thickness and

Fig. 3 External rhinoplasty incision

Fig. 4 Ligation of the artery

Fig. 5 Mass being dissected

Fig. 6 Cavity following dissection

Fig. 7 Closure of incision

Fig. 8 Histopathology picture

polypoidal projection of fibromuscular tissue of intima into the lumen. These features were consistent with clinical diagnosis of arteriovenous malformation (Fig. 8).

The patient has been on follow up for last 8 months (Fig. 9).

Discussion

Angiography and embolisation may be required before surgery. For symptomatic AVM, complete excision with prior embolisation is the treatment of choice [5]. Surgical ligation of the proximal feeding vessels avoided as it aggravates lesion by developing new collaterals and precludes later embolisation [6]. Embolisation alone can lead to stroke, cranial nerve palsy and blindness [7] if done near vital structures. We are describing this case because we have found only one case of AVM from the infra orbital artery.

AVM's have rapid enlargement, facial deformity and ulceration. Surgery is restricted to debulking gross soft

Fig. 9 Post operative pictures

tissue in children. Super selective embolisation of the feeding vessel is the first line of treatment followed by debulking.

AVM enlarge by haemodynamic mechanisms and not by cellular hyperplasia. AVM is essentially an abnormal communication between an artery and a vein which bypasses the capillary bed. Indications for treatment are disfigurement or bleeding.

Conclusion

Bell [8] in his 1815 textbook recognized that AVM (aneurysm by anastomosis is quite distinct from an acquired fistula and noted that the only hope for long term success is total resection of clinically involved tissue.

- (1) Mode of treatment—combination of surgical ablation and reconstruction.
- (2) Leaving behind dormant and residual anomalous channels, beyond resection margin encourages further collateral formation, shunting and reexpansion.

- (3) The team approach between radiologist, ENT head and neck surgeons, vascular and plastic surgeons and anaesthetist with blood bank services is emphasized by a number of authors [9–11]. All agree that super selective angiography alone is not a satisfactory treatment unless surgical resection can follow. In our case we did away with embolisation. 8 months of follow up has not resulted in recurrence.

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