

Innovative Treatment of Scalp Arteriovenous Malformation

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Abstract: Arteriovenous malformations of the scalp are a group of rare conditions which may present as large, tortuous vascular lesions resulting in craniofacial deformity, bleeding after minor trauma. Radiological findings can be the presence of feeding arteries and veins associated with dilated tortuous vessels. Surgical excision is considered as definitive treatment for these lesions but intraoperative bleeding can be a challenge. Hence various endovascular procedures are gaining popularity. We hereby describe a case of a 26 year male with arteriovenous malformation in the left parietal region of scalp.

Keywords: Scalp AVM, Bangle technique

1. Introduction

Arteriovenous malformation is an abnormal fistulous connection between the feeding arteries and draining veins without an intervening capillary network¹. A pulsatile mass which is progressively growing with a throbbing headache are the usual complaints of the patient². Treatment options include surgical excision, trans-arterial or trans-venous embolization and injection of sclerosants into nidus³. However, only total surgical excision offers a cure to these lesions. Due to excessive and troublesome intraoperative bleeding, endovascular procedures are gaining popularity but are associated with high incidence of recanalization. We describe here a case of scalp arteriovenous malformation in a 26 year male.

2. Case Report

A 26 year old male presented with swelling in scalp on left side in high parietal region since childhood which increased in size since 6-8 months associated with history of episodes of bleeding from the swelling.

On examination there was a swelling of size 2x1.5cm in left parietal region of scalp, which was reddish in colour well defined margins, soft in consistency and mobile. There was presence of bruit. There was no active bleeding at the time of presentation.



Figure 1: Nidus is reddish blue before the procedure.

Patient was advised radiological investigations. On CT angiography from vertex to base of skull, a nidus is seen in the high parietal region of the scalp on left side. Branches of maxillary artery, superficial temporal artery and posterior auricular artery are seen supplying this nidus. This nidus is seen draining into the superficial venous system.

Patient underwent Digital Subtraction Angiography, through femoral puncture; feeders are checked through both the carotids. It shows the similar findings in addition there was a branch of left ophthalmic artery supplying the nidus. Bangle shaped instrument was applied over the nidus and occlusion of the feeders was checked upon. On getting the satisfactory occlusion of feeders, cyanoacrylate glue was injected into the nidus percutaneously under the fluoroscopic guidance. On followup, nidus was reduced in size with loss of bruit.



Figure 2: Scalp AVM on left high parietal region which is supplied by maxillary, superficial temporal and posterior auricular artery

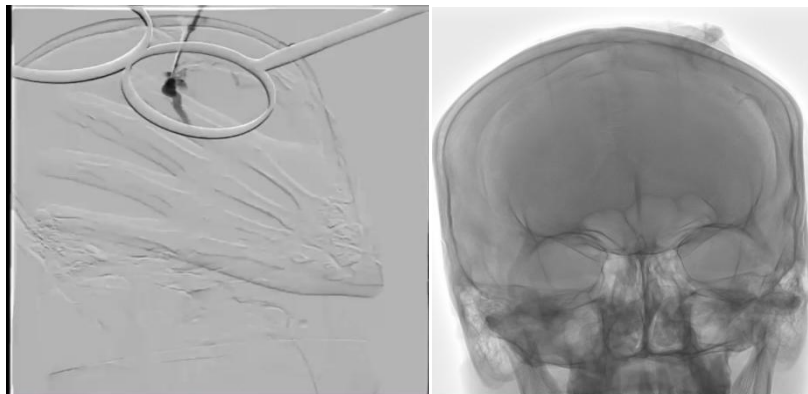


Figure 3: Occlusion of feeders with bangle shaped instrument and injecting the cyanoacrylate glue into the nidus under fluoroscopic guidance



Figure 4: Nidus is reduced in size and turned blackish in colour.

3. Discussion

It is either congenital or traumatic in origin. Clinical manifestations are related to the size of fistula. Patients presents with the complaint of loud bruit, haemorrhage and throbbing headache. Digital Subtraction Angiography is the gold standard investigation in diagnosing, delineating the lesion and to exclude an intracranial extension.

Management of scalp AVMs are difficult and challenging due to their high shunt flow, complex vascular anatomy and cosmetic problems. Embolization can be done via intra-arterial or percutaneous approach. In case of percutaneous

approach, there is risk of injecting the embolizing material into the essential arteries leading to cerebral infarct, venous infarct, venous thrombosis, blindness or loss of speech. But by occluding the feeders and draining vessels with a metallic bangle, this risk can be minimized.

4. Conclusion

Innovative approach of bangle technique can be revolutionary to treat difficult scalp AVM. However there is still need of refinement of this technique to occlude the feeders properly. There is also need of assessment of the risk and benefits of this technique.

References

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