Ethmoidal dural arteriovenous fistulas: endovascular transvenous embolization technique

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ABSTRACT

Ethmoidal dural arteriovenous fistulas (dAVFs) are rare, accounting for 1–1.5% of all intracranial malformations. However, they may have angiographic features that increase the risk of rupture: cortical venous drainage, venous ectasia, venous stenosis and high arterial flow. If the dAVF has these angiographic features, treatment may be indicated regardless of the clinical presentation. In this neurosurgical endovascular video, we present two patients with high-flow ethmoidal dAVFs treated via transvenous endovascular approaches. The first case was successfully embolized without complications, whereas the second case was complicated with intraoperative rupture of a tortuous cortical draining vein. The transvenous endovascular approach may be a useful tool in treating these lesions; however, access and tortuosity of structures proximal to the fistula point have to be thoroughly assessed. We review the natural history and angiographic architecture of these lesions. Important tips and bailout maneuvers for treatment of complex ethmoidal dAVFs in eloquent locations are also presented.

VIDEO HIGHLIGHTS

Introduction: 00:04
Angio-architecture: 00:18
Natural history: 01:23
Case 1:
- Clinical presentation: 01:54
- Jugular puncture: 02:39
- Transvenous access: 03:30
- Successful endovascular embolization: 04:30
- Post-embolization angiography: 04:56
Case 2:
- Clinical presentation: 05:16
- Transvenous access: 06:19
- Draining vein rupture: 06:38
- Hemicraniectomy + subdural hematoma evacuation + microsurgical dAVF excision: 07:14
- Follow-up angiography: 07:26
Summary/highlights: 07:39
References: 08:20

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REFERENCES