Ethmoidal dural arteriovenous fistulas: endovascular transvenous embolization technique

Jorge A Roa ¹,^{id} Guilherme Dabus,² Sudeepa Dandapat,³ David Hasan,⁴ Edgar A Samaniego ⁵^{id}

¹Neurology and Neurosurgery, University of Iowa Hospitals and Clinics, Iowa City, Iowa, USA

²Interventional Neuroradiology and Neuroendovascular Surgery, Miami Cardiac & Vascular Institute and Baptist Neuroscience Center, Miami, Florida, USA

³Neurology, University of Iowa Roy J and Lucille A Carver College of Medicine, Iowa City, Iowa, USA

⁴Neurosurgery, University of Iowa Hospitals and Clinics, Iowa City, Iowa, USA

⁵Neurology, Neurosurgery and Radiology, University of Iowa Hospitals and Clinics, Iowa City, Iowa, USA

Correspondence to

Dr Edgar A Samaniego, Neurology, Neurosurgery and Radiology, University of Iowa Hospitals and Clinics, Iowa City, IA 52246, USA; edgarsama@gmail.com

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ABSTRACT

Ethmoidal dural arteriovenous fistulas (dAVFs) are rare, accounting for 1–1.5% of all intracranial malformations.¹ 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.^{2–4} In this neurosurgical endovascular video 1, 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 angio-architecture of these lesions.^{5–7} 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
 - Hemisphericectomy + subdural hematoma evacuation + microsurgical dAVF excision: 07:14
 - Follow-up angiography: 07:26
- ▶ Summary/highlights: 07:39
- ▶ References: 08:20

Twitter Jorge A Roa @jorge_roa93

Contributors EAS and JAR: manuscript and technical video

Video 1

preparation, guarantors of the study; GD, SD and DMH: critical revision of contents.

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ORCID iDs

Jorge A Roa <http://orcid.org/0000-0003-4987-8853>

Edgar A Samaniego <http://orcid.org/0000-0003-2764-2268>

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