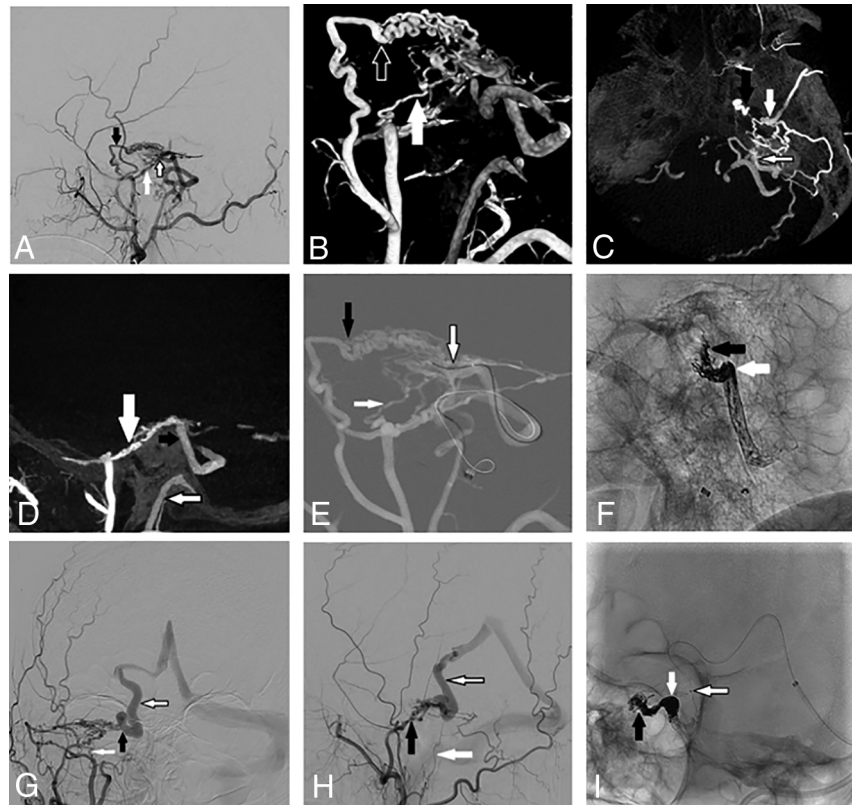




ON-LINE FIGURE. DSA and transvenous embolization of a left petrous AVF (patient 14, images A–F) and a right petrous AVF (patient 15, images G–I). A, Lateral projection of a left external carotid artery injection shows arterial supply to the AVF by the petrous branch of the MMA (*white arrow*), by the accessory meningeal artery (*black arrow*) with an intervening nidus before the venous drainage (contraindicating a transarterial approach), and the fistula draining into the petrosal vein (*black-border arrow*) over the posterior superior surface of the left petrous temporal bone. B, 3D rotational DSA via left external carotid artery injection in a lateral projection again shows the petrous branch of the left MMA (*white arrow*) and the accessory meningeal artery (*white-border arrow*) entering a nidal network before the fistulous point. C, Axial MPR MIP image of a 3D rotational DSA via the left external carotid artery injection shows the petrous branch of the left MMA extending posteriorly from the foramen spinosum and over the petrous temporal bone (*white arrow*), the accessory meningeal artery entering via foramen ovale (*black arrow*), and the draining petrosal vein (*black-border arrow*). D, Sagittal MPR of the same 3D rotational DSA shows the petrous branch of the left MMA (*white arrow*), the draining petrosal vein (*black arrow*), and caudal drainage via a condylar vein (*black-border arrow*). E, Lateral projection of a left external carotid artery roadmap shows the petrous branch of the MMA (*white arrow*), the accessory meningeal artery entering the pre-fistula nidus (*black arrow*), and successful navigation of a microcatheter transvenously across the petrosal vein to reach just proximal to the fistula point (*black-border arrow*). F, Lateral spot image after treatment demonstrates a combined coil-EVOH mass placed using a modified reverse pressure-cooker technique filling the distal arterial supply immediately proximal to the fistula (*black arrow*) and the draining petrosal vein (*white arrow*). The patient was cured angiographically after a single treatment session. G, Anterior-posterior projection of a right external carotid artery injection (patient 15) demonstrates a right petrous AVF supplied by the petrous branch of the MMA (*white arrow*), draining into the right petrosal vein (*black arrow*) with subsequent drainage cranially via the right lateral mesencephalic vein (*black-border arrow*) to reach the basal vein of Rosenthal. Note the presence of an intervening nidus that contraindicates a transarterial approach. H, Lateral projection of a right external carotid artery injection demonstrates the petrous branch of the MMA at the level of the facial arcade (*black arrow*), the nonenlarged right stylo-mastoid artery (*white arrow*), and the lateral mesencephalic vein outflow pathway (*black-border arrow*). I, Oblique lateral spot film during transvenous embolization of the right petrous AVF using a dual-microcatheter reverse pressure-cooker technique demonstrates the EVOH cast filling the petrosal vein and fistulous point (*black arrow*), the coil mass within the petrosal vein overlying the detachable tip of the embolization catheter (*white arrow*), and the proximal marker of the detachable tip in the lateral mesencephalic vein (*black-border arrow*).

On-line Table 1: Demographics and clinical presentation for dural AVFs supplied by the facial arcade

Patient No.	Sex	Age at Diagnosis (yr)	Clinical Presentation	mRS Score at Presentation
1	F	61	Incidental finding	0
2	M	62	Incidental finding	3
3	M	67	Seizure, pulsatile tinnitus	3
4	F	67	Headache	1
5	M	61	Memory loss, myoclonic jerks	3
6	M	62	Incidental finding	1
7	F	68	Incidental finding	0
8	M	59	Visual blurring, headache	1
9	M	60	Facial weakness, headache	2
10	F	52	Incidental finding	0
11	F	86	Gait disturbance, imbalance	3
12	M	52	Subarachnoid hemorrhage	1
13	M	79	Intraparenchymal hemorrhage	3
14	M	49	Pulsatile tinnitus; prior VST	1
15	M	67	Pulsatile tinnitus; headache	1
Total				
15	F = 5 M = 10	Mean = 63.5	Incidental finding, 5 Focal neurologic deficits, 4 Headache, 4 Intracranial hemorrhage, 2 Seizure, 1	mRS 0 = 3 mRS 1 = 6 mRS 2 = 1 mRS 3 = 5

Note:—VST indicates venous sinus thrombosis.

On-line Table 2: Angiographic characteristics of dural AVFs supplied by the facial arcade

Patient No.	Fistula Location	Borden Class	Cognard Class	Petrous Branch of MMA Supply	Stylomastoid Artery Supply	Other Arterial Supply	Primary Venous Drainage
1	Petrous	III	III	Yes	Yes	MHT; MMA (post)	Petrosal vein
2	Petrous	III	III	Yes	Yes	MHT; occipital; AMA	Petrosal vein
3	Petrous	III	IV	No	Yes	Occipital; MMA (ant)	Subtemporal
4	Petrous	III	IV	Yes	Yes	Recurrent meningeal	Petrosal vein
5	Petrous	III	III	Yes	Yes	Occipital; MHT; ITA	Petrosal vein
6	Petrous	III	IV	Yes	No	MMA (ant), ILT	Petrosal vein
7	Petrous	III	IV	Yes	No	MHT; MMA (post)	Petrosal vein
8	Petrous	III	III	Yes	No	Occipital; MHT; ILT	Petrosal vein
9	Petrous	III	IV	Yes	Yes	MMA (ant); AMA	Petrosal vein
10	Petrous	III	III	Yes	Yes	MHT; AICA (pial)	Petrosal vein
11	Petrous	III	IV	Yes	No	MMA (post); MHT	Petrosal vein
12	Petrous	III	IV	Yes	Yes	MMA (post); occipital	Petrosal vein
13	Petrous	III	III	No	Yes	APA; occipital	Subtemporal
14	Petrous	III	IV	Yes	No	MMA (post); AMA; MHT	Petrosal vein
15	Petrous	III	IV	Yes	No	MMA (post); MHT	Petrosal vein
Total							
15	Petrous n = 15	III: n = 15	III: n = 6 IV: n = 9	Yes: n = 13	Yes: n = 9	AMA: n = 3; APA: n = 1; ILT: n = 2; ITA: n = 1; MHT: n = 9; MMA (ant): n = 3; MMA (post): n = 6; Occipital: n = 6	Petrosal vein: n = 13 Subtemporal vein: n = 2

Note:—AICA indicates anterior inferior cerebellar artery; AMA, accessory meningeal artery; ant, anterior division; APA, ascending pharyngeal artery; class, classification; ILT, inferolateral trunk; ITA, inferior tympanic artery; MHT, meningohypophyseal trunk; post, posterior division.

On-line Table 3: Venous drainage pathways for petrosal dural AVFs

Primary Draining Cortical Vein	Distal Outflow Pathways
Petrosal vein (vein of Dandy) <i>n</i> = 13 of 15 cases Typically draining through at least 1 and usually 2 of the 3 main outflow pathways	Lateral mesencephalic vein rostral to basal vein of Rosenthal (reflux via brachial vein to superior vein of vermis) Superior petrosal sinus posterolateral to transverse sigmoid sinus junction Lateral pontomedullary vein caudally into condylar veins (reflux to inferior vein of vermis) Vein of Labbe to ipsilateral transverse sinus
Subtemporal vein <i>n</i> = 2 of 15 cases	

On-line Table 4: Treatments, angiographic outcomes, and clinical outcomes

Patient No.	First Treatment	Secondary Treatments	Curative Treatment	Initial Angiographic Outcome	Final Angiographic Outcome	Treatment Complications	mRS at Present	mRS Posttreatment
1	TAE, glue	None	TAE	Cure	Cure	Arterial infarct	0	1
2	TAE, aborted	Surgery	Surgery	No change	Cure	None	3	3
3	TAE, Onyx ^a	None	TAE	Cure	Cure	None	3	1
4	Surgery	None	Surgery	Cure	Cure	None	1	0
5	TAE, glue	Surgery	Surgery	Partial	Cure	Seizure (after embolization)	3	3
6	Surgery	None	Surgery	Cure	Cure	Venous infarct	1	2
7	TVE, Onyx: RPC	None	TVE	Cure	Cure	None	0	0
8	Surgery	None	Surgery	Cure	Cure	None	1	0
9	TAE, coils	None	TAE	Cure	Cure	Femoral AV fistula	2	1
10	GKRS	1) TVE 2) Surgery	Surgery	No change	Cure	None	0	0
11	TAE, glue	None	TAE	Cure	Cure	None	3	1
12	TAE, glue	None	TAE	Cure	Cure	None	1	0
13	TAE, aborted	Surgery	Surgery	No change	Cure	Seizure (postsurgery)	3	1
14	TVE, Onyx: RPC	None	TVE	Cure	Cure	None	1	1
15	TVE, Onyx: RPC	None	TVE	Cure	Cure	None	1	0
Total								
15 Patients	TAE: n = 8 TVE: n = 3 GKRS: n = 1 Surgery: n = 3	TVE: n = 1 Surgery: n = 4	TAE: n = 5 TVE: n = 3 Surgery: n = 7	No change: n = 3 Partial: n = 1 Cure: n = 11	Cure: n = 15	n = 5 Facial palsy: n = 0	0: n = 3 1: n = 6 2: n = 1 3: n = 5	0: n = 6 1: n = 6 2: n = 1 3: n = 2

Note:—GKRS indicates gamma knife radiosurgery; present, presentation; RPC, reverse pressure-cooker; AV, arteriovenous.

^a Onyx; Covidien, Irvine, California.