Stent-Assisted Coil Embolization in a Vertebrobasilar Fusiform Aneurysm, with Single Vertebral Artery Contributing to Basilar Trunk

Sarma, D. · Cheung, G.
Sunnybrook & Women’s College Health Science Center
University of Toronto, Toronto, ON, CANADA.

Purpose
Stents are being used increasingly in combination with coil embolization in the treatment of wide necked aneurysms (1-3). We further demonstrate the value of this technique in a case of ruptured vertebrobasilar fusiform aneurysm, in a patient who had only one vertebral artery contributing to the basilar.

Materials & Methods
This 43-year-old woman had past history of subarachnoid hemorrhage from a right paraophthalmic aneurysm which was surgically clipped. She also had a left vertebrobasilar junction fusiform aneurysm, with the basilar artery solely supplied by the left vertebral artery. Her small right vertebral artery ended in the posterior inferior cerebellar artery (PICA), without contributing to the basilar. She subsequently again suffered subarachnoid hemorrhage. Cerebral angiogram again showed the known vertebrobasilar fusiform aneurysm which had increased in size. It was 6 mm long extending from the vertebrobasilar junction, and distally stopping short of the anterior inferior cerebellar artery (AICA) origins. There was a 4 mm saccular component with a nipple-like projection, presumably the site of rupture (fig on left).
After careful review of the case including angiographic images, stent-assisted coil embolization was considered to be the best treatment option. A 3 mm x 14 mm self-expanding nitinol stent (Radius Stent, SciMed) was introduced. The stent was positioned strategically across the aneurysm, the distal end in the basilar trunk just proximal to the AICA origins. The proximal end was in the vertebral artery just distal to the PICA origin; the lack of a contralateral vertebral artery joining the basilar facilitated stent positioning. The stent was deployed, and subsequently a microcatheter was introduced. Four Guglielmi detachable coils were placed in the aneurysm through the interstices of the stent. Good occlusion of the aneurysm was achieved, though with a residual neck remaining (figure on right). At the end of the procedure the basilar artery, bilateral AICA, and the left PICA were normal in caliber and showed good flow. Recovery was uneventful.

Results
No rebleeding has occurred after 12 months of follow-up. Transcranial Doppler done after the procedure showed good flow across the basilar artery and has shown no change on follow-up.

Conclusion
Combined endovascular stenting and coil embolization in fusiform vertebrobasilar aneurysms is an emerging alternative to surgery or parent vessel occlusion. In some situations it may be the only practical option, as seen in our case.
References

*The authors of this work have indicated that they will be discussing/presenting an unapproved or investigative use of a Radius stent (coronary stent) for vertebrobasilar artery stenting. The Radius stent is made by SciMed.*