Pipeline Embolization Device case reports

Progressive deconstruction with flow diversion using a Pipeline embolization device (PED; Medtronic) can be utilized to promote thrombosis of broad-based fusiform aneurysms. Current flow diverters require a 0.027-inch microcatheter for deployment. Vakharia et al., presented a patient with a fusiform P2-P3 junction posterior cerebral artery aneurysm in which they demonstrate the importance of haptics in microwire manipulation to recognize large-vessel anatomy versus perforator anatomy that may overlap, especially when access is needed in distal tortuous circulations. In addition, the authors demonstrate the need for appropriate visualization before PED deployment. Postembolization runs demonstrated optimal wall apposition with contrast stasis within the aneurysm dome.The video can be found here: https://youtu.be/8kfsSvN3XqM

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/8kfsSvN3XqM" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html> ¹.

Ravindran et al., from the Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts, USA and The National Neuroscience Institute, King Fahad Medical City, Riyadh, Saudi Arabia, present a case of a 63-year-old female with a persistent aneurysm in the communicating segment of the internal carotid artery treated with a second PED, 14 months after the deployment of a 1st PED, who subsequently developed a fatal intraparenchymal hemorrhage 3 weeks postimplantation. Histopathologic analysis at autopsy displayed evidence of endothelialization along the 2nd PED at this time, as well as neo-intimal growth between both devices. Patency of the vessel lumen with no intra-luminal thrombus, but thrombus showing early organization (endothelial cell ingrowth) was observed within the aneurysm dome. This case represents the earliest demonstration of intimal cell growth along the PED².

Bowers et al. report the microsurgical rescue and removal of a Pipeline stent embolization of a giant internal carotid artery aneurysm. After the initial placement of a Pipeline Embolization Device (PED), it migrated proximally to the cavernous carotid with the distal end free in the middle of the aneurysm, resulting in only partial aneurysm neck coverage. The patient underwent microsurgical rescue with trapping, bypass, and opening of the aneurysm with PED removal. The vessel remained patent in the proximal segment previously covered by the Pipeline stent. Microsurgical rescue for definitive aneurysm treatment with PED removal can be safe and effective for aneurysms unsuccessfully treated with PED ³.

A 40-year-old woman who had left facial pain and orbit discomfort. Angiography showed a giant fusiform aneurysm located in the cavernous segment of the left internal carotid artery. A PED was successfully deployed across the aneurysm. The procedure and post-procedural course were uneventful. After 3 months, angiography showed complete obliteration of the aneurysm with good patency of the branching vessels originating from the deployed segment. The patient's symptoms improved completely without complications ⁴.

References

1)

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2)

Ravindran K, DiStasio M, Laham R, Ogilvy CS, Thomas AJ, VanderLaan PA, Alturki AY. Histopathological demonstration of subacute endothelialization following aneurysm re-treatment with the Pipeline embolization device. World Neurosurg. 2018 Jul 18. pii: S1878-8750(18)31568-7. doi: 10.1016/j.wneu.2018.07.090. [Epub ahead of print] PubMed PMID: 30031197.

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