

Optical coherence tomography-guided flow diversion for aneurysmal treatment

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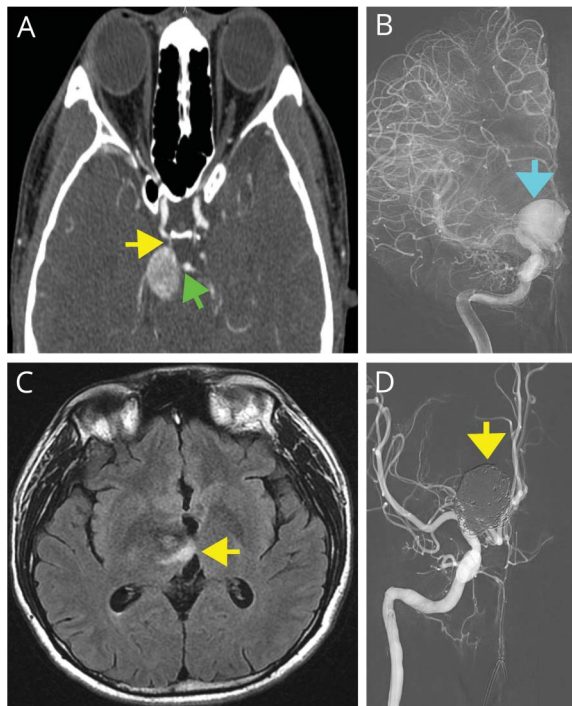
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A 28-year-old man presenting with right third nerve palsy was diagnosed with a giant unruptured aneurysm supplied by the right posterior communicating and cerebral arteries (figure 1, A and B). The aneurysm was treated with flow-diverting stent-assisted coiling. Two months later, he presented with new-onset left-sided weakness, and MRI showed increased edema in the thalamus (figure 1C) and increased aneurysm size and no filling. There was no evidence of stent malapposition with high-resolution cone-beam (VASO) CT (figure 2). Angiography and optical coherence tomography (OCT) imaging demonstrated no stent endothelialization over a patent portion of the aneurysm neck (figure 3).^{1,2} A second stent was deployed under OCT guidance for complete aneurysmal embolization. In follow-up at 4 months, the patient was ambulating independently, and

Figure 1 Diagnostic imaging

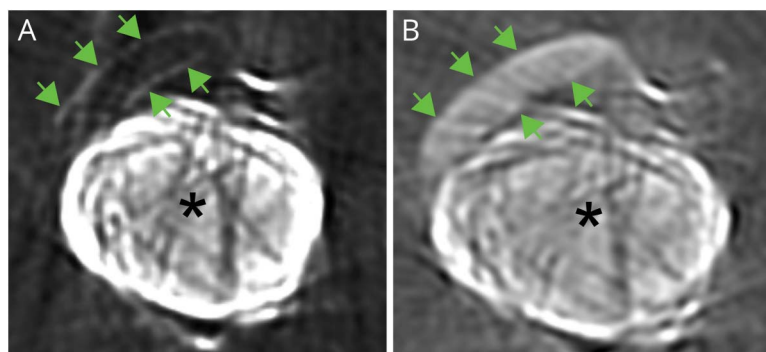


(A and B) CT/cerebral angiogram displaying the giant aneurysm (blue arrow) and feeding posterior communicating (yellow arrow) and posterior cerebral (green arrow) arteries. (C) MRI showing right thalamic edema (yellow arrow). (D) Right internal carotid angiogram showing the coiled aneurysm (yellow arrow) with no filling of the neck/dome.

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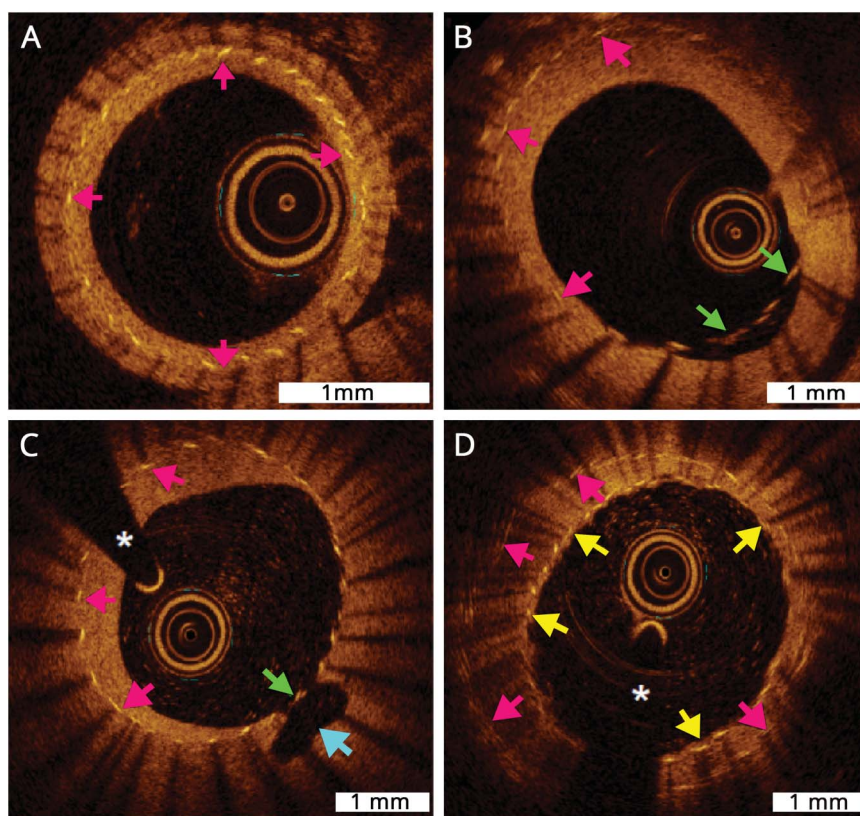
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Figure 2 VASO-CT imaging



(A) Precontrast administration VASO-CT showing the coil mass (black asterisk) and the stent (green arrows). (B) Post-contrast VASO-CT shows contrast filling the vessel (green arrows) and the coil mass (black asterisk). When comparing the pre- and post-contrast images, it appears that the stent is fully expanded against the vessel wall with no stent malapposition detected. VASO CT = high-resolution cone-beam computed tomography.

Figure 3 OCT imaging



(A and B) Endothelialization over the stent (pink arrows) with an area of stent malapposition with no endothelialization (green arrows). (C) Patent aneurysm (blue arrow) with no endothelialization of the stent over the neck (green arrow). (D) Placement of a second stent with good apposition (yellow arrows). *Glidewire. OCT = optical coherence tomography.

repeated MRI showed decrease in the amount of perilesional edema. In summary, OCT allowed for visualization of stent malapposition and small neck remnant, facilitating image-guided stent placement and subsequent embolization of the aneurysmal remnant followed by clinical improvement.

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Name	Location	Contribution
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Appendix (continued)

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