Teaching NeuroImage: Etiologic Investigation Using Optical Coherence Tomography During Thrombectomy

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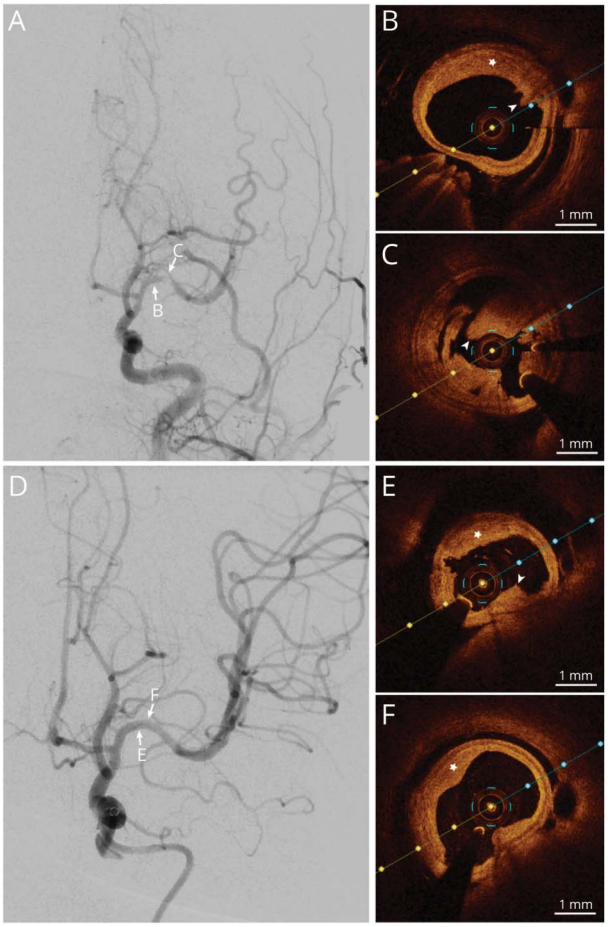
Figure Intraoperative Findings



(A) A filling defect after the first clot retrieval. (B and C) OCT revealed a fibrous plaque with intact fibrous cap (low-attenuating, signal-rich lesion, star) and white thrombi (intralumenal low-attenuating, signal-rich masses, arrowhead). (D) A successful second clot retrieval. (E and F) Repeated OCT confirmed the unruptured plaque and residual white thrombi. OCT = optical coherence tomography.

A 24-year-old man with an acute left middle cerebral artery occlusion underwent a thrombectomy. A filling defect was observed in the culprit lesion after the first clot retrieval (Figure, A). Intraoperative optical coherence tomography (OCT) was then performed to investigate the etiology,

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which revealed a fibrous plaque with an intact fibrous cap and intraluminal white thrombi (Figure, B and C). Complete reperfusion was achieved with a second clot retrieval (Figure, D). Repeated OCT confirmed recanalization and the absence of ruptured plaque (Figure, E and F), indicating large artery atherosclerosis with plaque erosion caused the in situ thrombosis.[1] Adjunctive antiplatelet therapy was administered, and functional independence was achieved at 90 days. OCT provides insight on intrinsic vessel wall disease with high spatial resolution.[2] It can act as a robust tool for ambiguous etiologic diagnosis during thrombectomy, shedding light on personalized adjunctive treatment and proper secondary prevention strategy to improve outcome.

Standard Protocol Approvals and Patient Consents

The study was approved by the Ethical Committee of Dalian Municipal Central Hospital affiliated with Dalian Medical University (approval number 2022-035-01). A written consent-to-disclose form from the patient was obtained.

Author Contributions

D. Li: drafting/revision of the manuscript for content, including medical writing for content; major role in the acquisition of data; study concept or design; analysis or interpretation of data. T. Tang: drafting/revision of the manuscript for content, including medical writing for content; major role in the acquisition of data; study concept or design; analysis or interpretation of data. T. Hu: drafting/revision of the manuscript for content, including medical writing for content; major role in the acquisition of data; study concept or design; analysis or interpretation of data. C.-Y. Yu: major role in the acquisition of data; analysis or interpretation of data. A.M. Thomas: drafting/revision of the manuscript for content, including medical writing for content. M.-H. Zhao: major role in the acquisition of data; study concept or design; analysis or interpretation of data. T.-P. Fan: drafting/revision of the manuscript for content, including medical writing for content; major role in the acquisition of data; study concept or design; analysis or interpretation of data. S. Li: drafting/revision of the manuscript for content, including medical writing for content; major role in the acquisition of data; study concept or design; analysis or interpretation of data.

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Disclosure

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