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**Neurology Publish Ahead of Print**  
**DOI:10.1212/WNL.0000000000207345**

Teaching NeuroImage: Etiologic Investigation Using Optical Coherence Tomography During  
Thrombectomy

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*Neurology*® Published Ahead of Print articles have been peer reviewed and accepted for publication. This manuscript will be published in its final form after copyediting, page composition, and review of proofs. Errors that could affect the content may be corrected during these processes.

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**Contributions:**

Di 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

Tao 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

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Shen 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

**Figure Count:**

1

**Table Count:**

0

**Search Terms:**

[ 2 ] All Cerebrovascular disease/Stroke, [ 6 ] Infarction, [ 11 ] Stroke in young adults, [ 17 ] Prognosis, [ 118 ] All Imaging

**Acknowledgment:****Study Funding:**

This work was supported by National Natural Science Foundation of China (82171319), Beijing Municipal Science & Technology Commission (Z221100007422111), and Central Committee Healthcare Project (2020YB64).

**Disclosures:**

All authors report no disclosures relevant to the manuscript.

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**Preprint DOI:****Received Date:**

2022-11-08

**Accepted Date:**

2023-03-10

**Handling Editor Statement:**

Submitted and externally peer reviewed. The handling editor was Resident and Fellow Section Editor Whitley Aamodt, MD, MPH.

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, which revealed a fibrous plaque with an intact fibrous cap and intraluminal white thrombi (Figure, B, C). Complete reperfusion was achieved with a second clot retrieval (Figure, D). Repeated OCT confirmed recanalization and the absence of ruptured plaque (Figure, E, F), indicating large artery atherosclerosis with plaque erosion caused the *in-situ* thrombosis<sup>1</sup>. 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<sup>2</sup>. It can act as a robust tool for ambiguous etiological diagnosis during thrombectomy, shedding light on personalized adjunctive treatment and proper secondary prevention strategy to improve outcome.

**Standard Protocol Approvals, Registrations, and Patient Consents:**

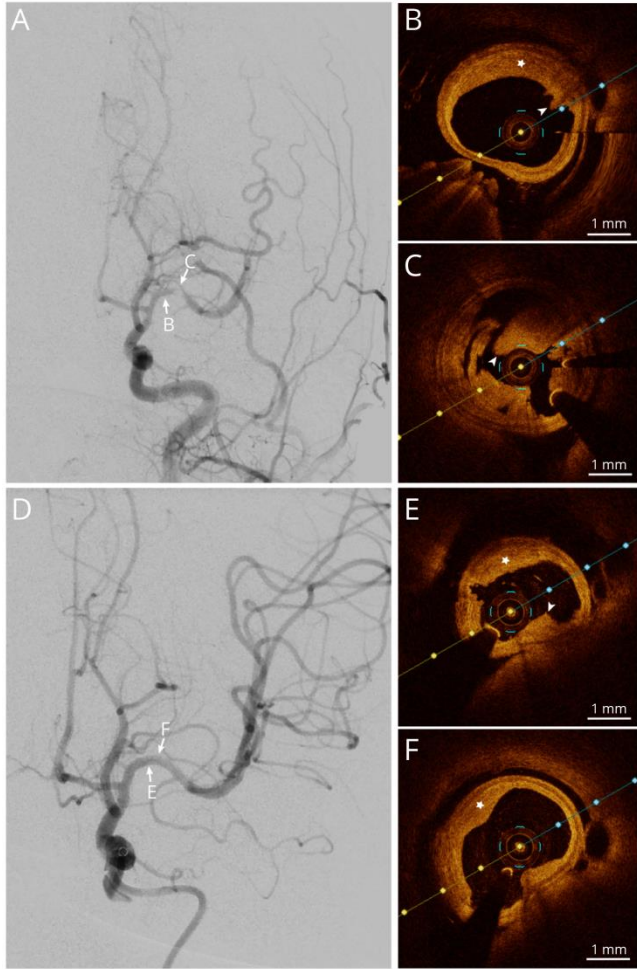
The study was approved by the Ethical Committee of Dalian Municipal Central Hospital affiliated with Dalian Medical University (approval number 2022-035-01). A written consent-to-disclose form from the patient was obtained.

## References

1. Araki M, Park SJ, Dauerman HL, et al. Optical coherence tomography in coronary atherosclerosis assessment and intervention. *Nat Rev Cardiol* 2022;19(10):684-703.
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## Figure Intraoperative findings

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



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*Neurology* published online May 2, 2023

DOI 10.1212/WNL.0000000000207345

**This information is current as of May 2, 2023**

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