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Successful retrieval of the detached tip of crosser catheter using a two-wire technique with a gooseneck snare



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Disclosure

Speaker name:

Yoshito Kadoya

I do not have any potential conflict of interest.



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Background

- The crosser catheter is a device that facilitates intraluminal recanalization by high-frequency vibration energy and cavitation.
- Detachment or complete separation of the tip of a crosser catheter is a serious complication; however, there is limited information on bail-out methods.



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76 y.o. woman CLI (Rutherford 5)

CC : an ulcer on the right 5th toe

PMH : hemodialysis, diabetes, CABG, AVR, MVR

HPI :

X-10 mo an ulcer on the right 5th toe → ASO (CLI)

X-6 mo EVT for the right ATA

→ The ulcer did not resolved. And she was referred to our hospital for re-EVT.

Med :

Aspirin 100mg

Cilostazol 200mg

Warfarin 0.75mg

Insulin lispro 26U

Carvedilol 2.5mg

Rosuvastatin 2.5mg

Vildagliptin 50mg

Esomeprazole 20mg

Fosrenol 2250mg

Ursodeoxycholic acid 300mg



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1st EVT for the right BTK (Jan. 2016)

2mm
POBA





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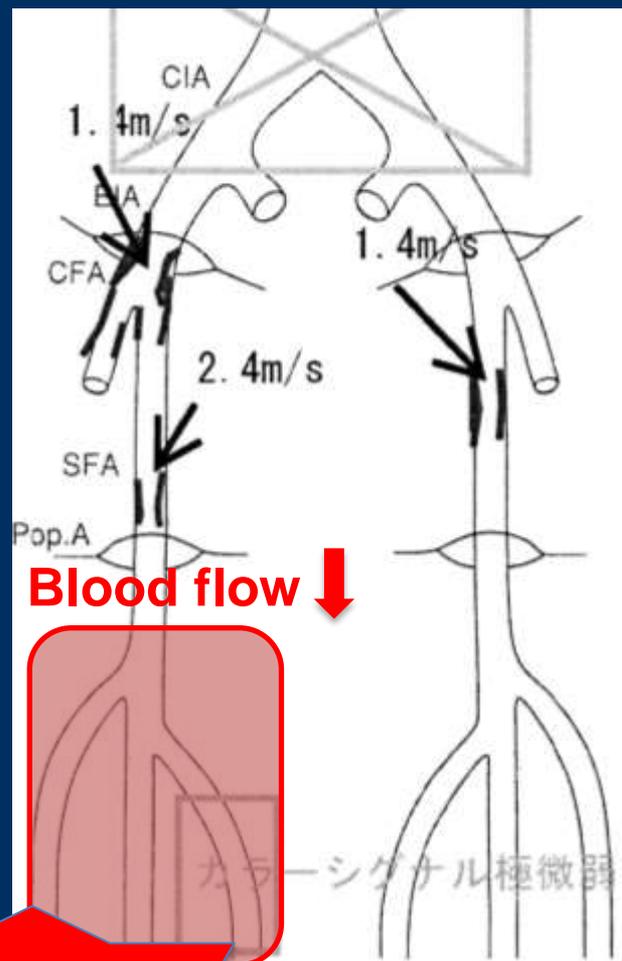
ABI

R) 0.59 L) 0.65

SPP

Unmeasurable

Ultrasonography



an ulcer



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Initial Angiography

〈Rt. SFA~Pop〉



〈Rt. BTK〉





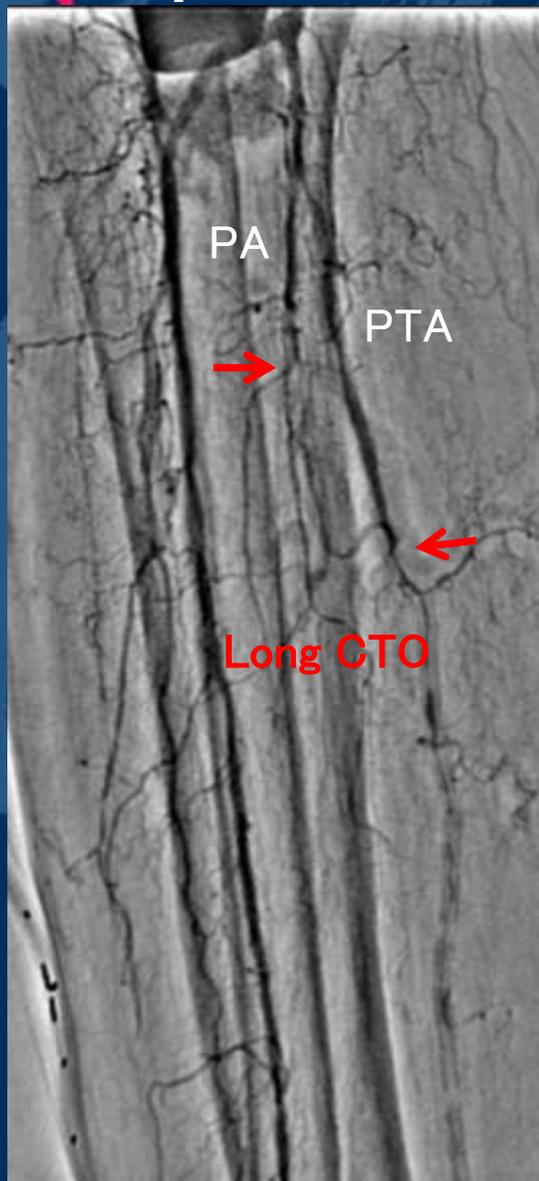
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<proximal>

Initial Angiography

<distal>

<Below the ankle>





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EVT Strategy

Target vessel: **ATA** (\pm PA, PTA)

Ipsilateral antegrade approach

Use of **crosser catheter** as a **flossing device**



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Crosser flossing in ATA

<proximal>

<distal>

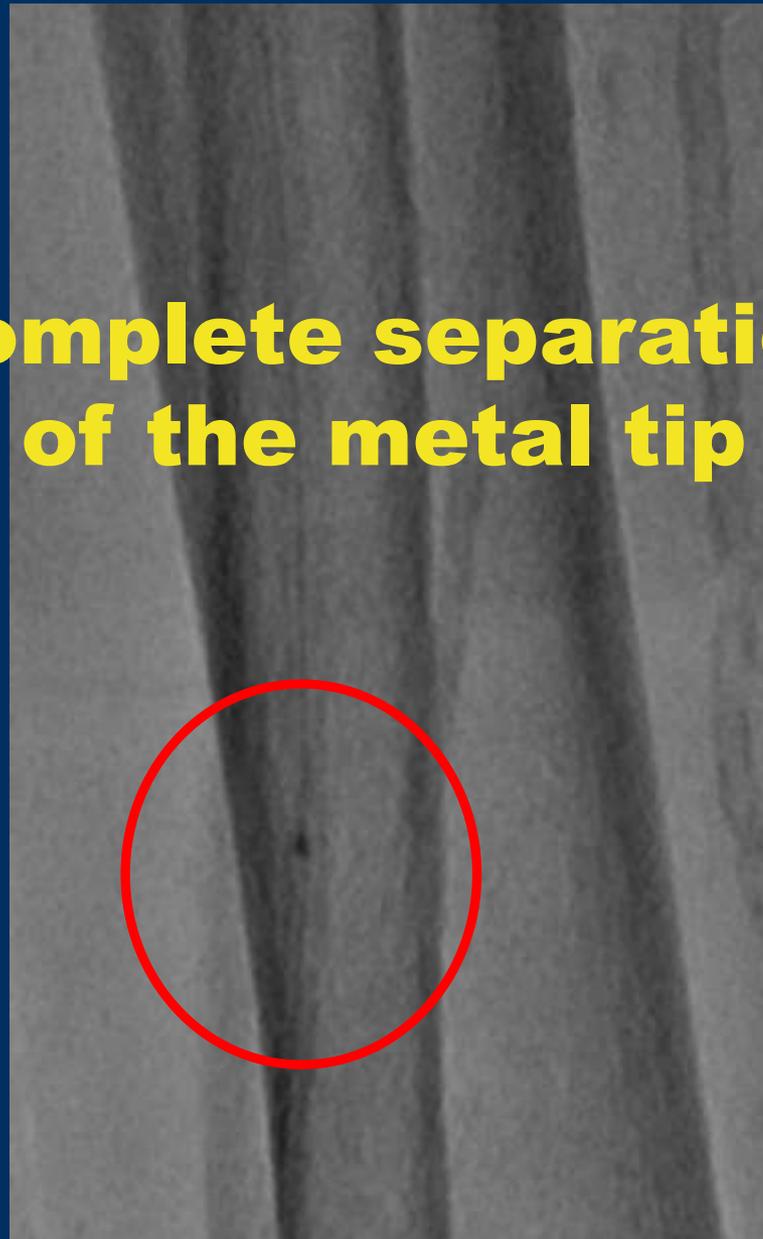




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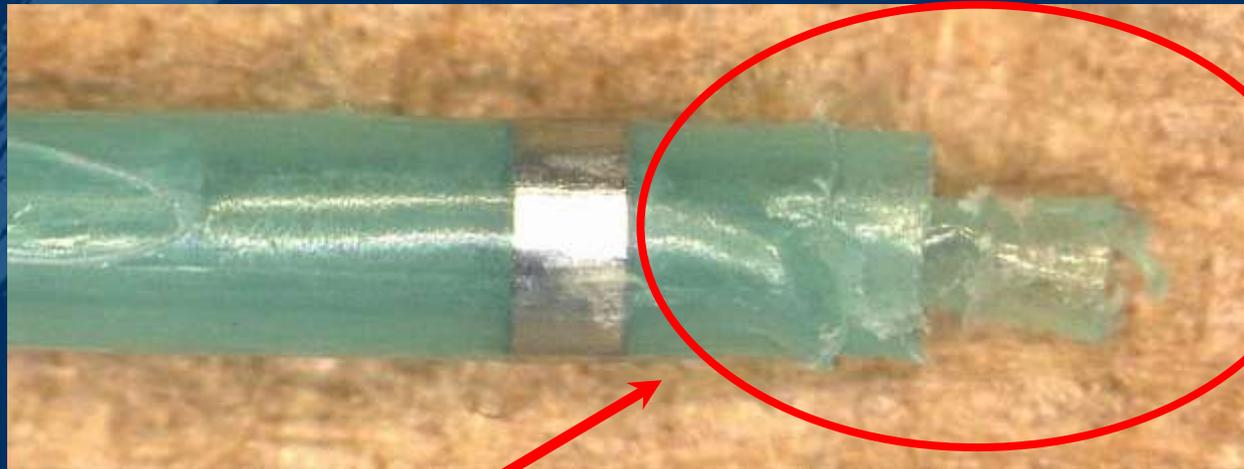
**Complete separation
of the metal tip**





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The retrieved shaft of a crosser catheter



The tip was completely separated and left in the ATA.





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ATA



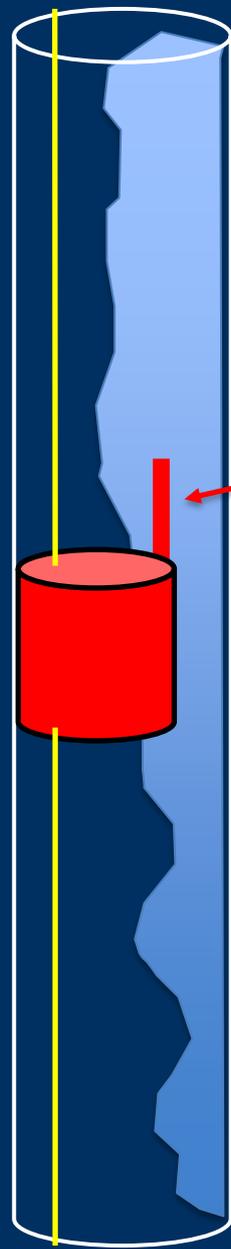
Cruise wire

ATA

Stenosis with severe calc

Tip
1.1mm

Core wire





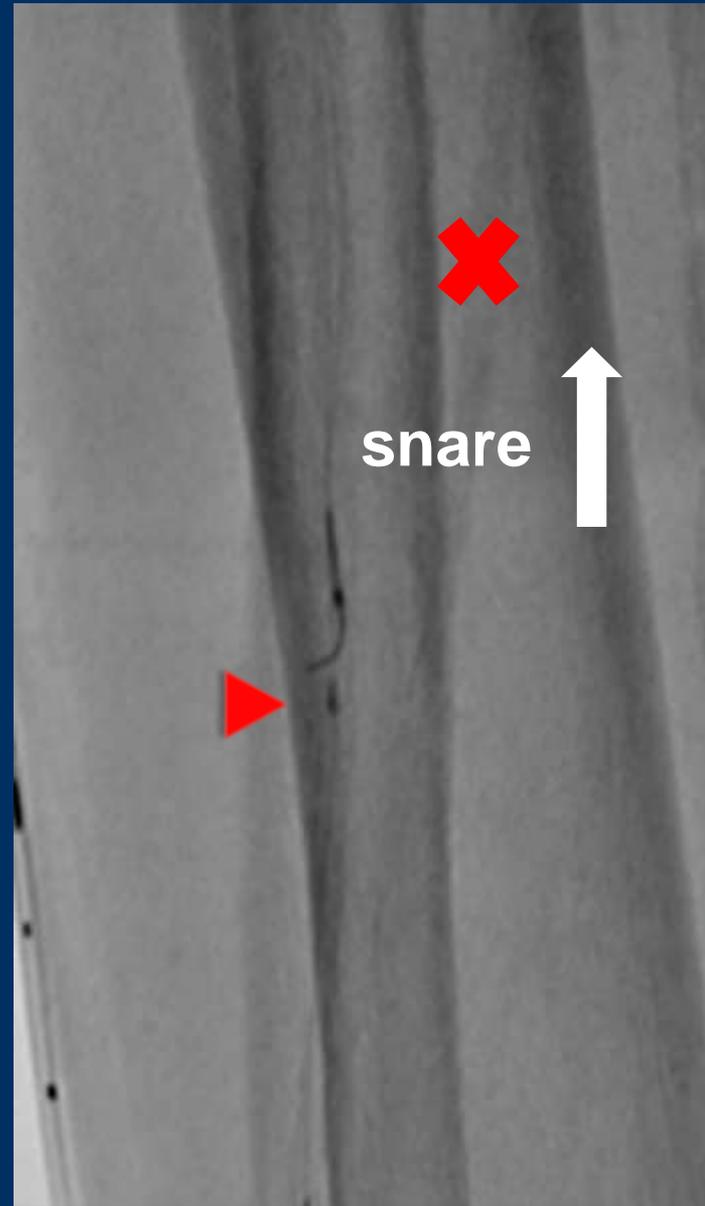
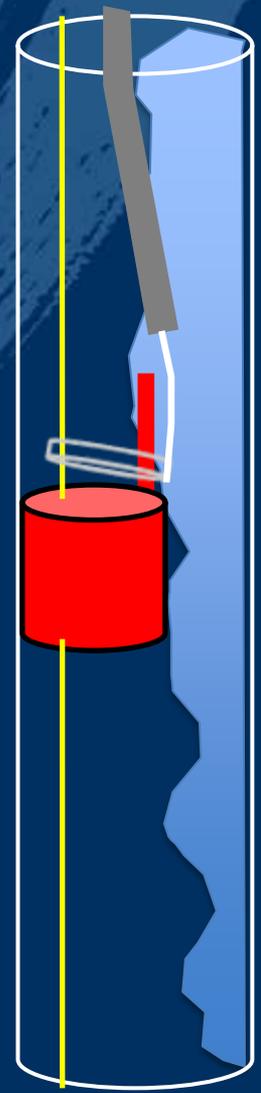
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Attempt 1

Direct catch by using gooseneck snare

Cruise wire

Tip





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Attempt 2

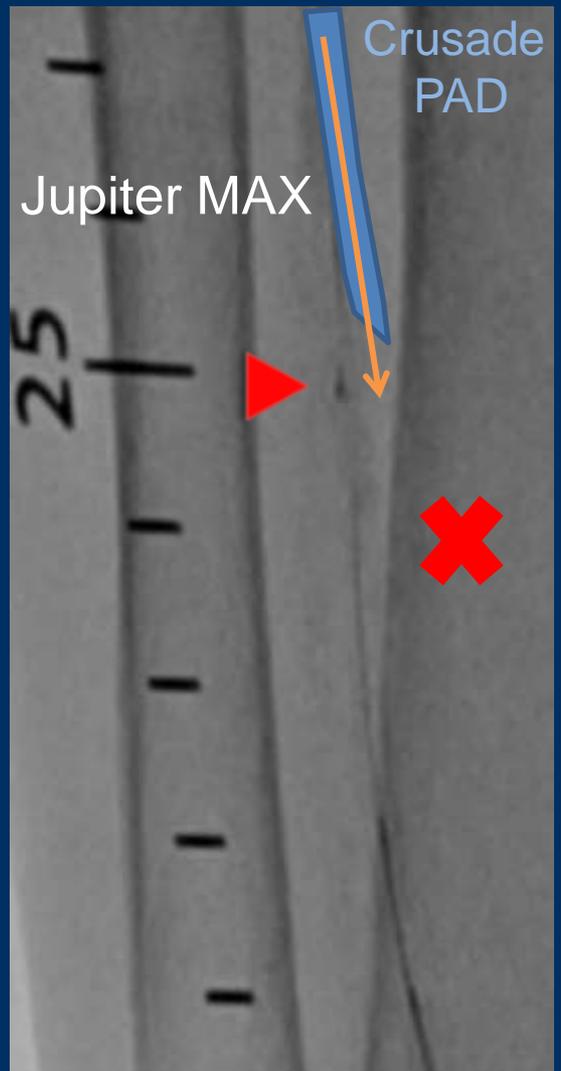
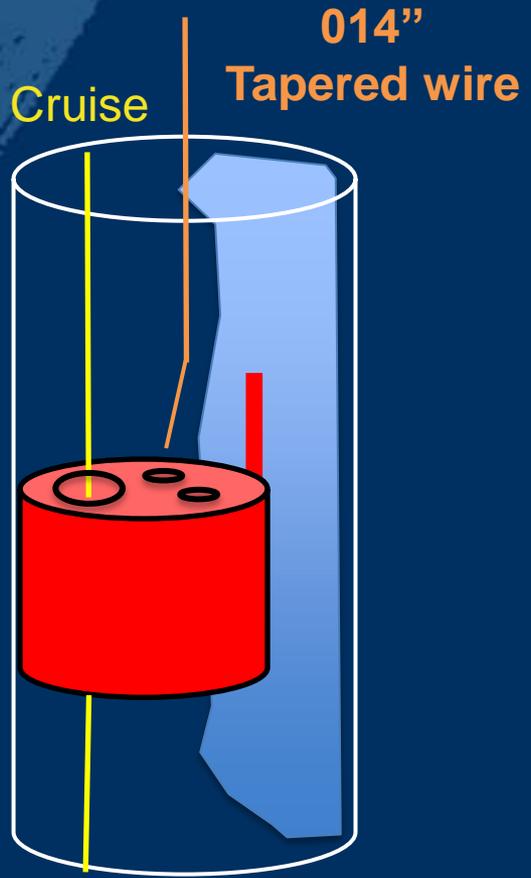
Crossing an 014" tapered wire through the irrigation outlets

Guidewire lumen



Irrigation outlets

Tip





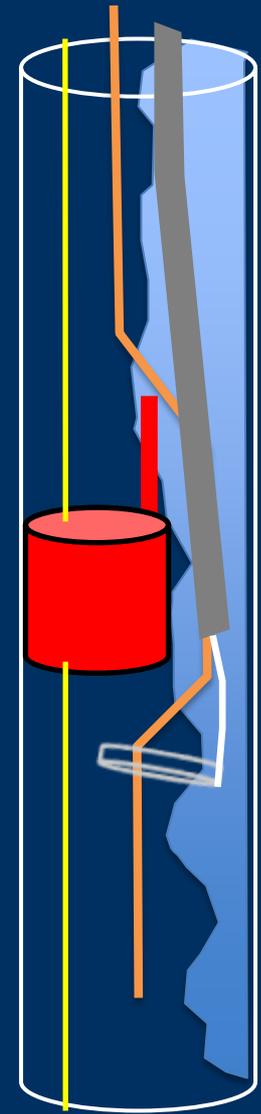
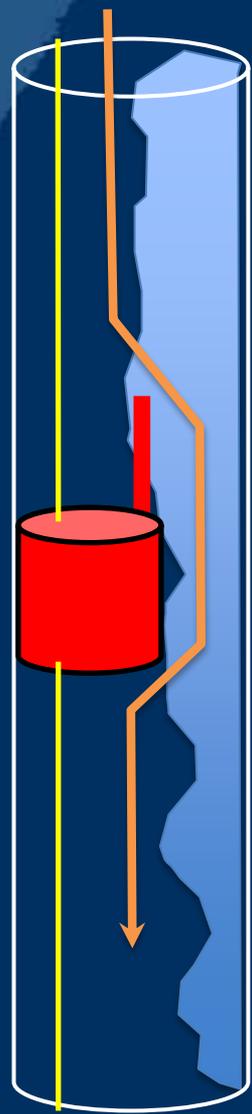
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Attempt 3

We crossed a new wire, and advanced the snare to the distal side of the tip.

Cruise wire

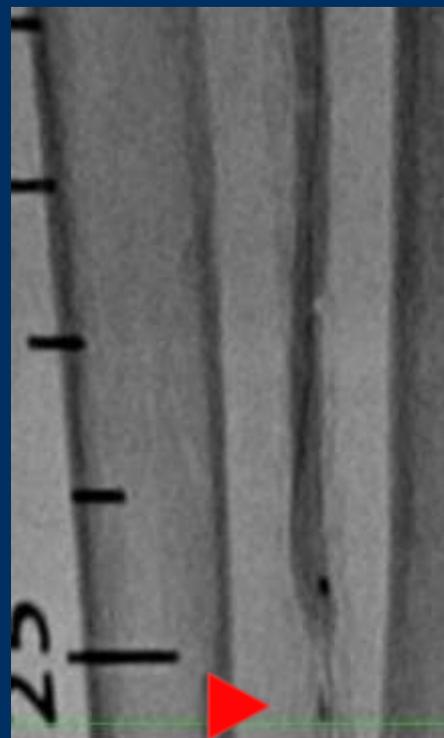
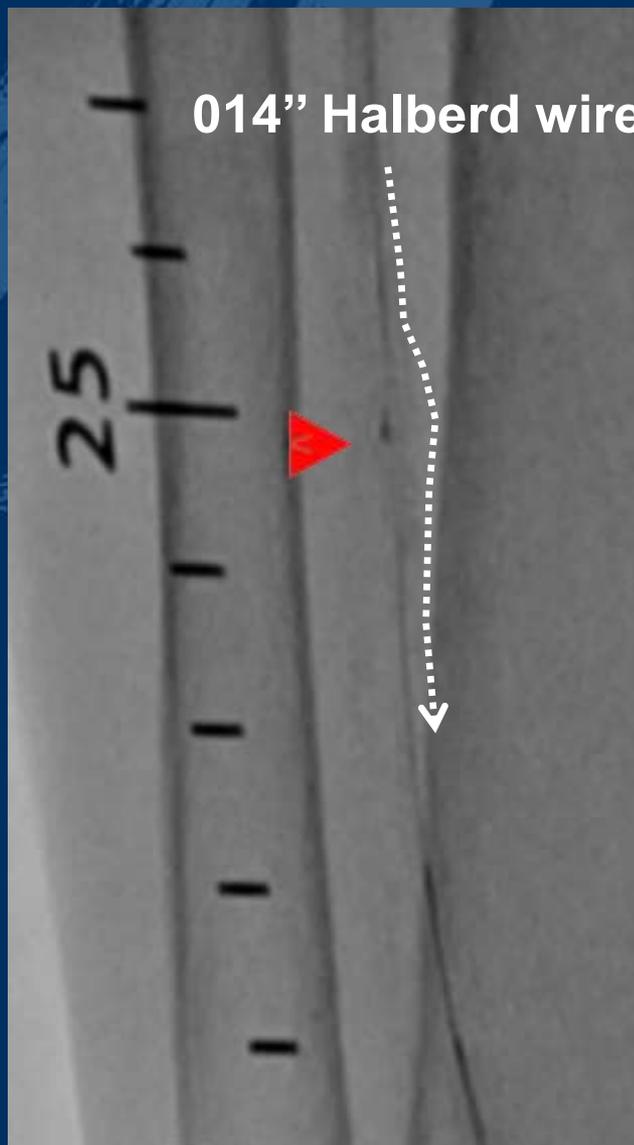
Tip





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A 014" Halberd
wire was crossed into the
small space beside the tip.

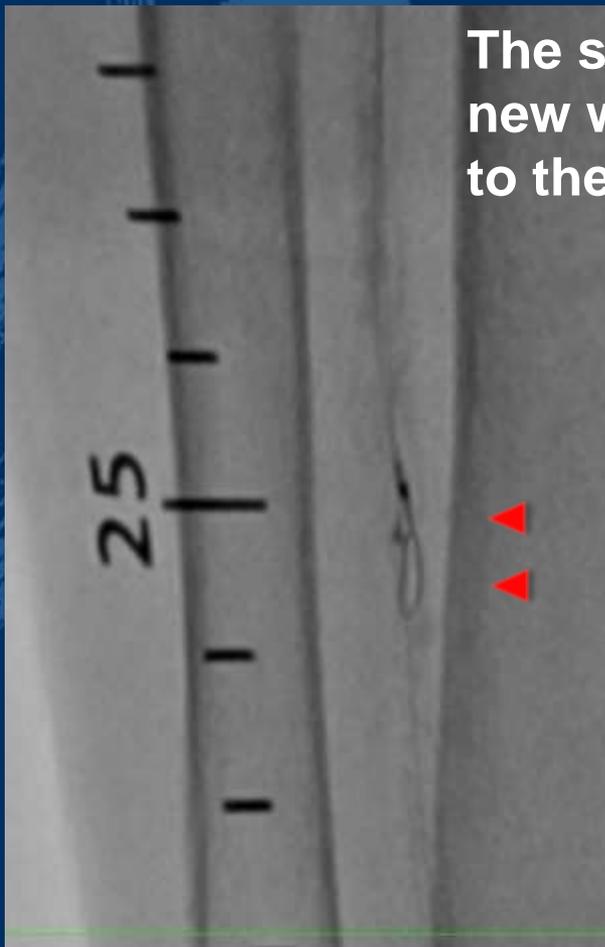


POBA

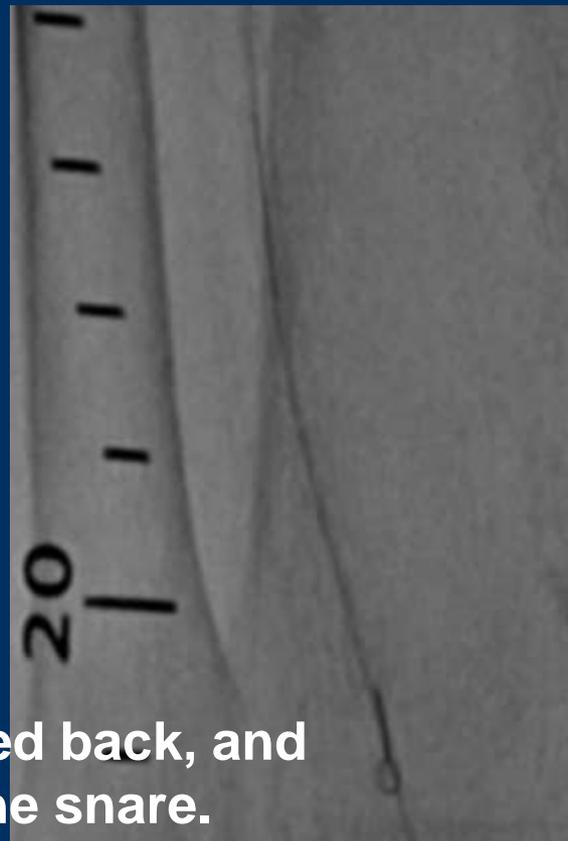
Amphirion deep
2.0×120mm



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The snare was re-inserted along the new wire and successfully advanced to the distal side of the tip.

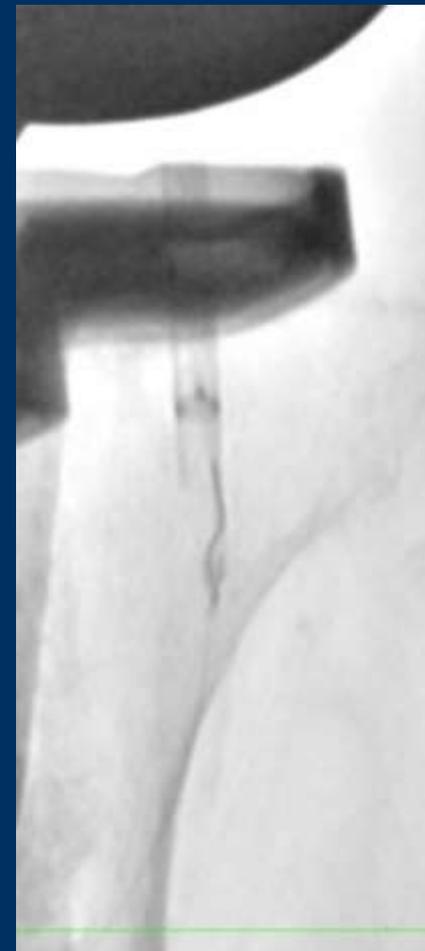
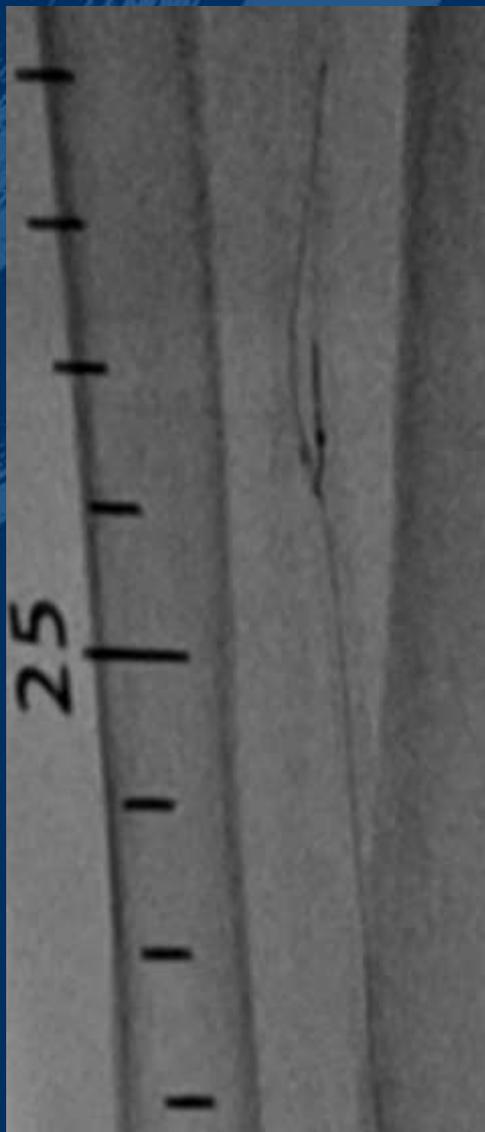


The Cruise wire once pulled back, and inserted into the loop of the snare.



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The two wires were entrapped by the snare.



The detached tip was retrieved with the entire system as a unit.

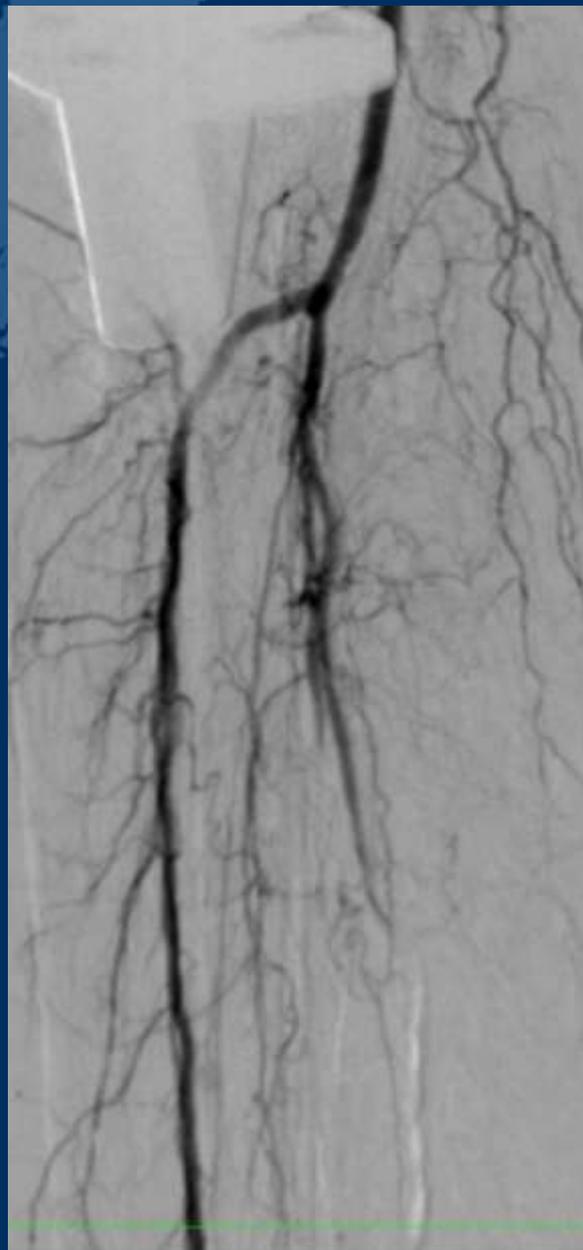


Final Angiography

ATA-POBA

Jade 2.0×120mm

20
25





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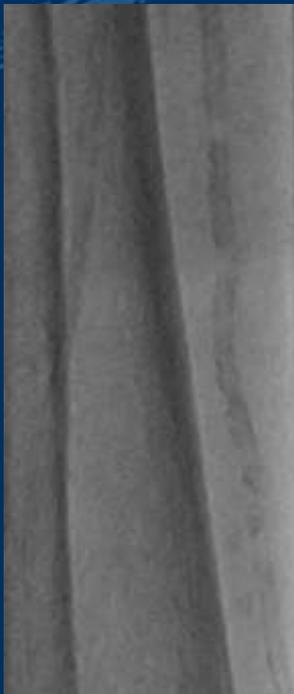
Complications related to the Crosser

Detachment

14.4%

Complete Separation

0%



A predictor of detachment

PACSS grade 4

(OR 14.6; CI 1.26–168.5; $P = 0.032$)



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‘ Detachment ’

- ✓ It is known that the detachment would occur by pushing the catheter too strongly when the shaft is stuck or trapped due to the severe stenosis or calcification.
- ✓ In this situation, the tip and core wire still remains connected.

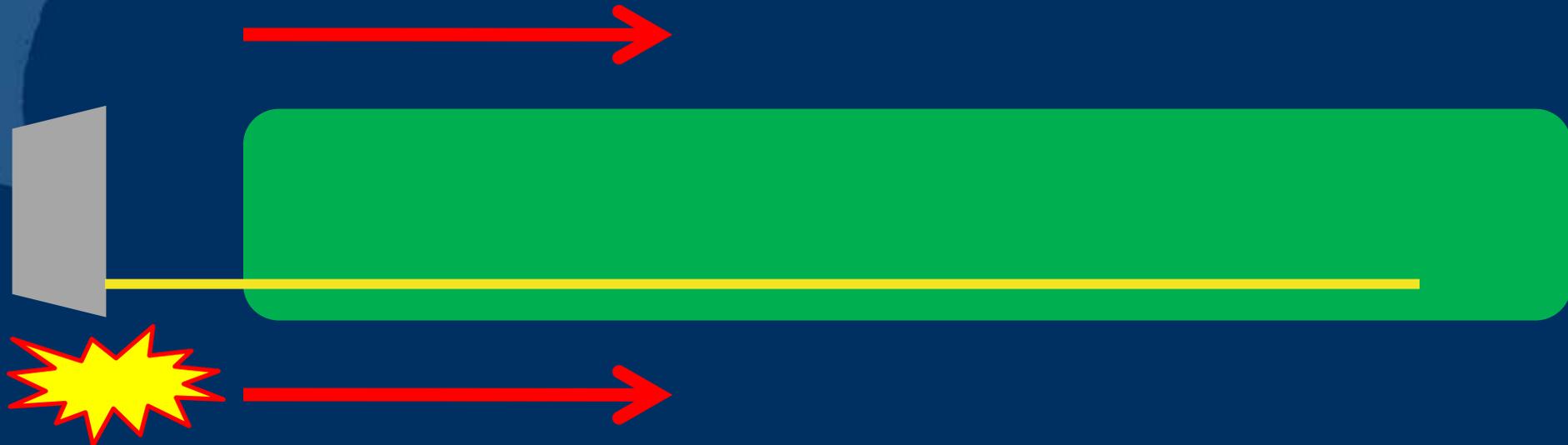




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‘ Complete Separation ’

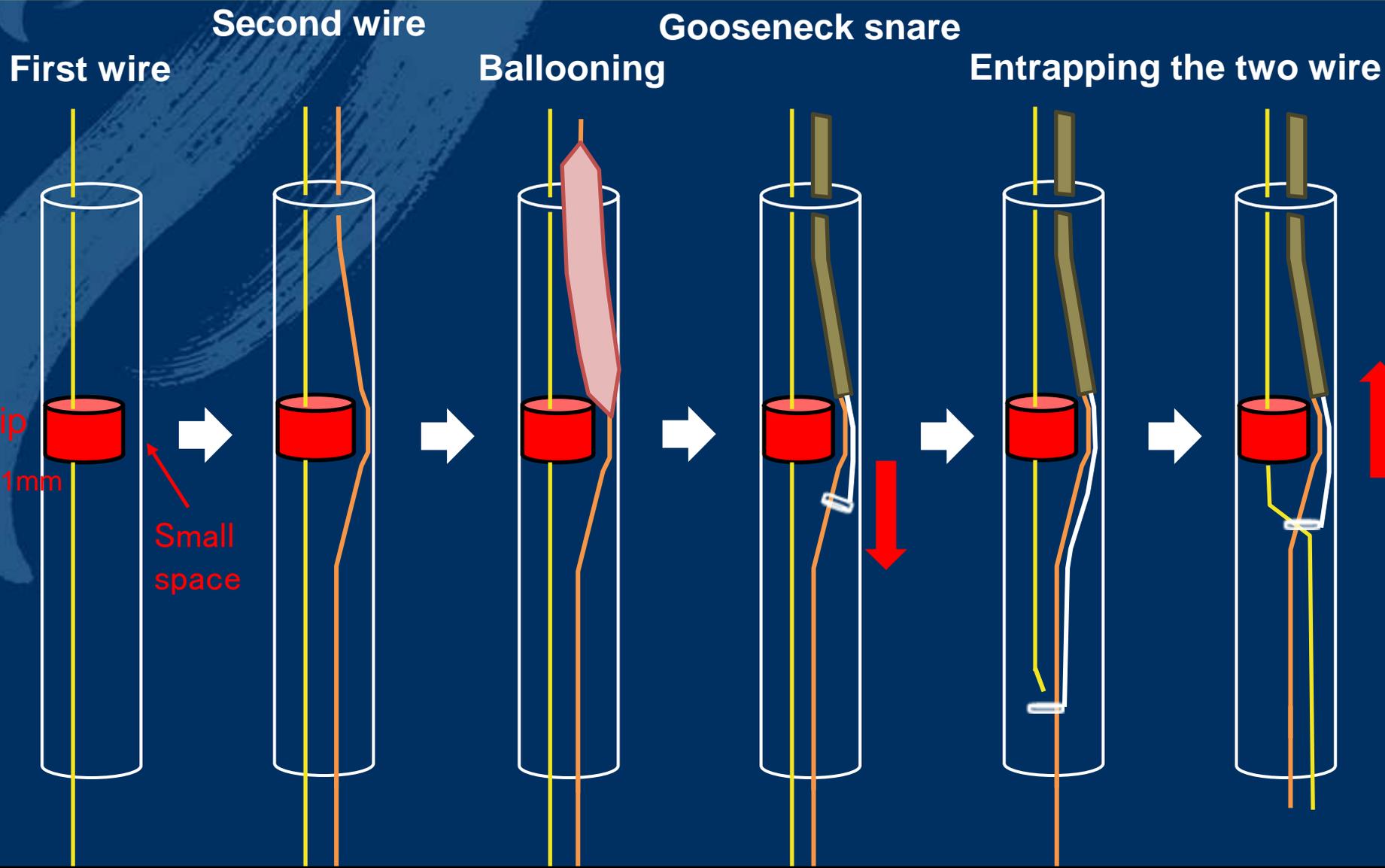
- ✓ If the tip is trapped by the stenosis, the tip and core wire would be separated completely during pulling back the catheter.





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Two-wire technique with a gooseneck snare





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The retrieved tip



tissue fragment

Core wire



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Conclusion

- ✓ Detachment or complete separation of the tip of a crosser catheter is one of the most serious complications in EVT.
- ✓ The two-wire technique with a gooseneck snare is a novel bail-out method, and can be widely adapted for various situations of this complication.



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