Describing the histopathological effects of transcatheter arterialization of deep veins in CLTI

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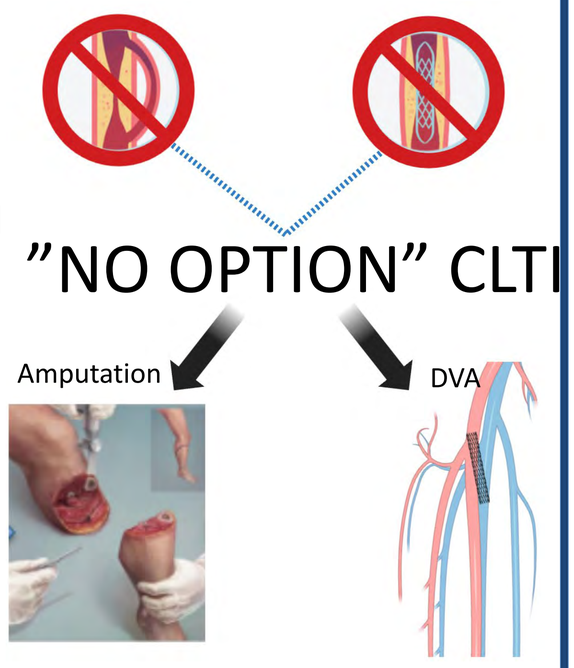
Introduction

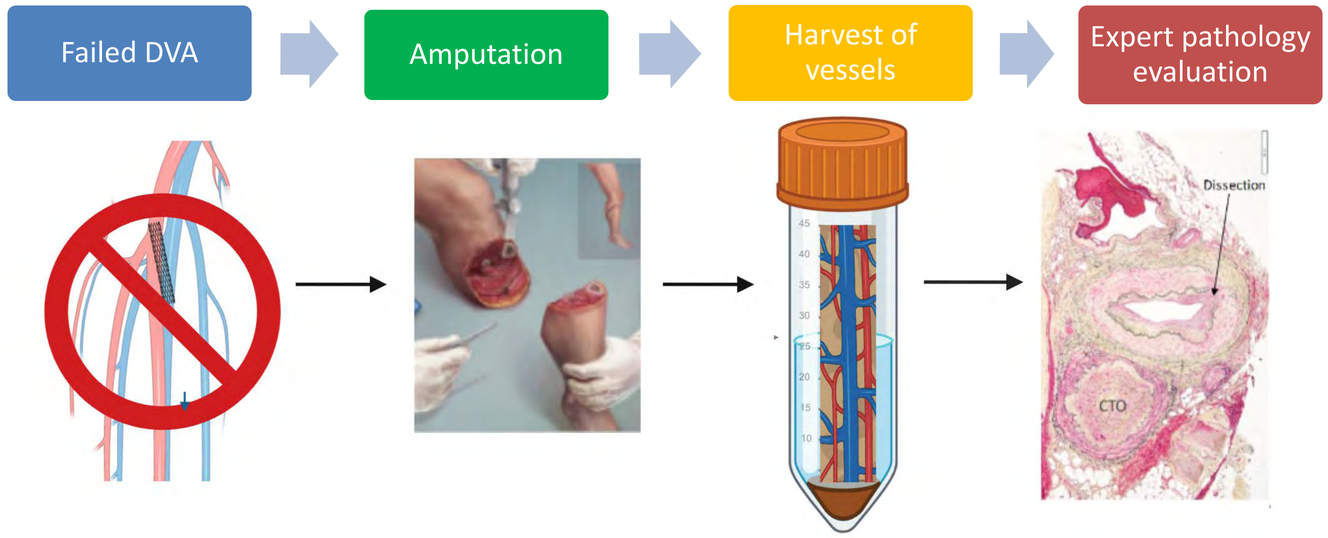
- 20% of patients presenting with CLTI have “no option” for revascularization[1]
- PROMISE II showed 66% 6-month amputation free survival [2] after deep venous arterialization.
- There is little to no histological evidence for the effects of (DVA) in humans.



Aim

To evaluate the histopathological effects of DVA in human subjects.

Methods



Single center study including patients undergoing amputation following prior DVA were included.

Five patients (2, male, 3 female), median age 65yrs.

Prior intervention in 80% and 40% had a contralateral major limb amputation.

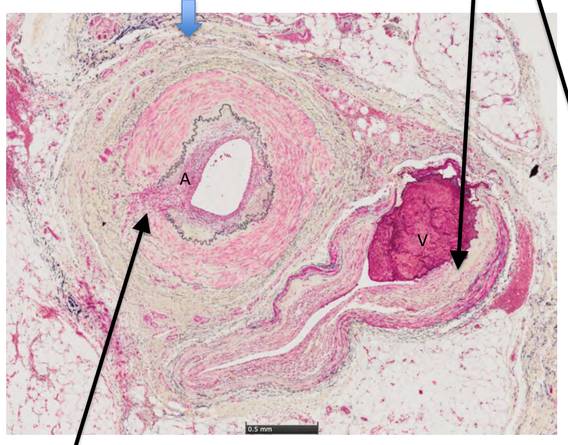
Median time from DVA to amputation was 21 days (4-137).

Harvested vessels underwent expert cardiovascular histopathological evaluation for signs of deep venous changes post DVA.

Results

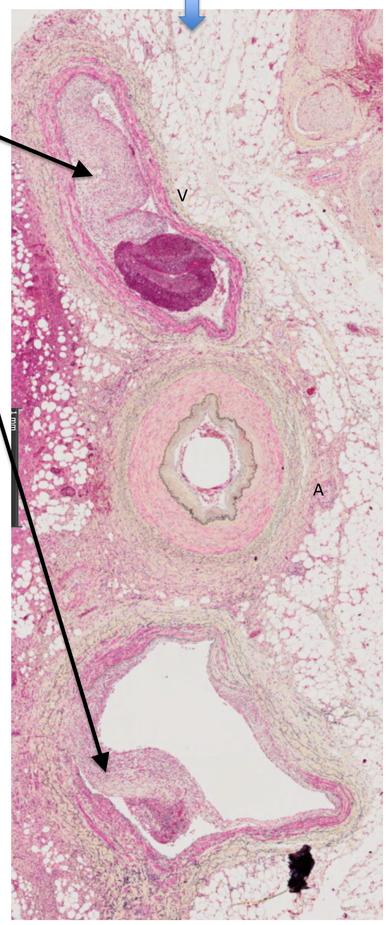
Neointimal hyperplasia (NIH) occurring as early as 4 days post procedure

4 days - Lateral plantar

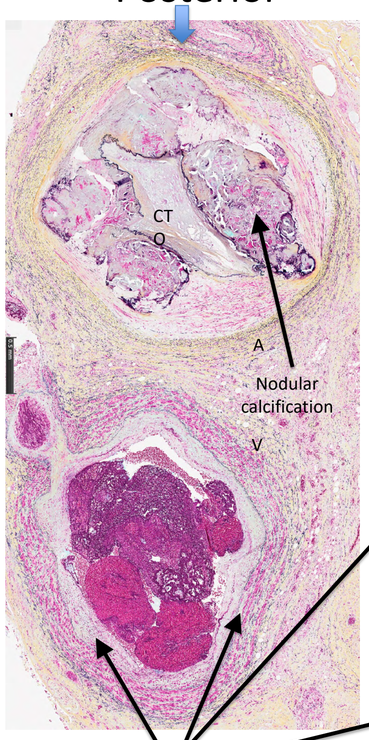


Dissection likely secondary to wire injury.

21 days - Lateral plantar

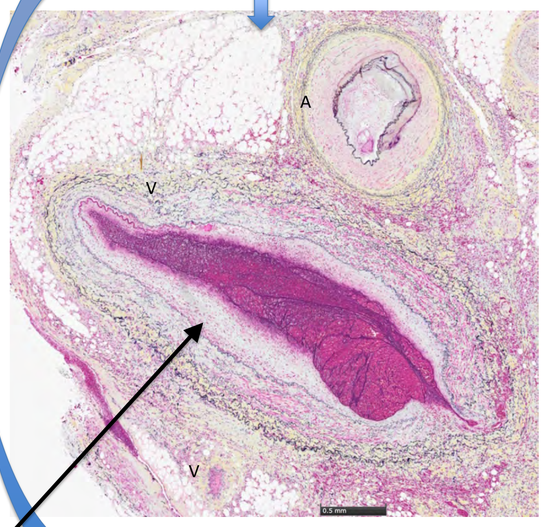


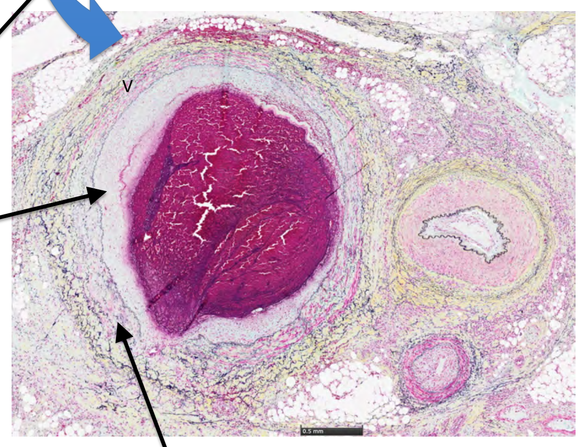
125 days Posterior



Circumferential intimal hyperplasia just inferior to the stent.
Increased matrix deposition also present at 137 days

137 days Posterior tibial





Medial fibrosis+

Significance of this study

- Currently available literature of the histological effects of DVA focus on animal studies.
- To our knowledge this is the first case series of the histopathological effects of DVA.
- Deep venous changes occur early following treatment with DVA.
- Current findings support colloquially known approaches to graft reintervention – e.g. angioplasty to the vein inferior to the stent.
- Further work will look to increase the available pool of vessel samples in a consistent manner to provide more substantial findings.

Acknowledgements

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References

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2.Shishehbor MH et al; PROMISE II Investigators. Transcatheter Arterialization of Deep Veins in Chronic Limb-Threatening Ischemia. N Engl J Med. 2023 Mar 30;388(13):1171-1180