

A systematic histopathologic evaluation of Type-A aortic dissections

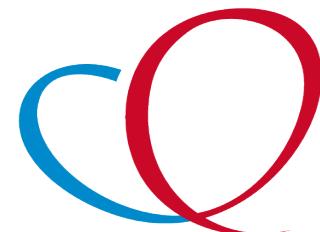
Nimrat Grewal MD, PhD

Cardiothoracic Surgeon

Principal investigator

Department of Cardiothoracic Surgery &

Department of Anatomy and Embryology



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Disclosure of Interest



Speaker name: Nimrat Grewal

I do not have any potential conflict of interest

Introduction

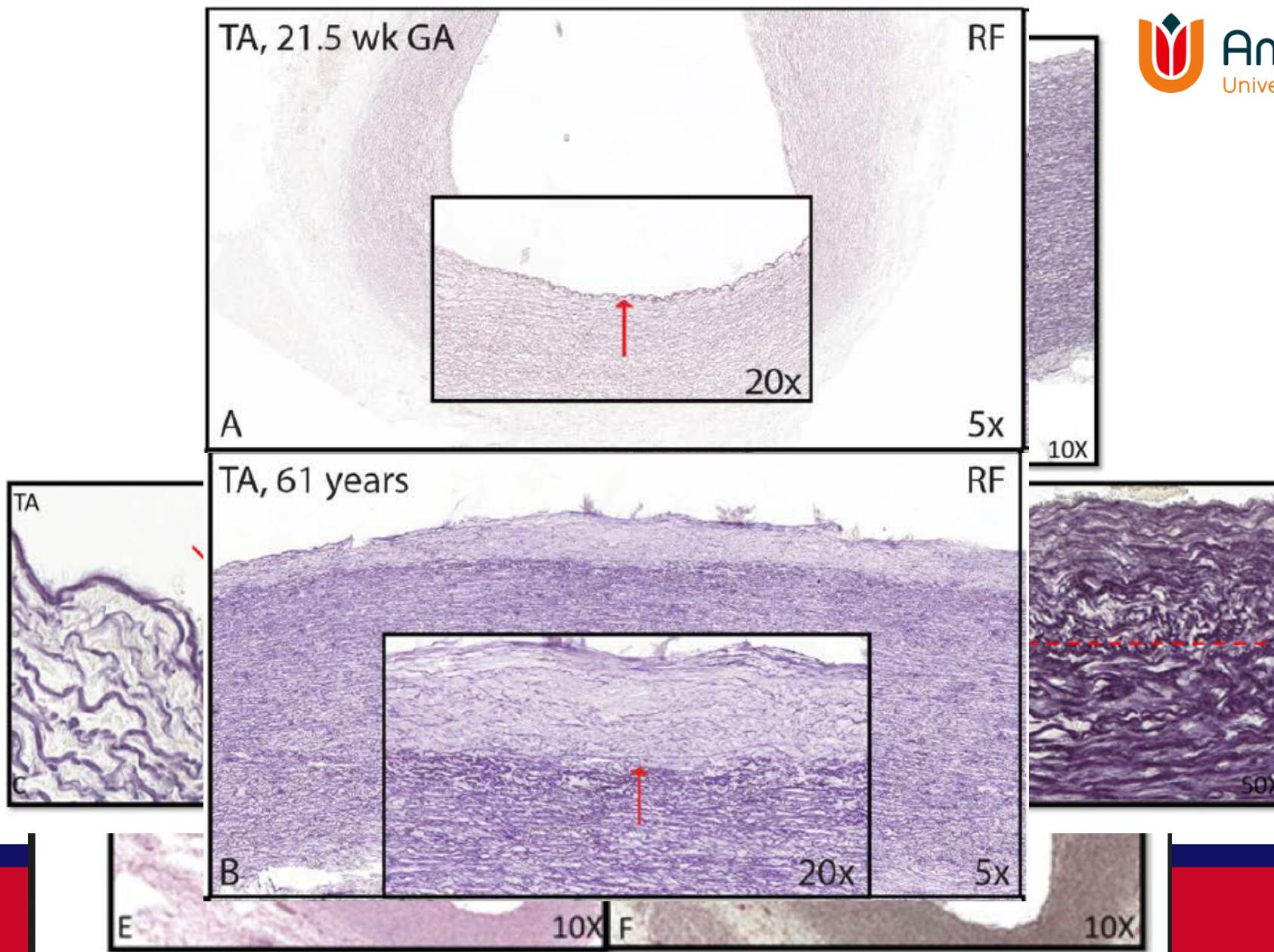


- Risk factors
 - Genetic
 - Bicuspid aortic valve (BAV)
 - Marfan, Turner, Ehlers Danlos, Loeys-Dietz, FTAAD
 - Acquired
 - Hypertension
 - Atherosclerosis
 - Aneurysm
 - Age
- Common complication

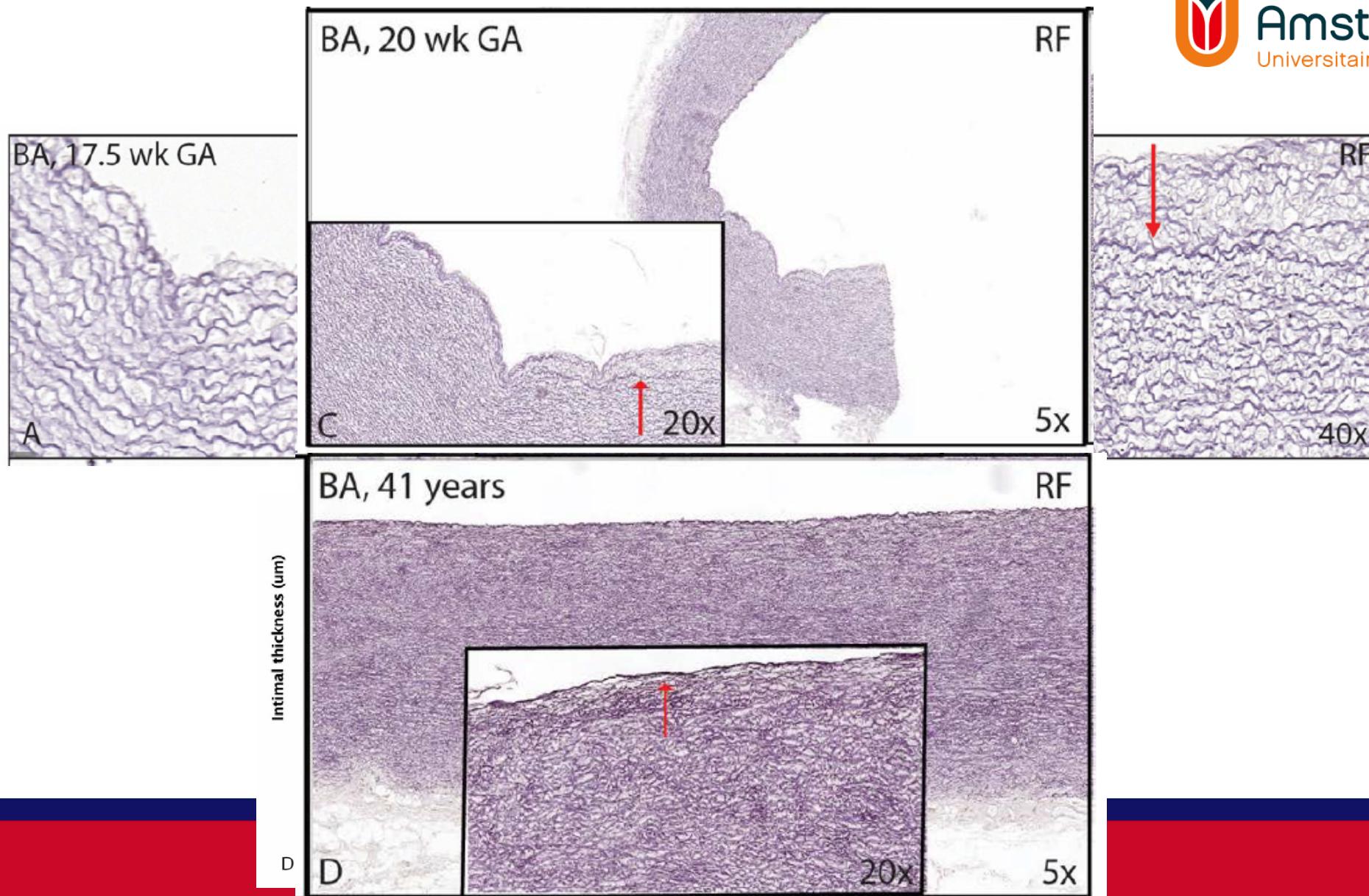
Background

- Normal vascular wall
- Intimal layer development
- VSMC phenotypic switch (defect)

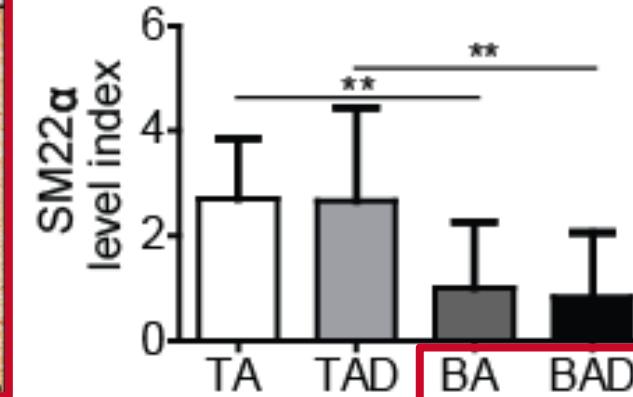
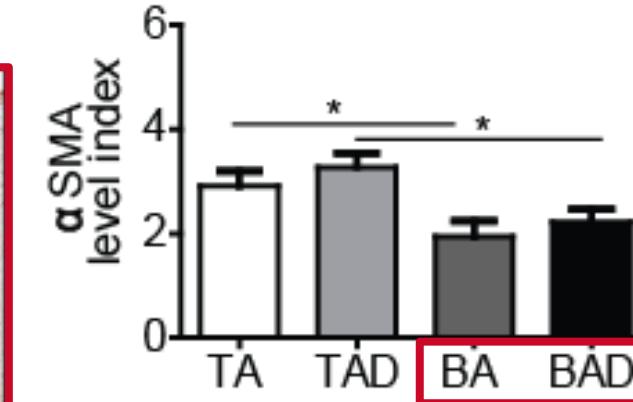
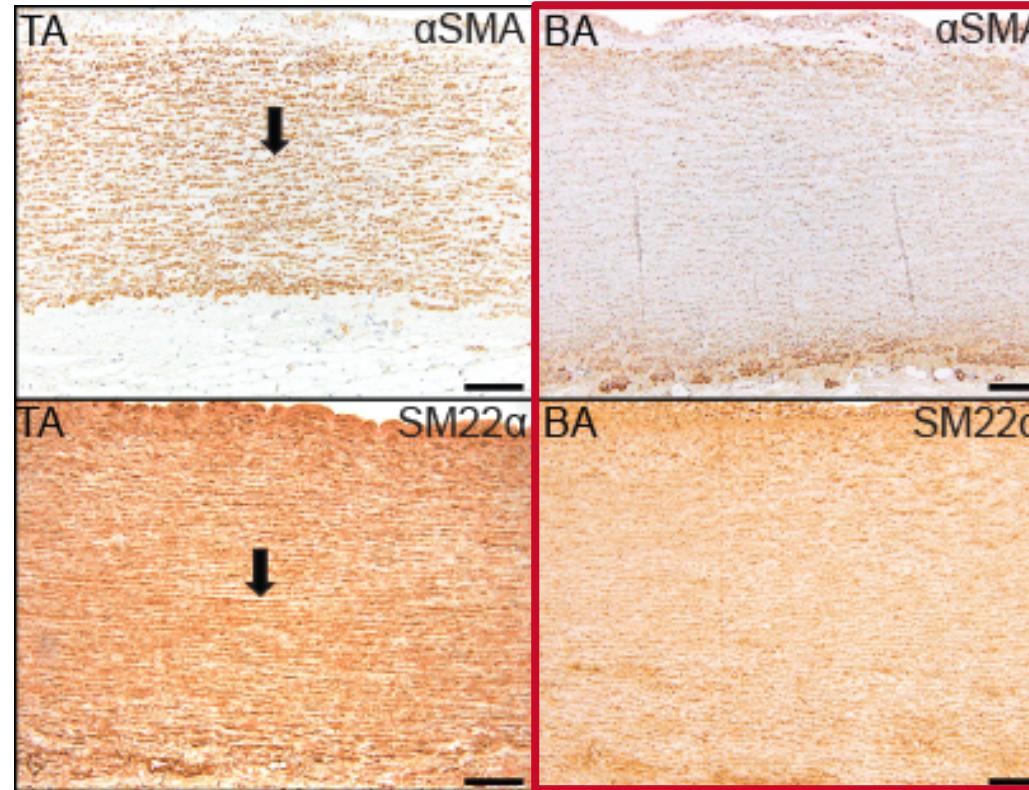
Development of the vascular wall



The intimal layer in BAV



Phenotypic switch defect

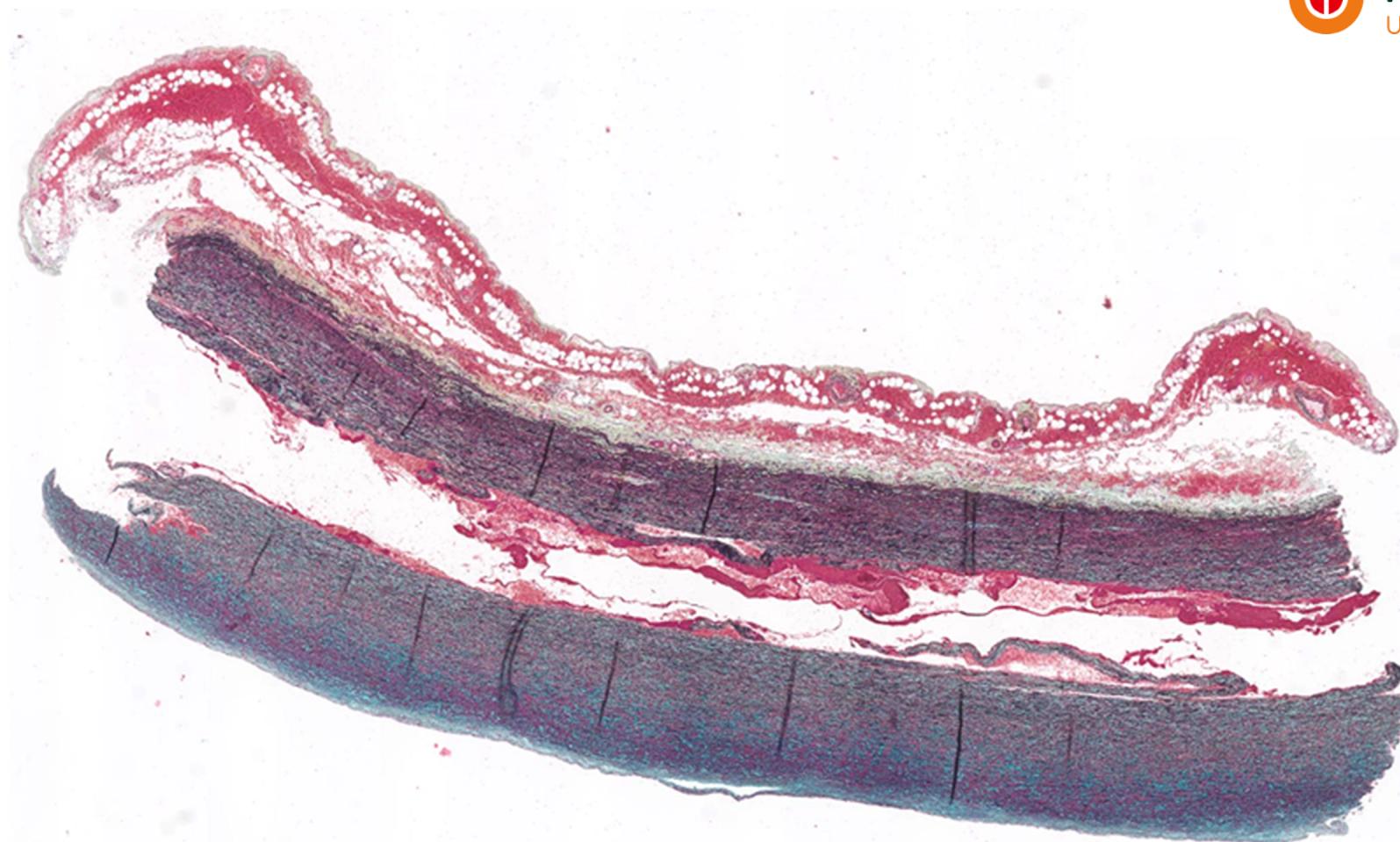


* p < 0.05
** p < 0.01
*** p < 0.001

Describing a ‘pathologic’ vascular wall

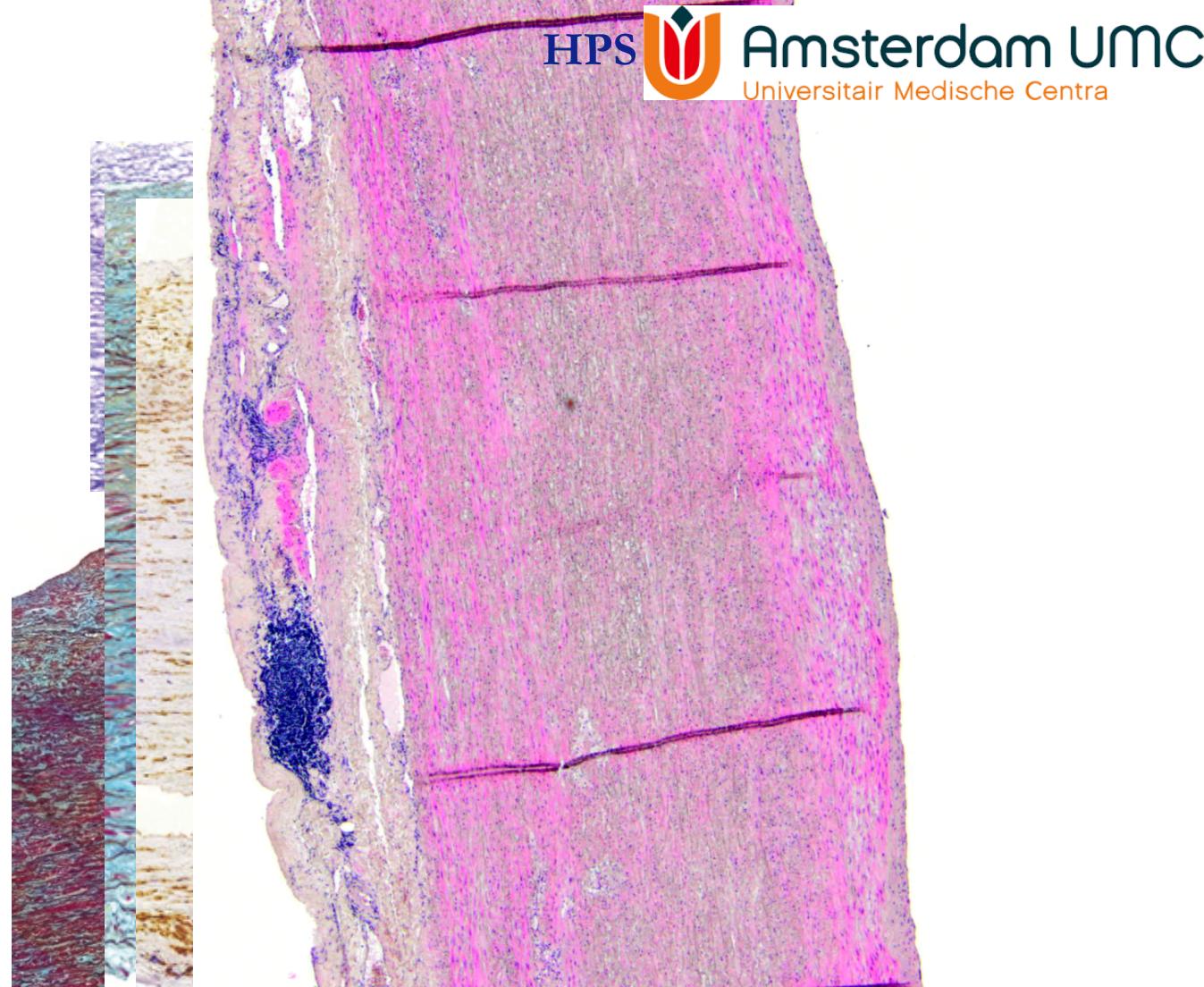
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The pathology score

- Intimal architecture
 - Endothelial and subendothelial layer structure
 - Absolute intimal thickness
 - Intimal atherosclerosis
- Medial VSMC differentiation
- Medial EFD
- Medial MEMA
- Medial CMD
- Adventitial inflammation



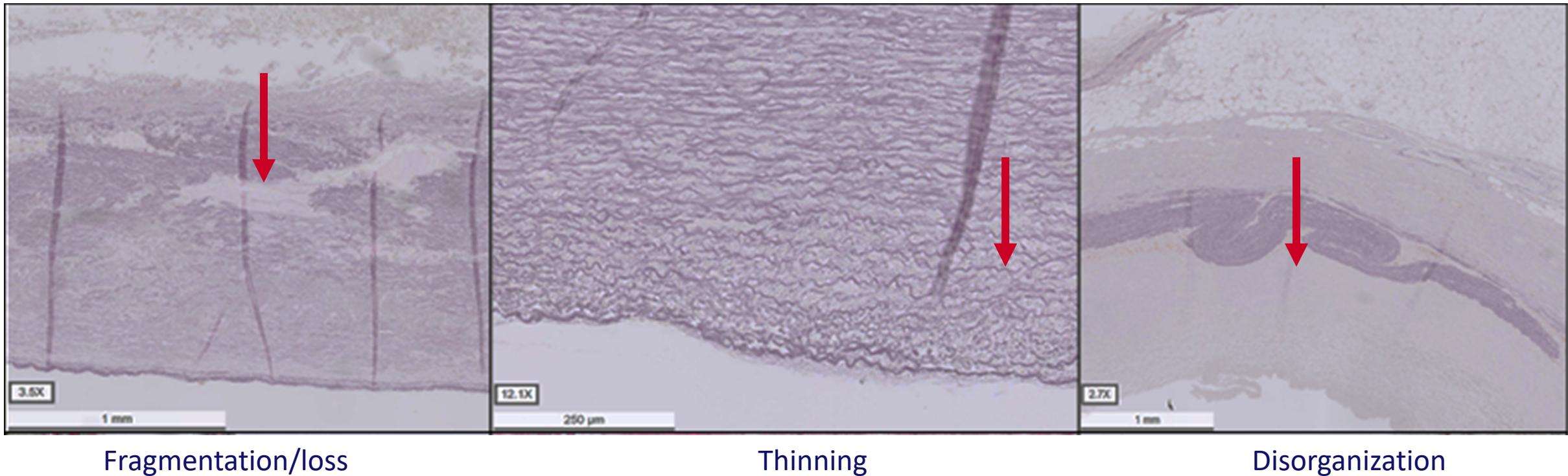
Methods (I)



- Ascending aorta specimens obtained during surgery
- Samples from autopsies served as controls
- Staining
 - Hematoxylin-Eosin
 - Resorcin-Fuchsin (elastin)
 - Movat pentachrome
 - CD31+
 - VSMCs
 - Lamin A/C
 - Progerin

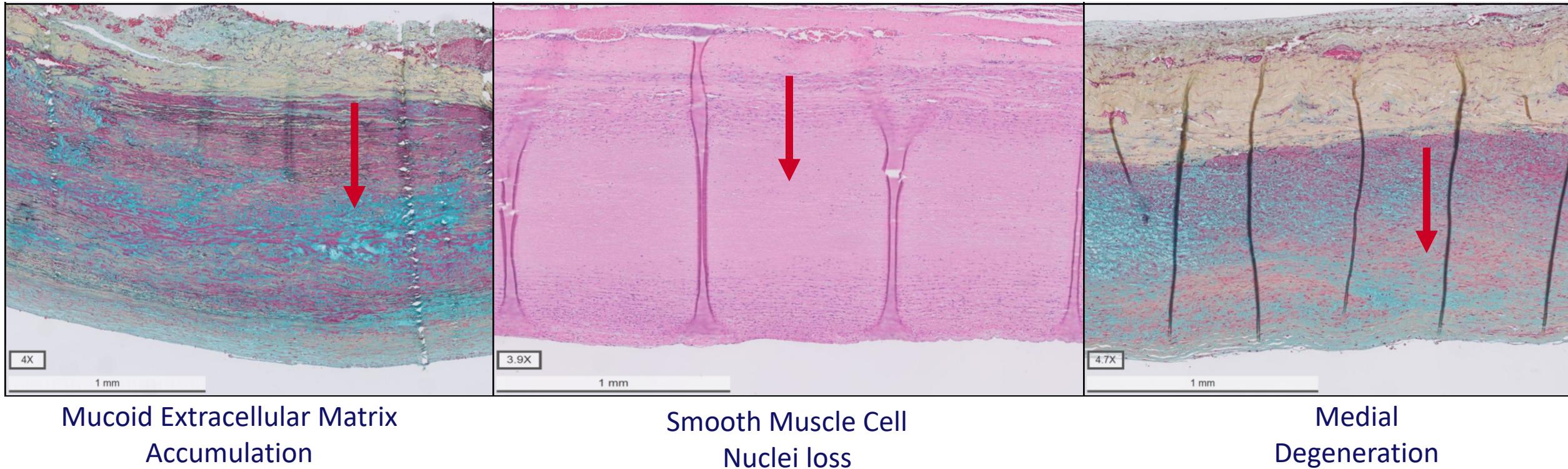
Results (II)

Histomorphology

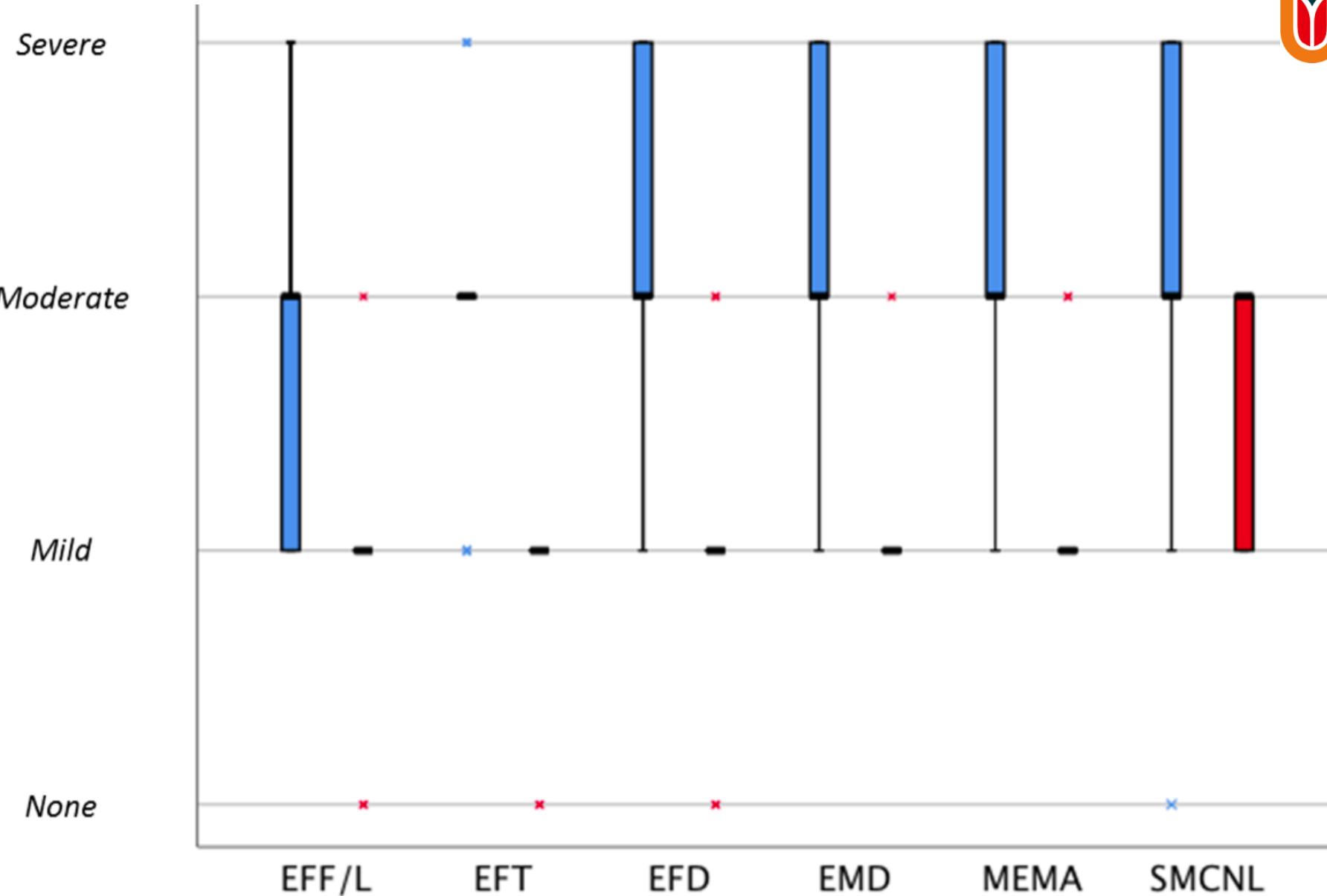


Results (III)

Histomorphology

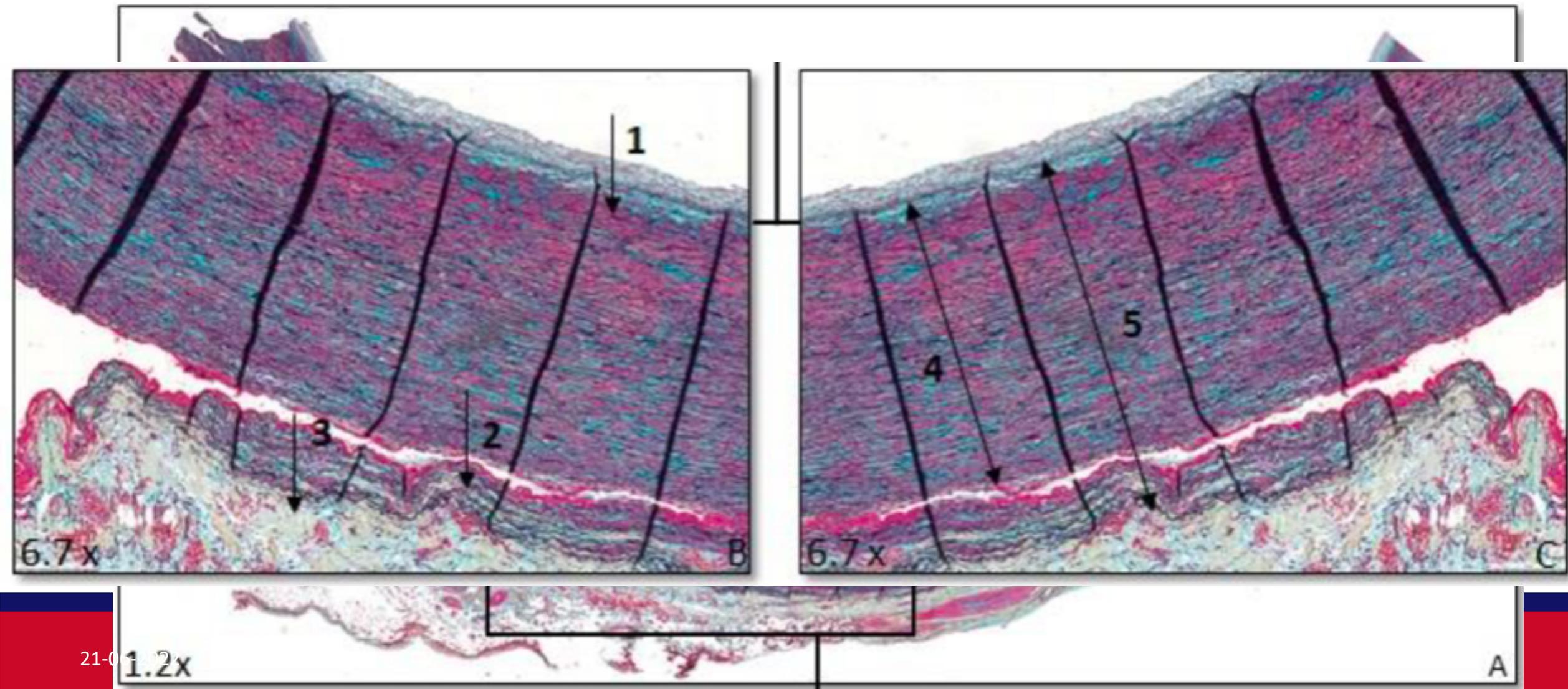


Results (VI)



Methods

Location of the dissection plane

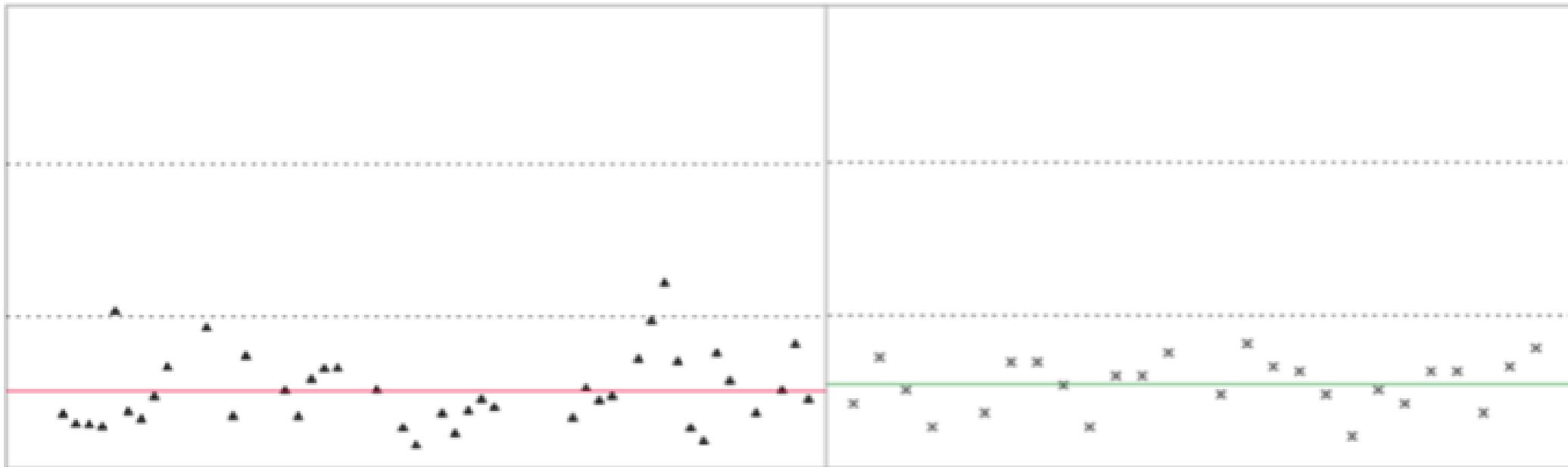


Results (V)

Location of vasa vasorum

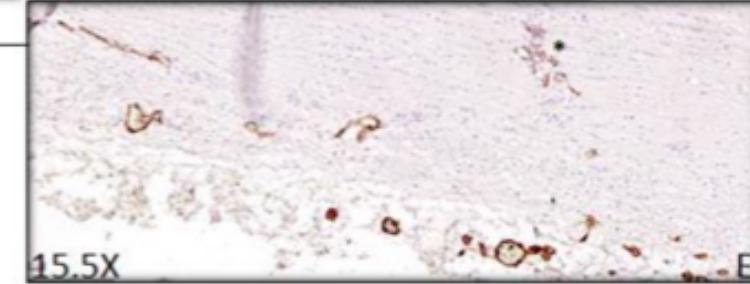
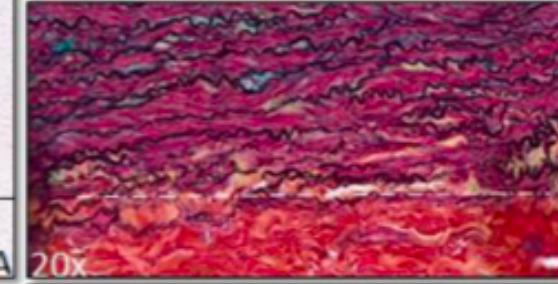
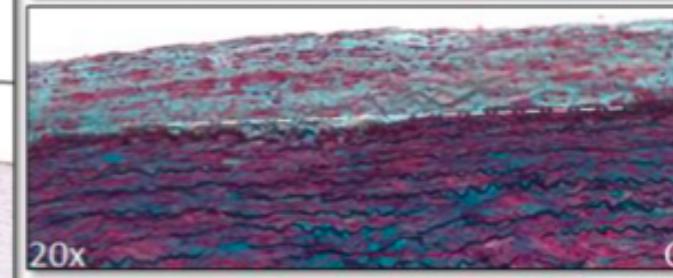
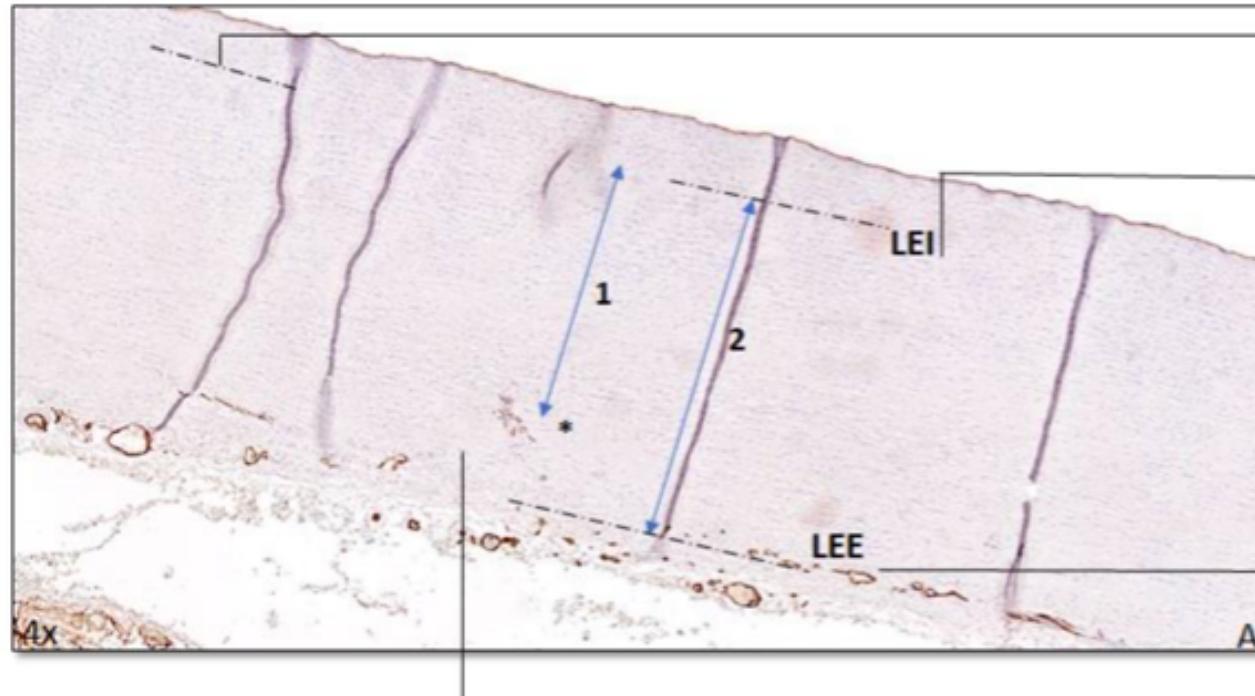
Location of dissection plane

Location of vasa vasorum

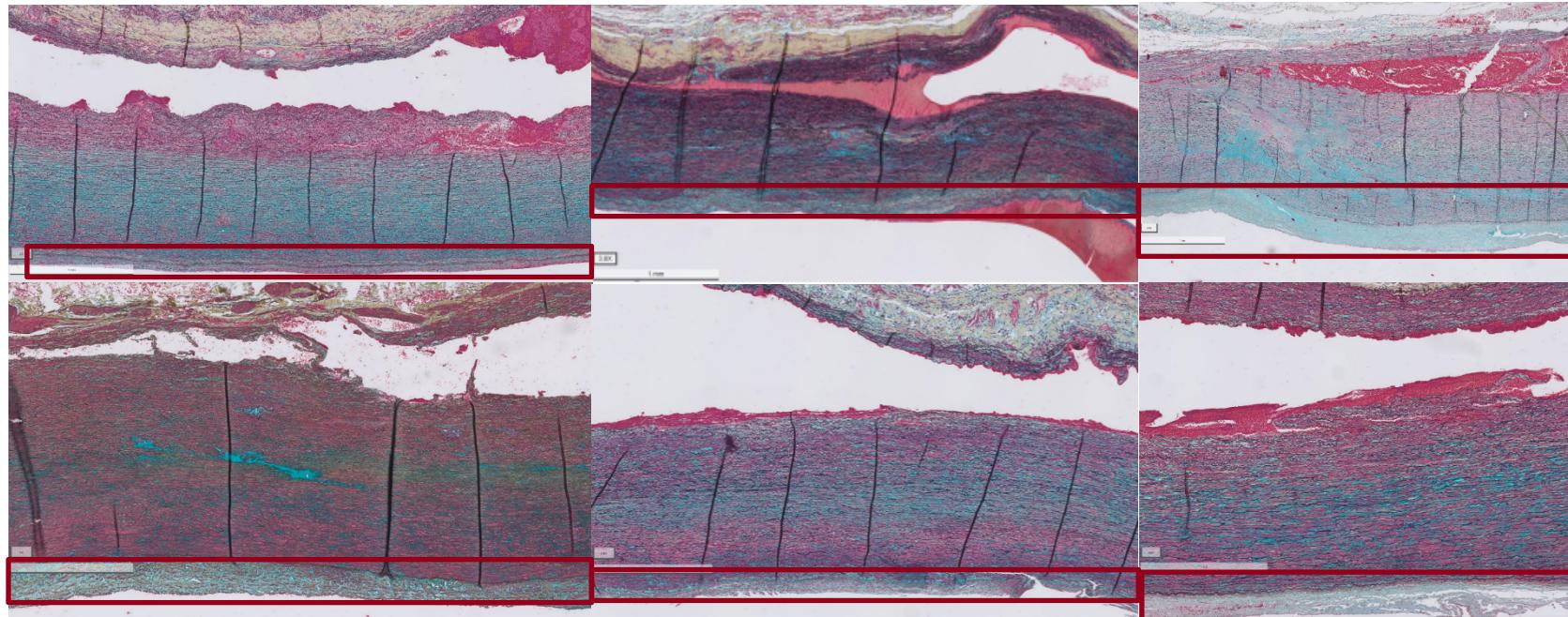


Results (VI)

Location of vasa vasorum



Results (VII)



Conclusion



→ “Triple hit” model

- Significantly thinner intimal layer
- The middle media is the most diseased part *and VSMC phenotypic switch defect*
- The dissection plane consistently appears in the outer media at the location of the vascular plexus

Embryologic explanation?

Thank you

