

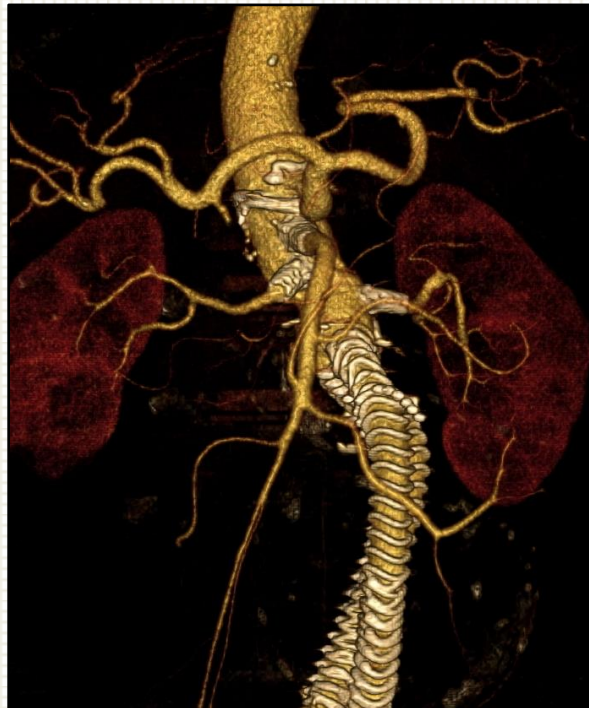
# Model Simulation for Fenestrated Anaconda

Dr Peter Bungay

Derbyshire Vascular Services

Royal Derby Hospital

Derby UK



# Model simulation for Fenestrated Anaconda

- Validation of the concept
- Validation of design concept variations
- Prototype graft verification & refinement
- Case rehearsal
- Cannulation practice
- Training
- Limitations
- The future



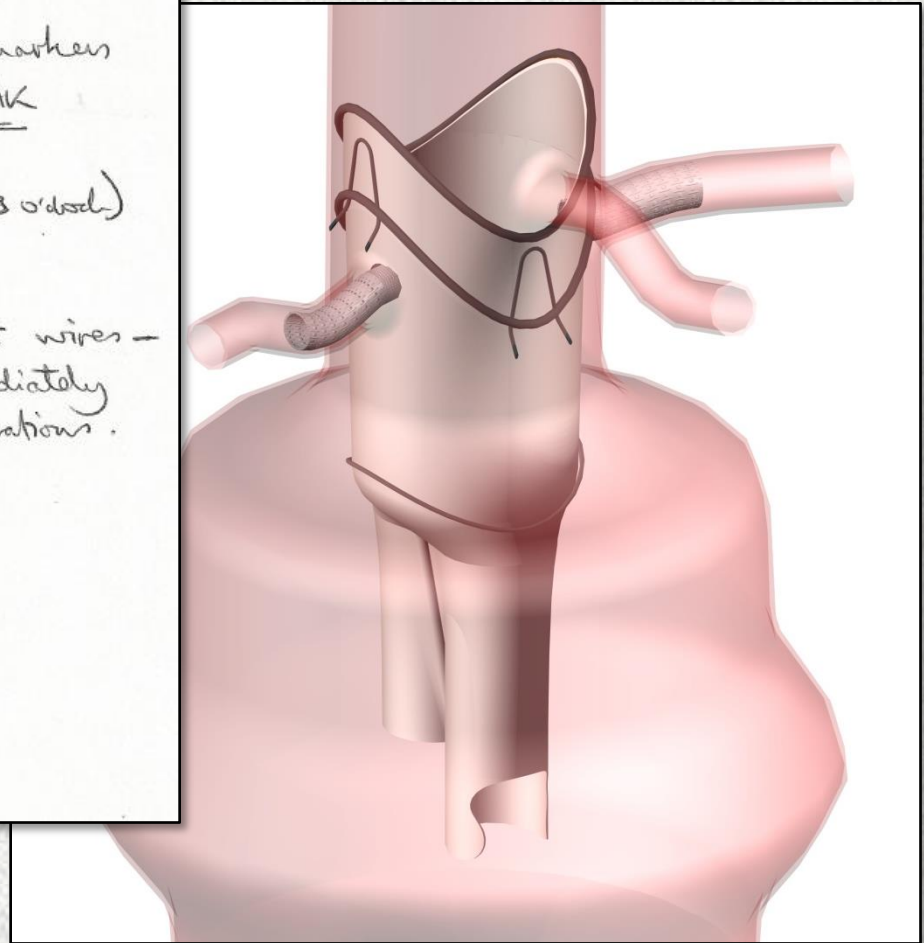
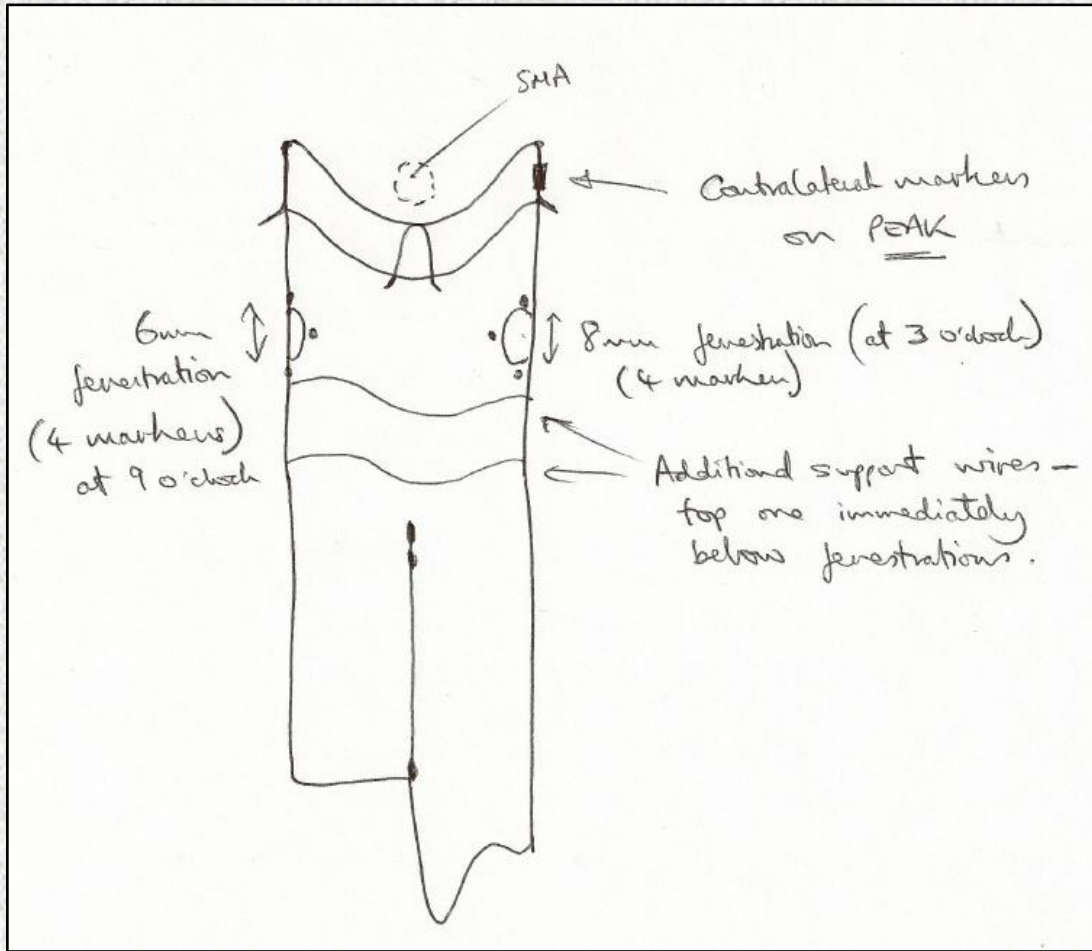


# Anaconda Fenestrated 1

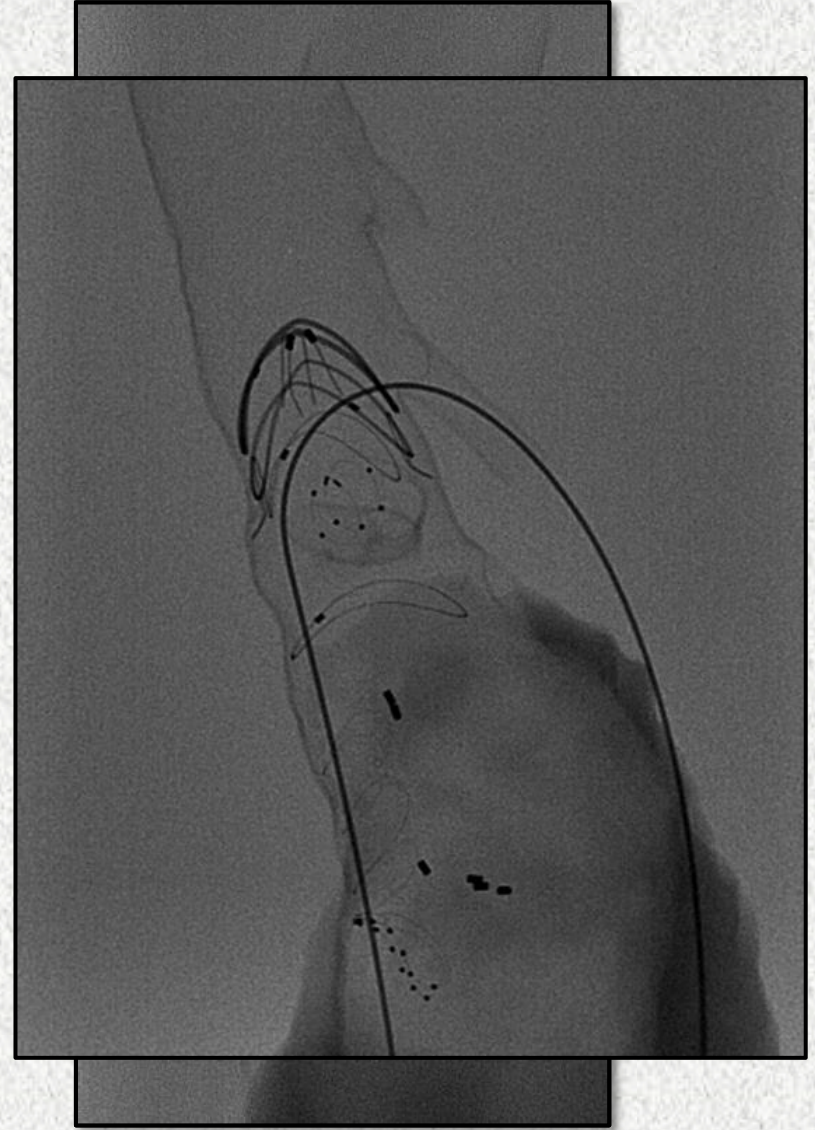
- 76 male
- 7.4 cm juxtarenal AAA
- NIDDM
- CRF (left RAS)
- Aortic valve replacement
- Hypertension
  
- Request to Vascutek for fenestrated Anaconda graft March 2010



# Fenestrated Anaconda - Concept



# Validation of the concept

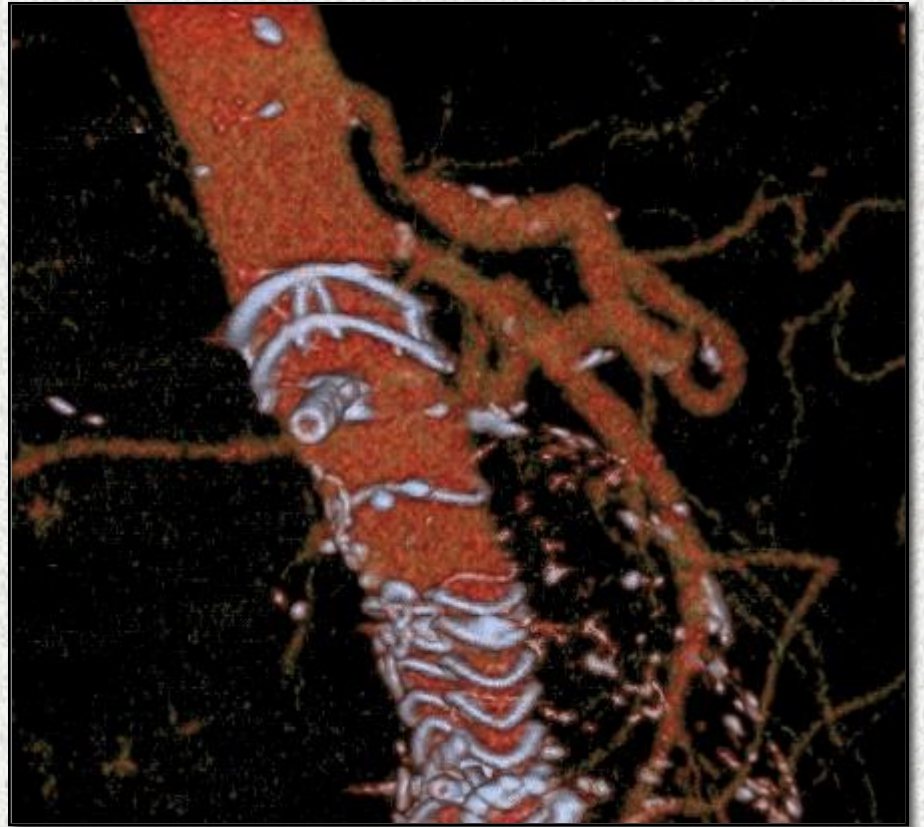
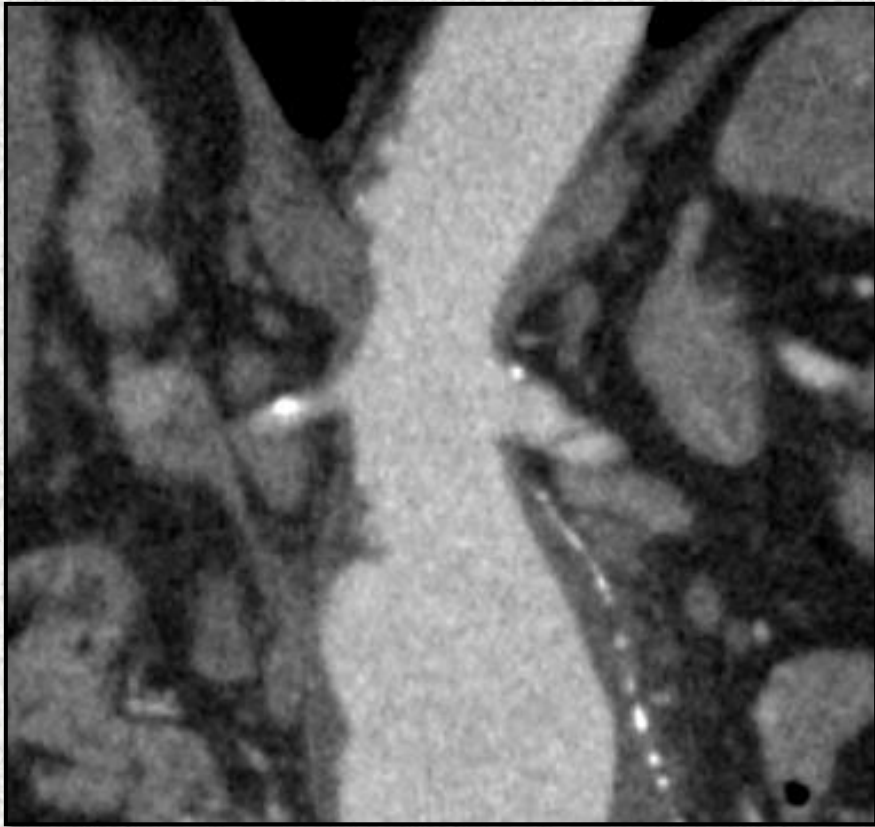




# Anaconda Fenestrated 1

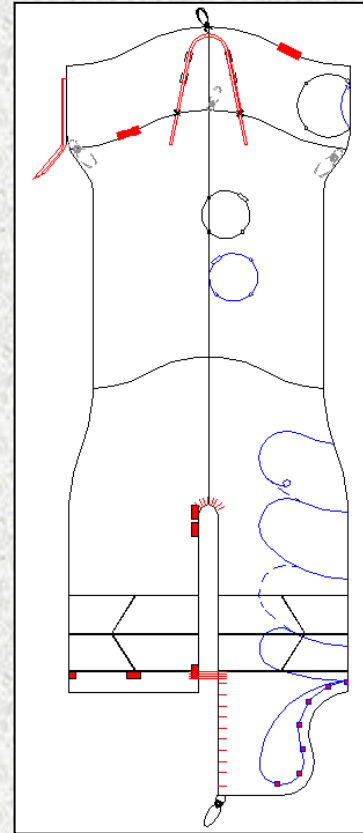
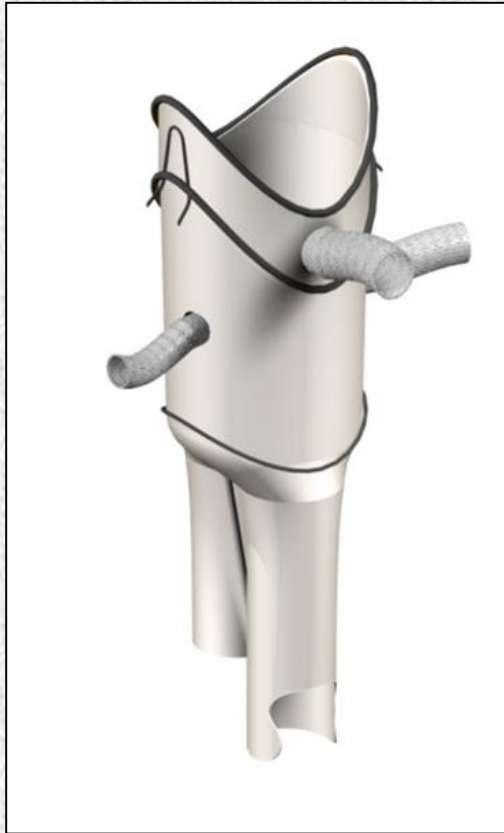
- Initial request for graft March 2010
- 3 prototypes to refine design
- Multiple deployments into model
- Patient deployment 15<sup>th</sup> June 2010
  - 3.5 months for concept, development, validation manufacture and practice deployments

# Anaconda Fenestrated 1



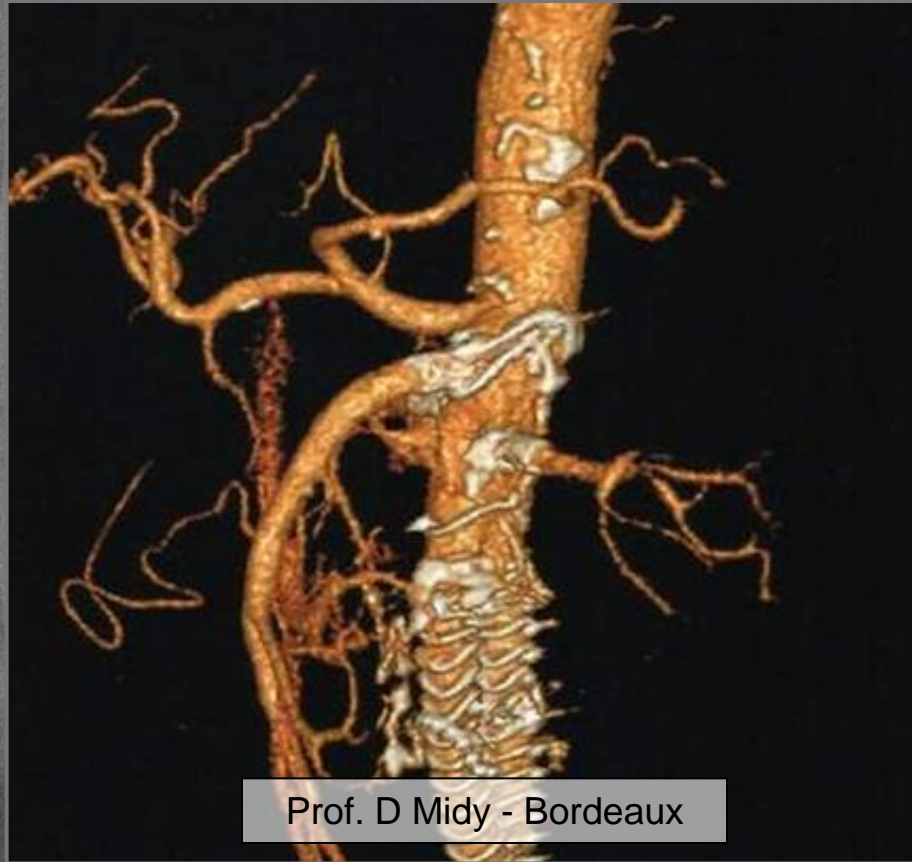
# Validation of design concept variations

- SMA very close to or level with renal arteries
  - 3 (or more) fenestrations





# 3 Fenestrations – case number 7

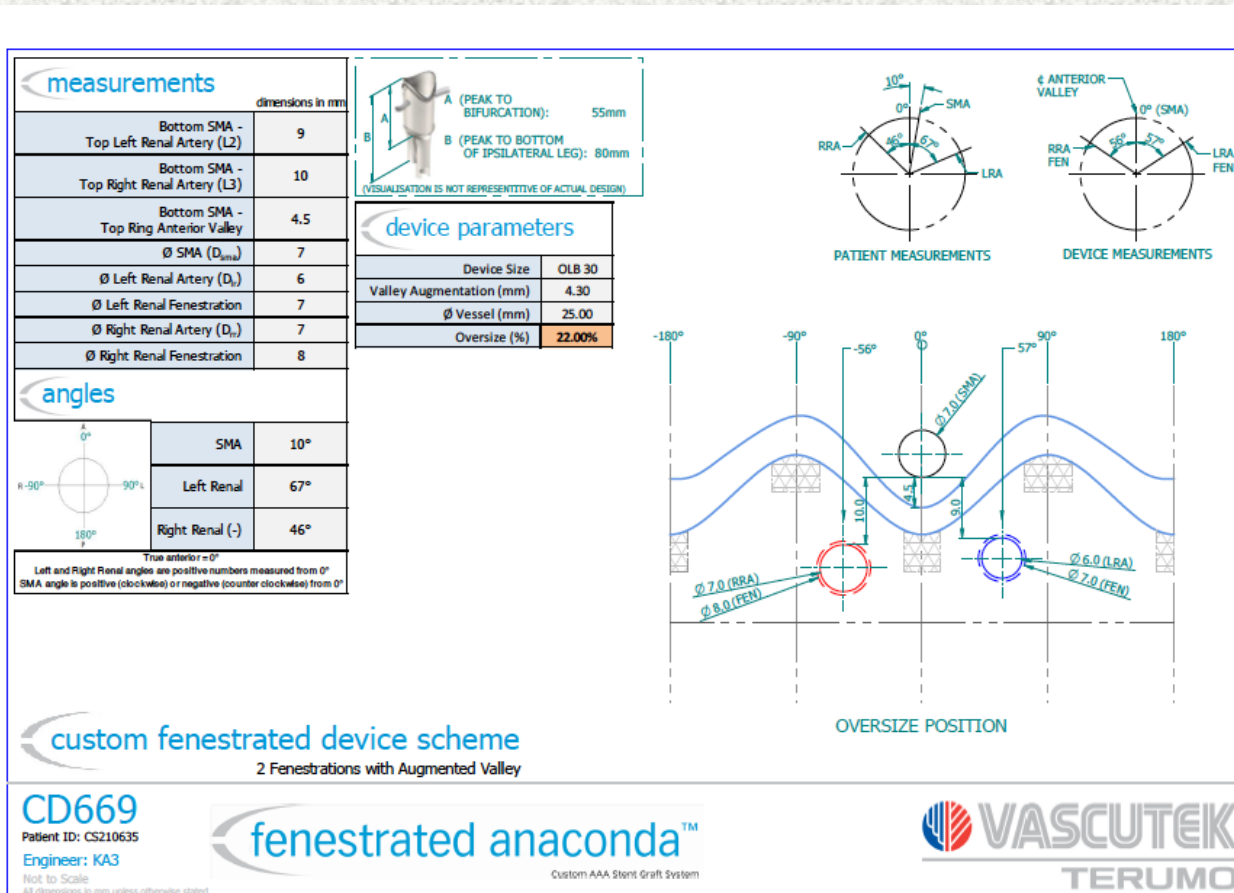


Prof. D Midy - Bordeaux

# Prototype graft verification

# Prototype graft verification

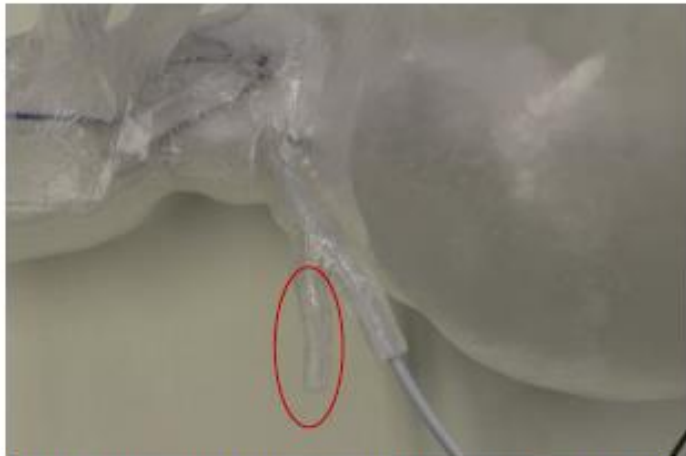
- Device Scheme



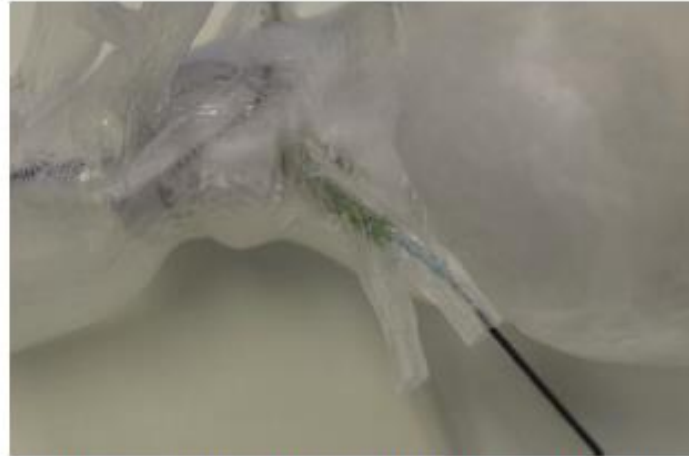


# Prototype graft verification

- Device Scheme
- Engineers prototype model deployment



In order to cannulate the renal arteries the device was positioned lower within the anatomy model. The RRA has an early branch.



Right renal artery cannulated from below. No issues encountered when advancing 7Fr sheath into vessel.



Left renal artery cannulated from below. No issues encountered when advancing 7Fr sheath into vessel.



Device was deployed. There appears to be sufficient clearance from the anterior valley to SMA.

# Prototype graft verification

- Graft Scheme
- Engineers prototype model deployment
- Clinicians prototype model deployment
- ? Graft changes, ? Second prototype
  - Move fenestrations, oversize change, 2 to 3 fen etc.
  - Changes made in approximately 20%
  - More likely with more complex grafts
- Graft sign-off and manufacture



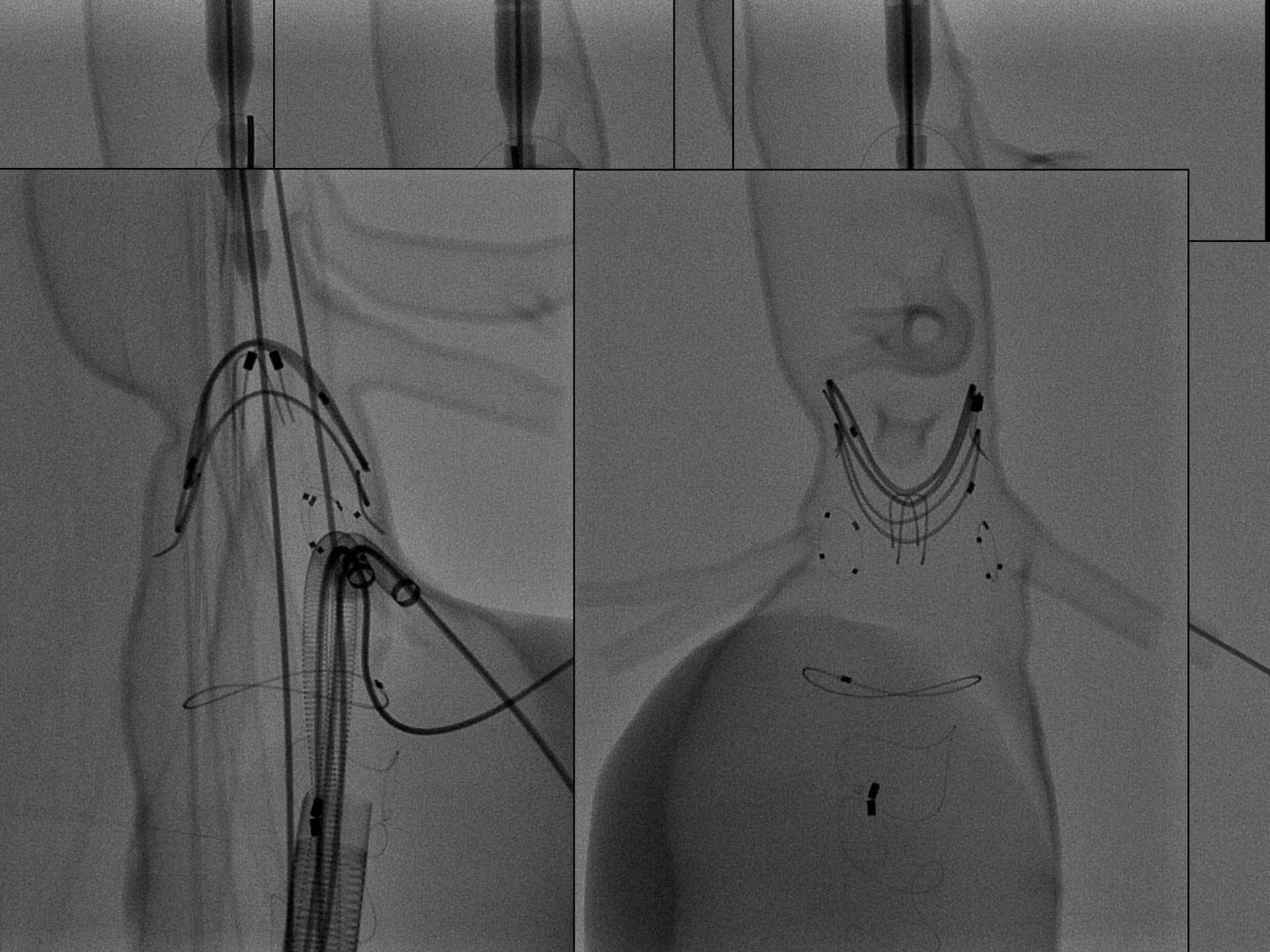
Case rehearsal

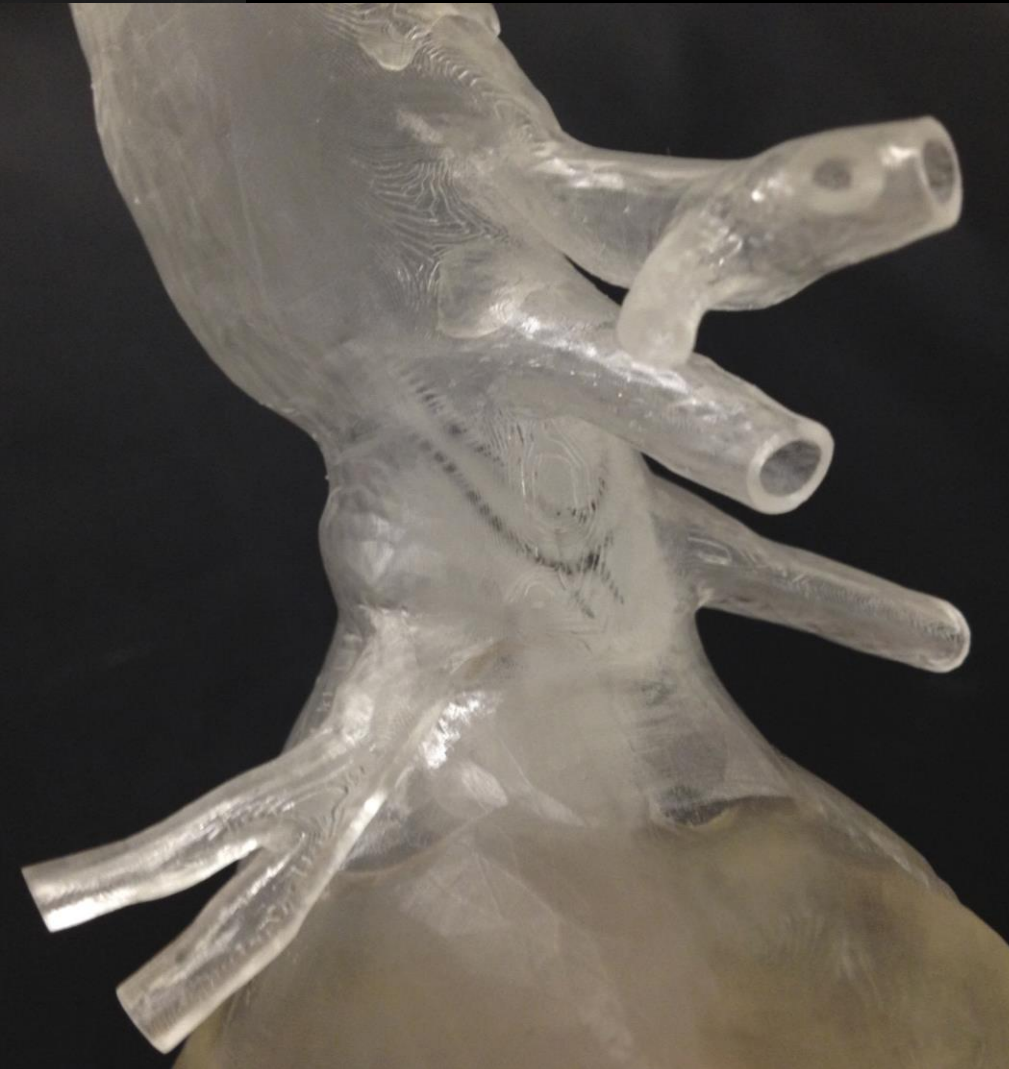
# Deployment & Repositioning

# Case rehearsal









# Case rehearsal

- Cannulation practice
- Catheter choice
- Cannulation from below or above
- Elective arm access
  
- Easier in-vivo than in-vitro
  
- Training Workshops

# Limitations and The Future



# Limitations

- Hard model does not behave as arteries do
- Time delay
- Is it worth the time and cost?
  
- 98.6% target vessel patency at 2 years
- Zero type 1 endoleaks at 2 years

# The Future?



# Summary FEVAR models

- Successful validation of concept
- Individual graft design verification
- Case rehearsal
- Training
- Graft performance in registry data
- ? Replaced by VR version eventually





Any questions?

