

NEW TREATMENT MODALITIES IN AORTIC DISEASE

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Disclosures

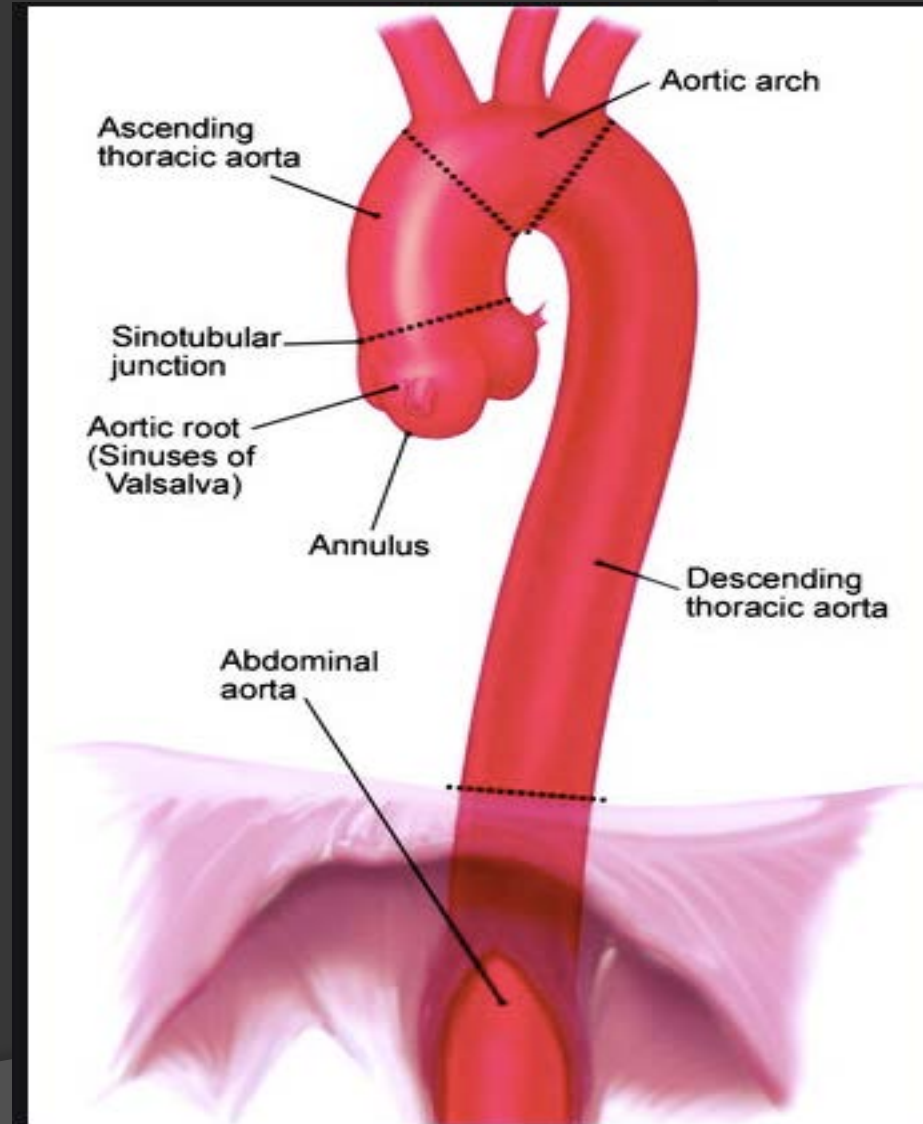
- None

Outline

- Aortic aneurysms
- Screening
- Acute aortic syndrome
- New treatment pathways

Thoracic Aortic Aneurysms

- ◎ “Silent killer”
- ◎ Presenting symptoms are typically dissection or rupture
 - * high mortality *
- ◎ Screening?



Aneurysms: who's at risk?

- ⦿ Elderly patients
- ⦿ Smokers
- ⦿ Hypertensive
- ⦿ Hyperlipidemic
- ⦿ Inflammatory/infectious conditions
- ⦿ Genetic predisposition:
 - Relative with aortopathy
 - Bicuspid aortic valve
 - Marfan's, Ehler's Danlos, Loeys Dietz, Turner's

Thoracic Aneurysm Screening

- No current guidelines from US or European societies
- Expert consensus out of Netherlands in 2018

Who to screen?

Table 1

List of most characteristic or easy recognizable clinical features associated with syndromic forms of thoracic aortic disease.

Craniofacial features	Craniosynostosis Widely spaced eyes (hypertelorism) Cleft palate or bifid uvula
Ocular features	Lens subluxation/dislocation (ectopia lentis) Retinal detachment High myopia (−6.00 diopters or higher) Iris hypoplasia or flocculi
Cardiovascular features	Mitral valve prolapse Arterial tortuosity Multiple aneurysms or dissections Left-sided congenital heart defect or patent ductus arteriosus
Musculoskeletal features	Pectus excavatum or carinatum Joint hypermobility or contractures Recurrent joint subluxations/dislocations Severe, early-onset osteoarthritis Severe kyphosis or scoliosis
Cutaneous features	Thin, translucent skin with easily visible veins Hyperelastic skin Livedo reticularis Striae at unusual sites/not related to weight gain Atrophic or wide scars
Other features	Short or tall stature Disproportionately long limbs (dolichostenomelia) Abnormal long and slender fingers (arachnodactyly) Spontaneous pneumothorax Recurrent abdominal wall hernias Spontaneous rupture of internal organs

Physical features concerning for syndromic aortopathy

Who to screen?

- ⊙ Positive family history?
- ⊙ *1st or 2nd degree relative with*
 - Thoracic aortic aneurysm or dissection
 - ANY aneurysm or dissection dx < 60 yrs
 - Left-sided congenital heart defect
 - Congenital AS, BAV, PDA
 - Sudden death < 45 yrs

How to screen?

- ◎ TTE
 - Pros: inexpensive, widely available
 - Cons: cannot reliably image all aortic segments
- ◎ CT
 - Pros: excellent details
 - Cons: requires contrast and radiation
- ◎ MR – limited availability, more expensive
- ◎ Don't forget about abdominal and brain imaging!

When to screen?

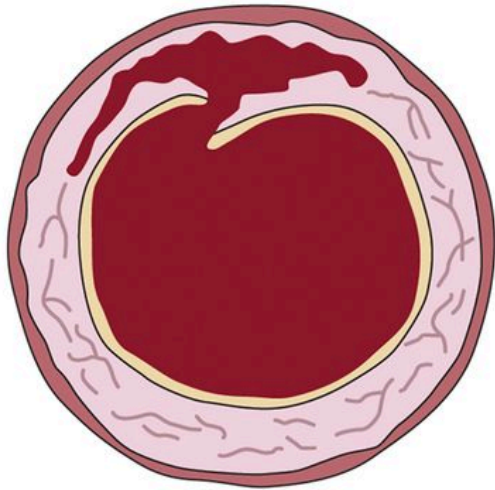
- ◎ Possible syndromic form? Immediately!
- ◎ Family History:
 - Start at age 25 or 10yr earlier than relative's diagnosis
 - Then every 2 to 5 years → if very stable over time can consider q10 yr

Acute Aortic Syndrome: think *STEMI* !

- Aortic dissection: intimal tear
- Intramural hematoma: rupture of vasa vasorum
- Penetrating atherosclerotic ulcer: plaque penetrating into the media

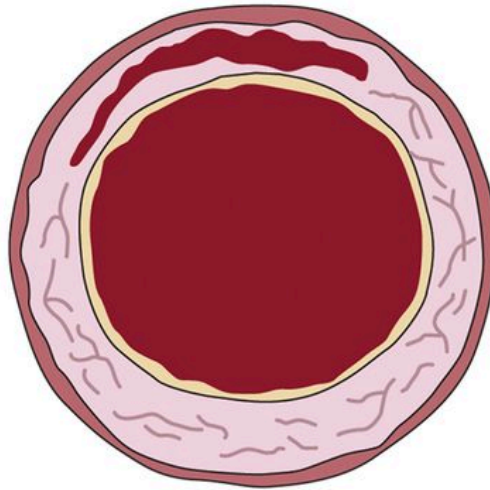
Acute Aortic Syndrome

A



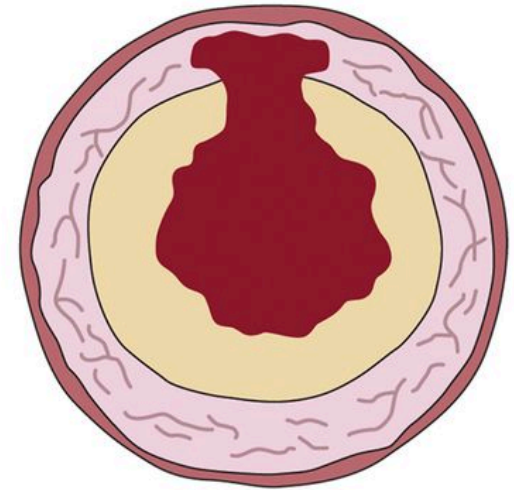
Aortic Dissection

B



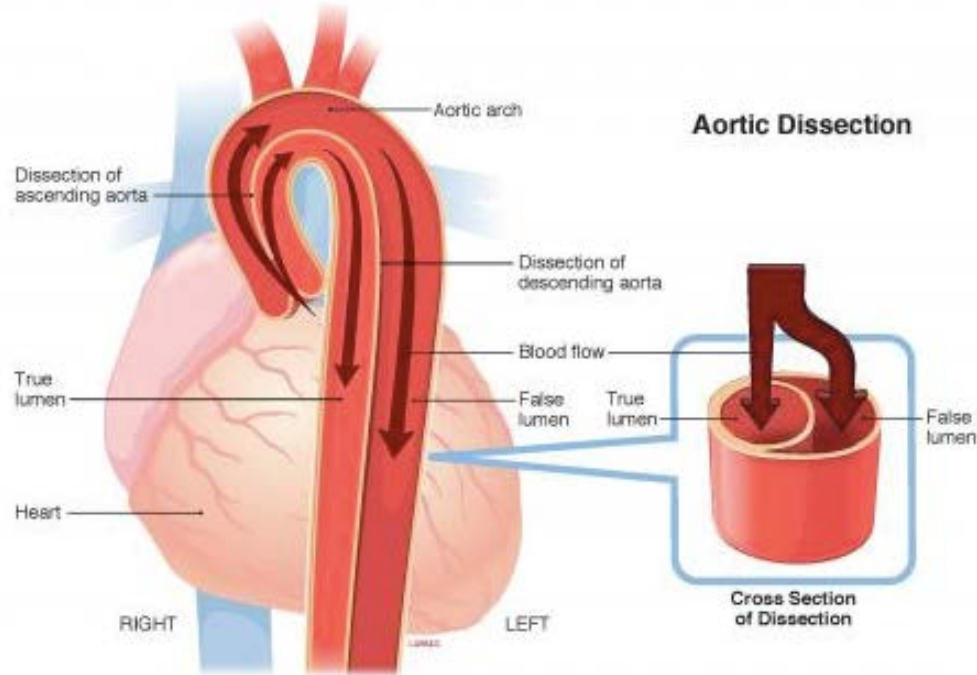
Aortic Intramural Hematoma

C

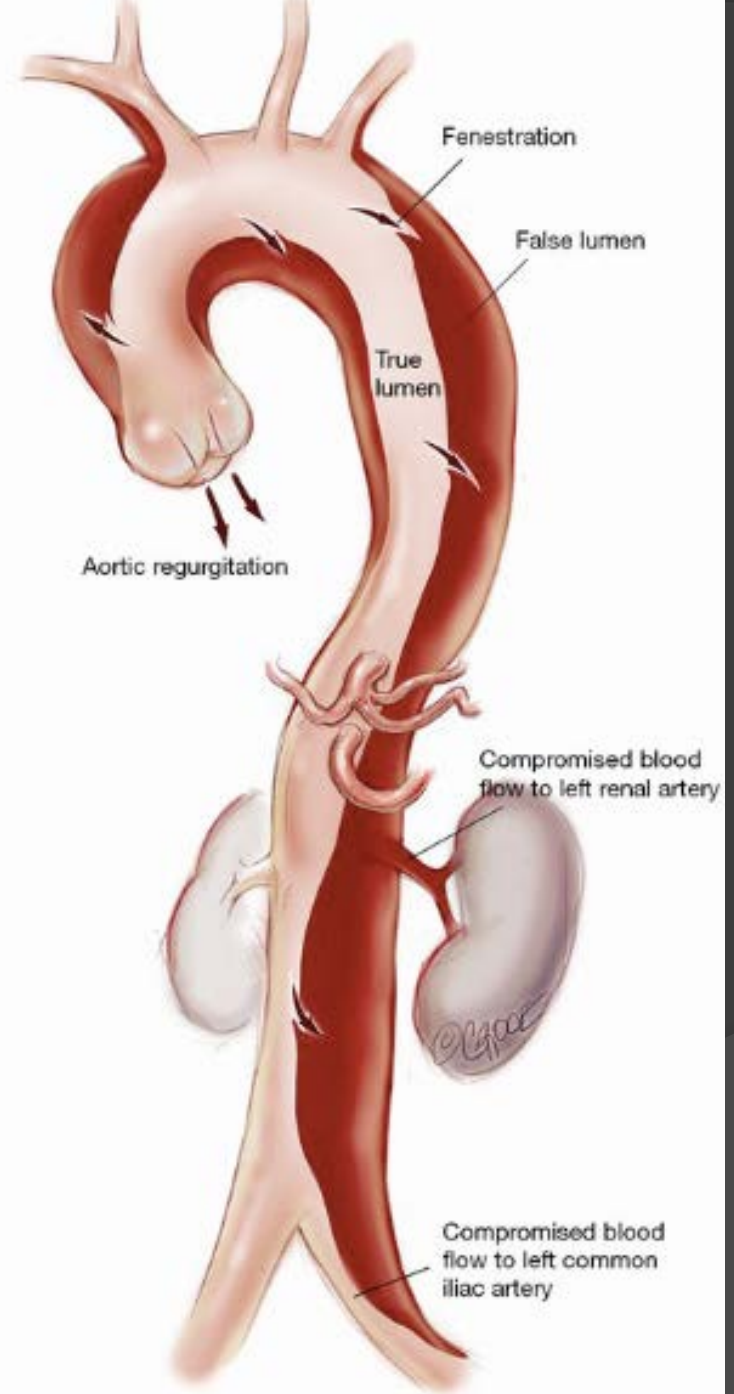


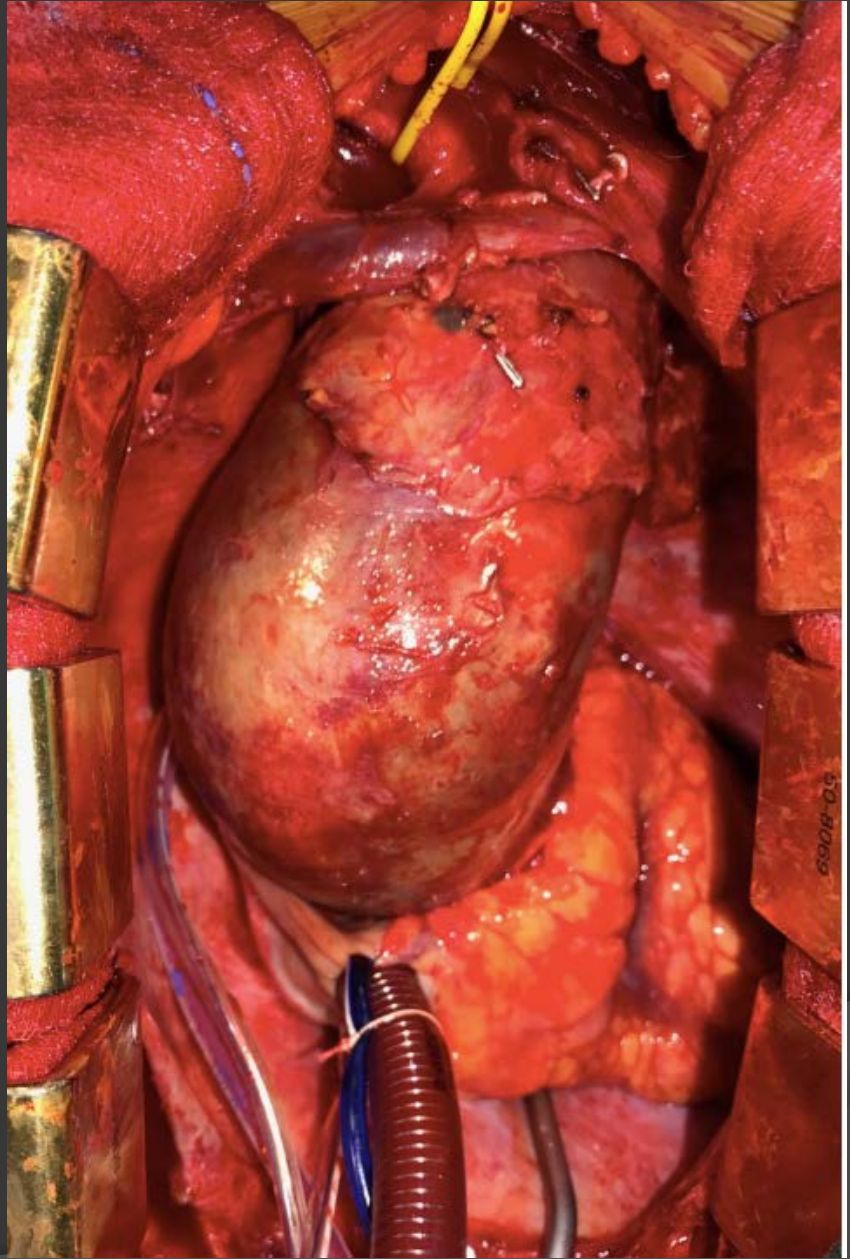
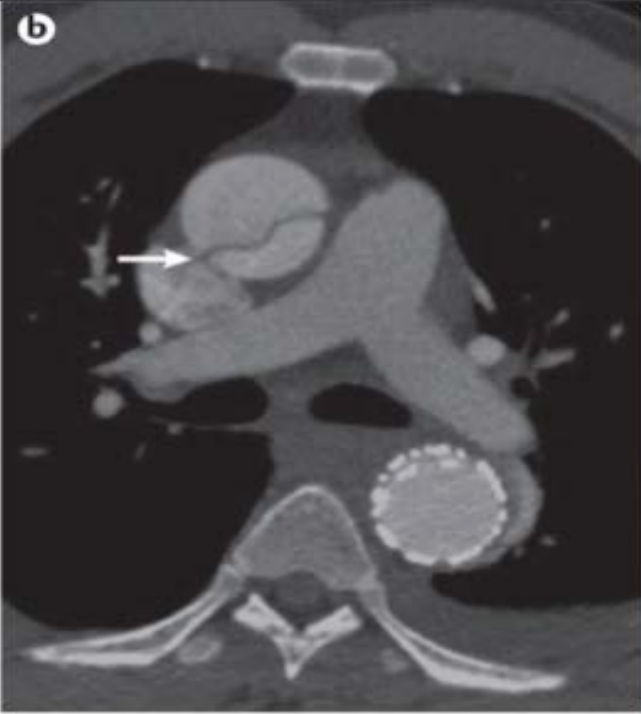
Penetrating Atherosclerotic Ulcer

Aortic Dissection



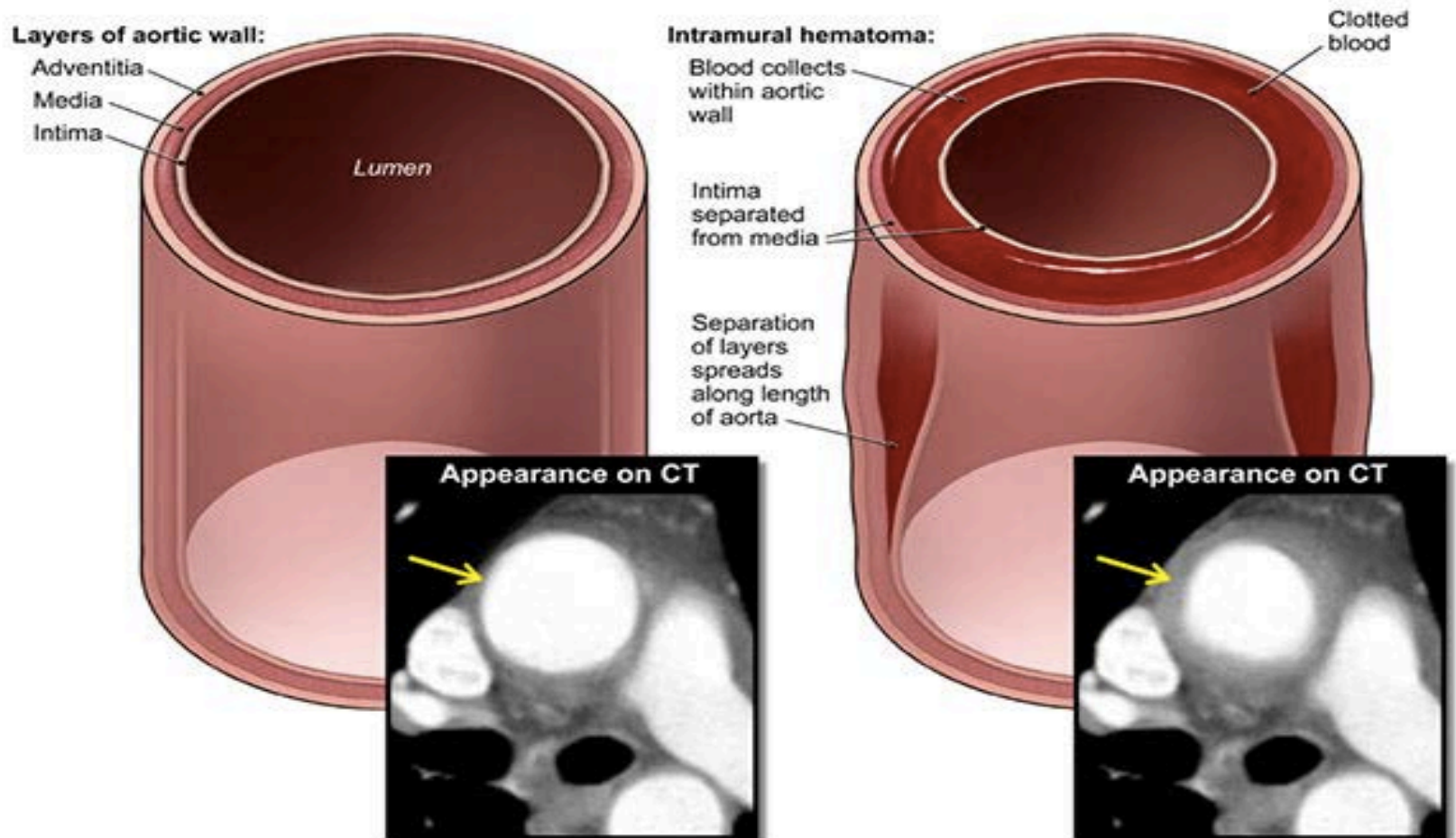
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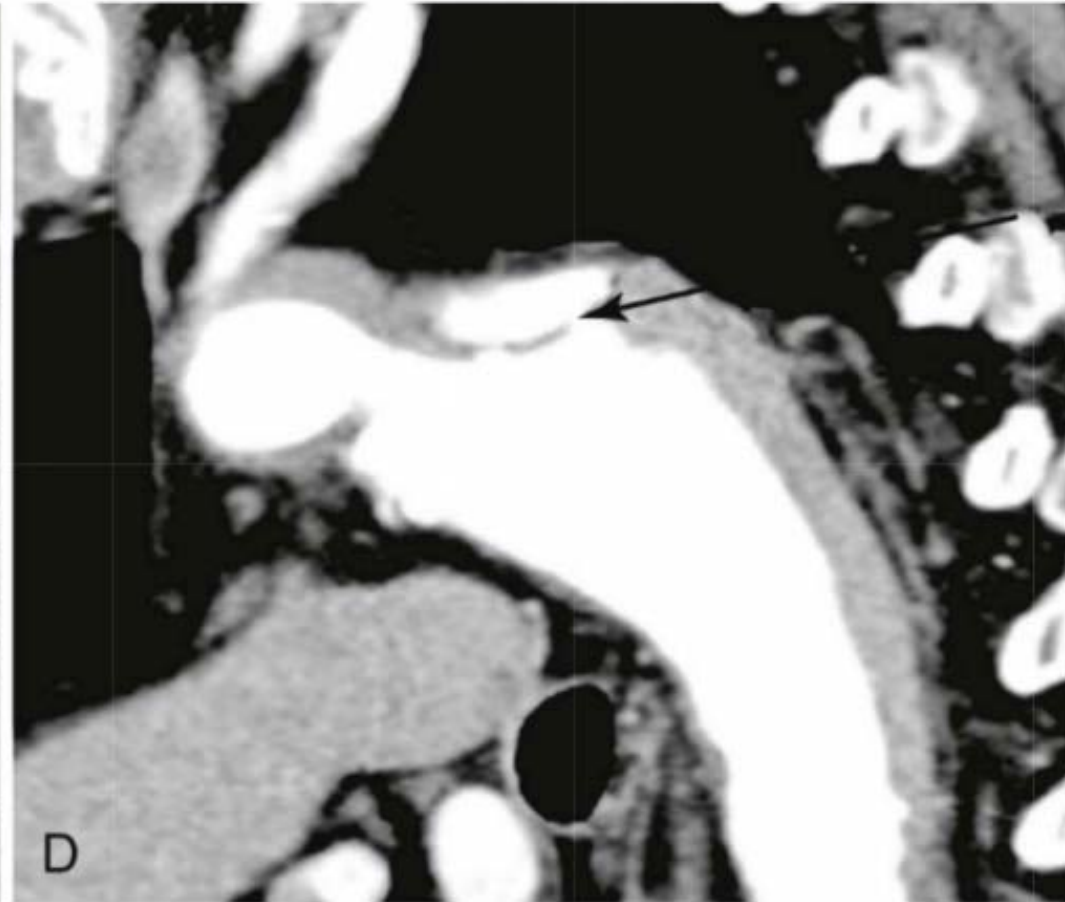
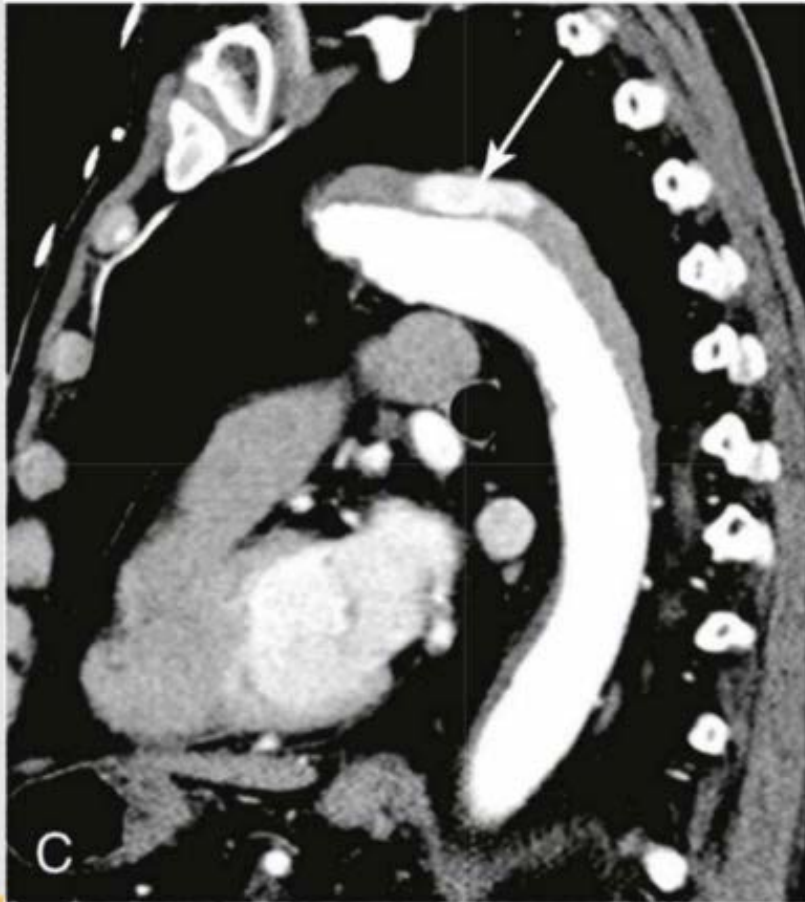


Intramural Hematoma

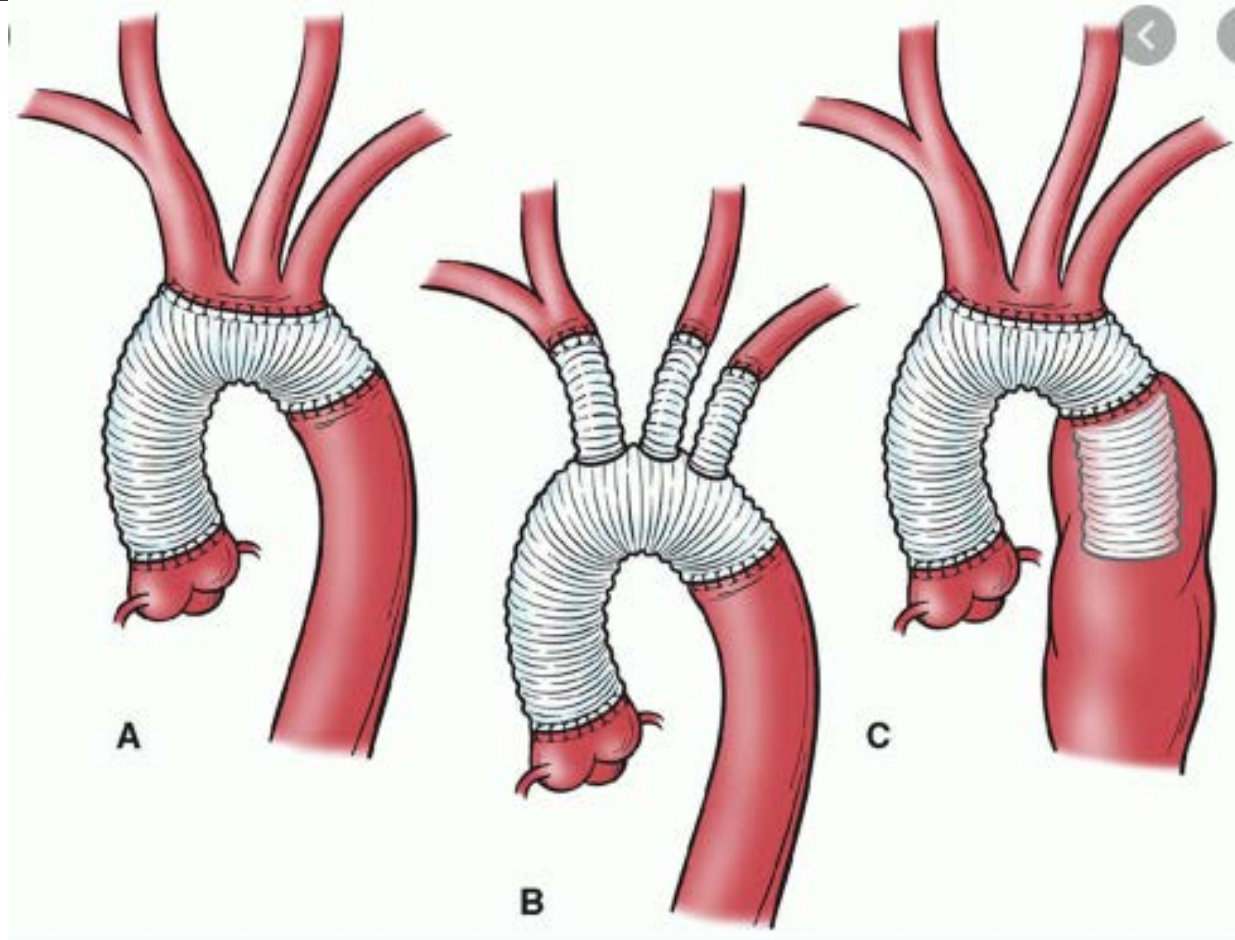
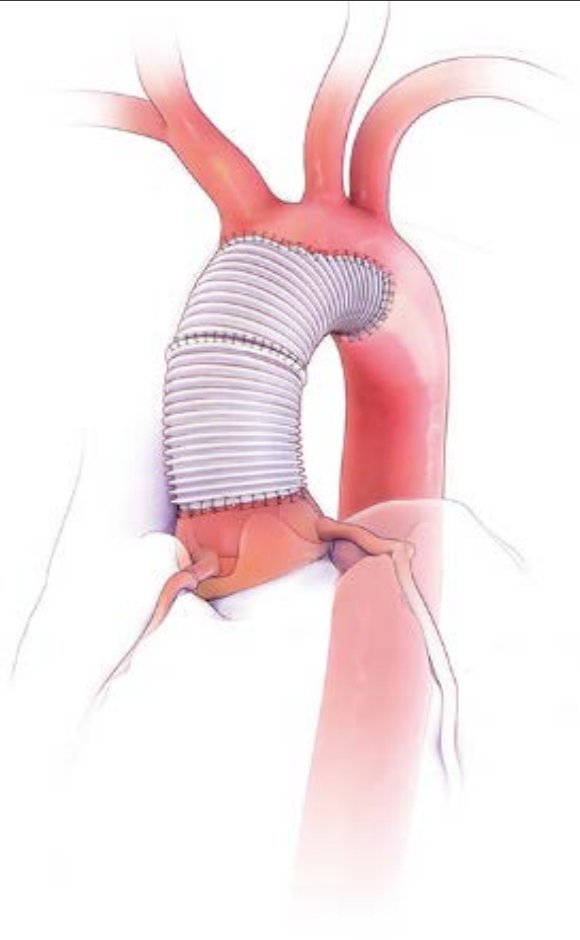
Normal Aorta vs. Intramural Hematoma



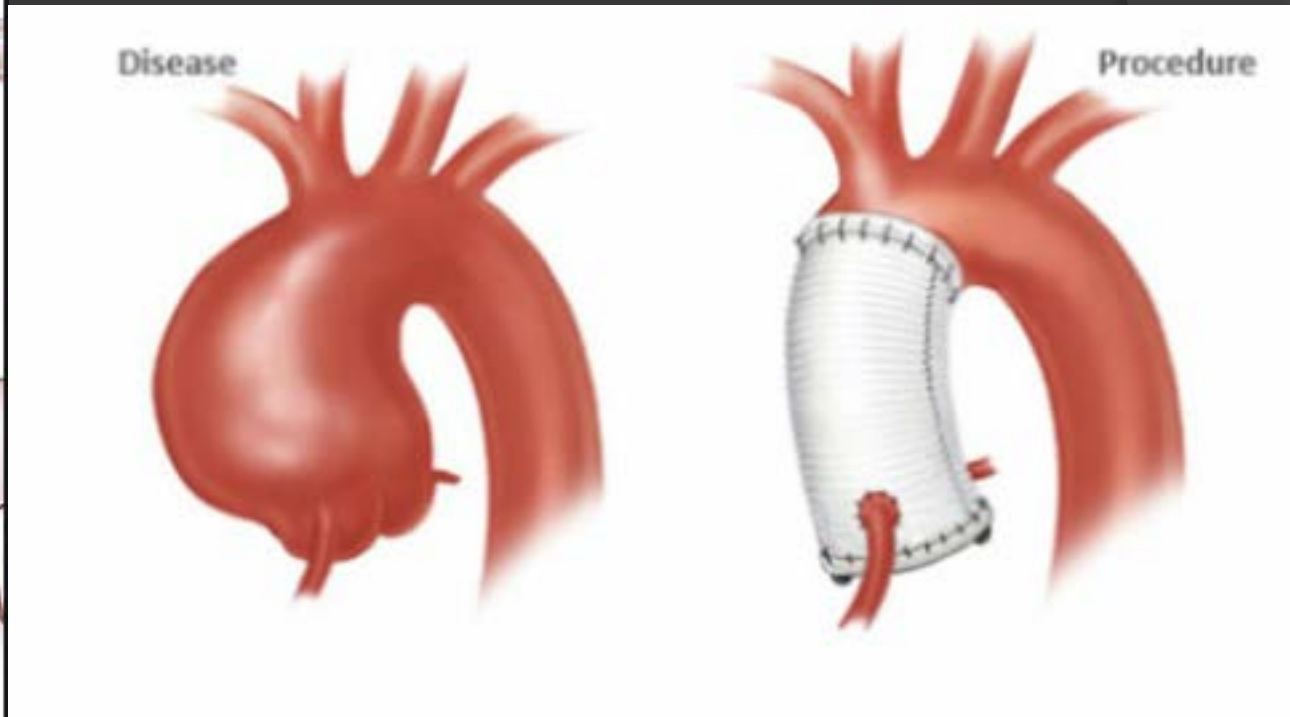
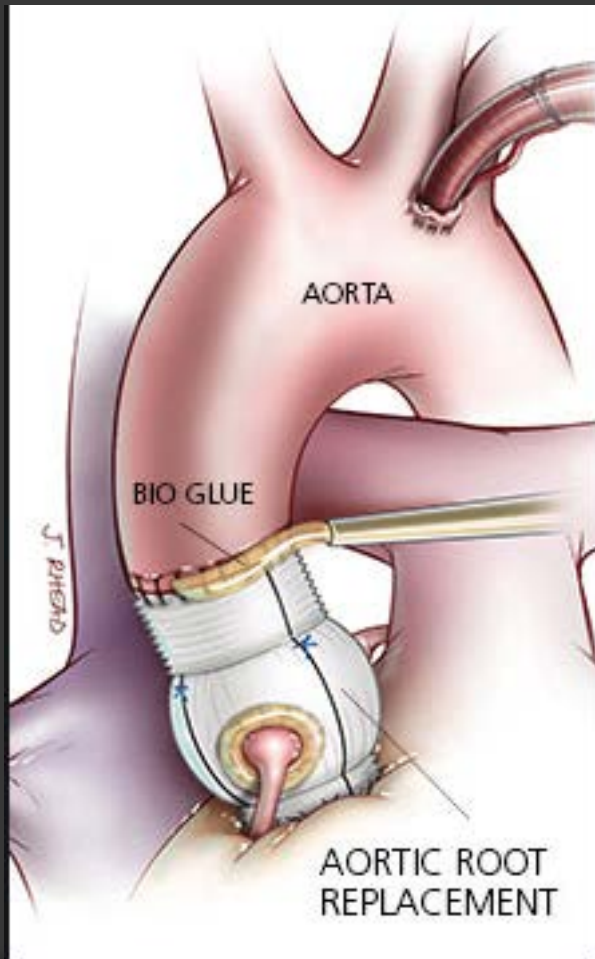
Penetrating Atherosclerotic Ulcer



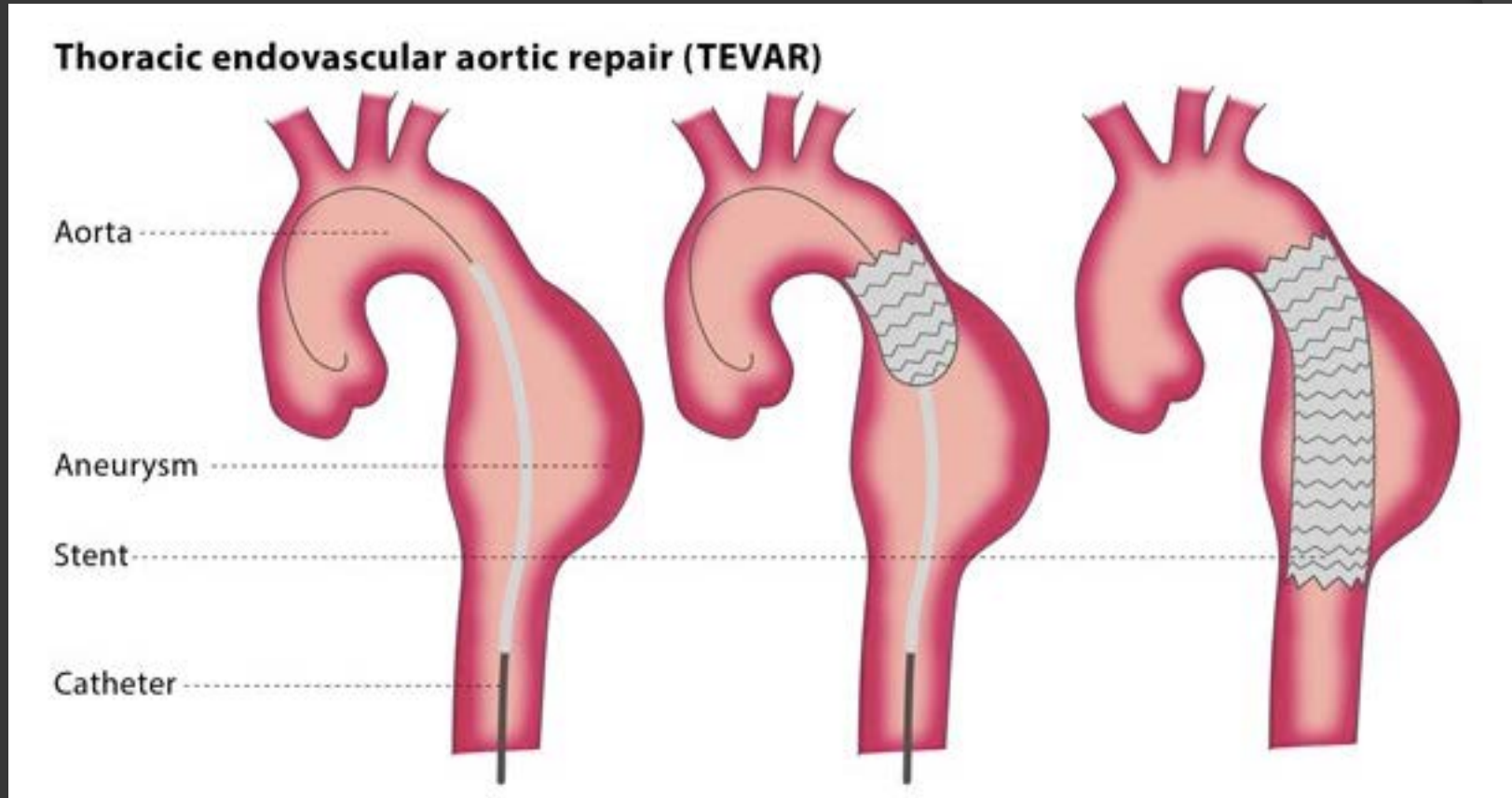
Surgical Repair: Ascending +/- Arch



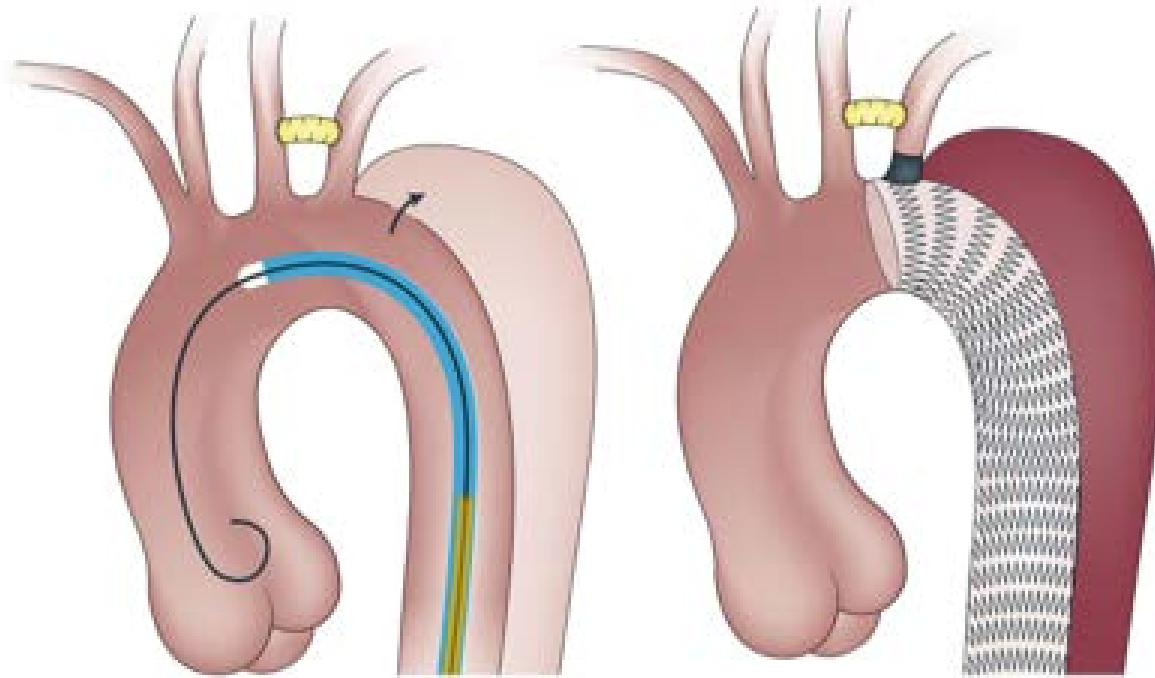
Root Replacement



Type B/descending

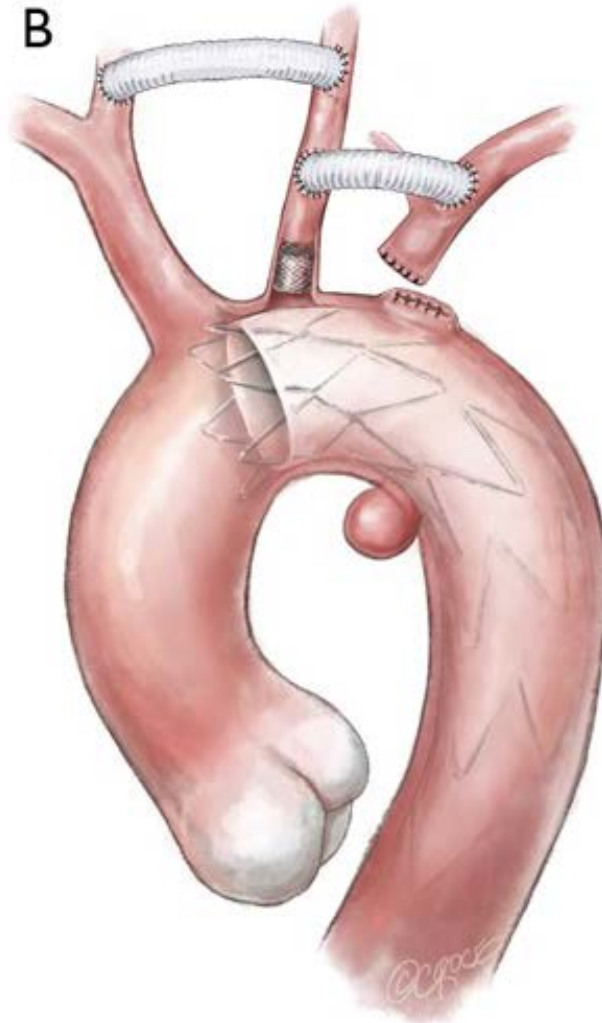
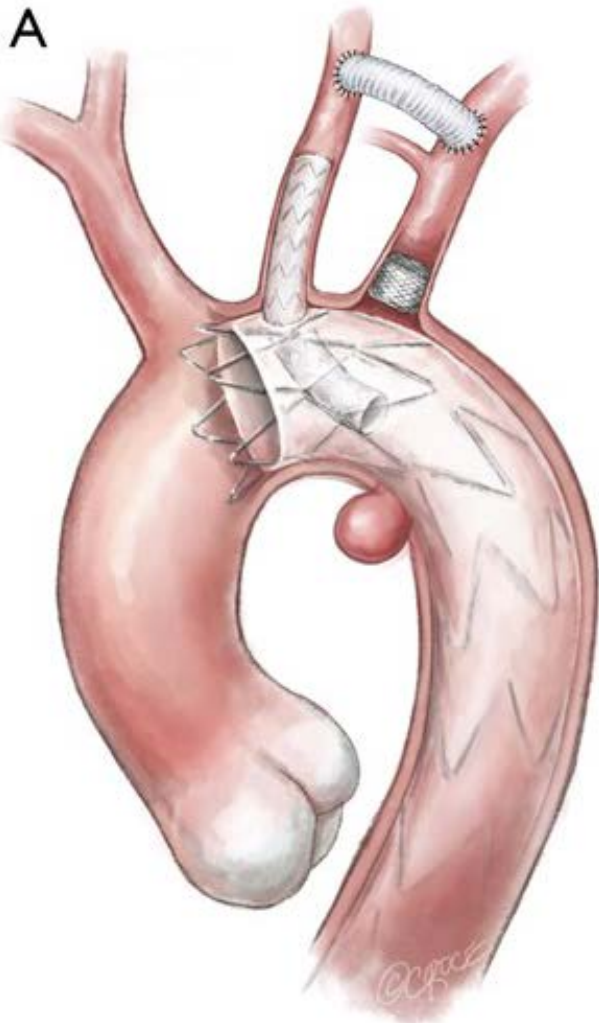


TEVAR, carotid-subclavian bypass

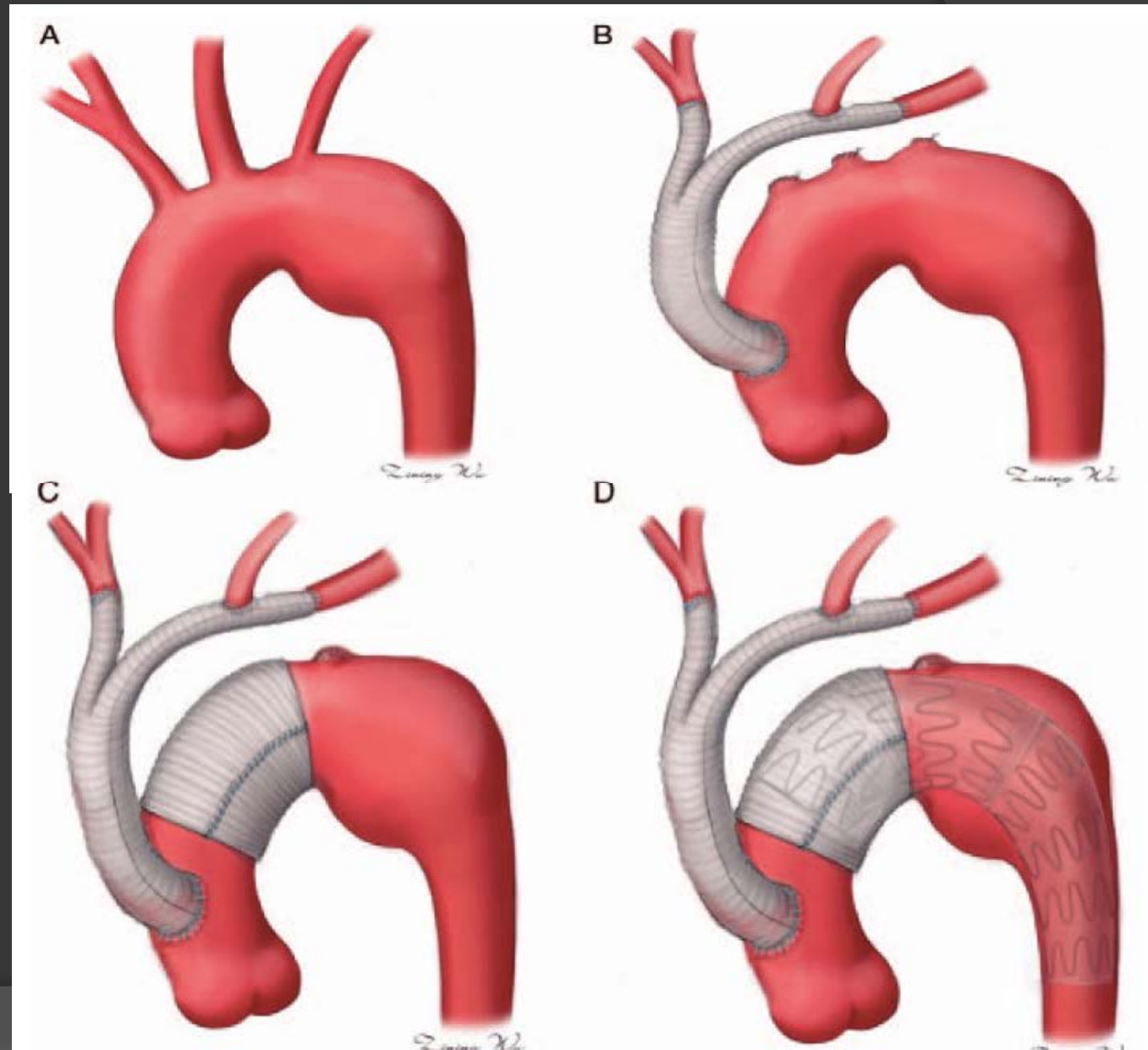


Nature Reviews | Disease Primers

Complicated TEVAR



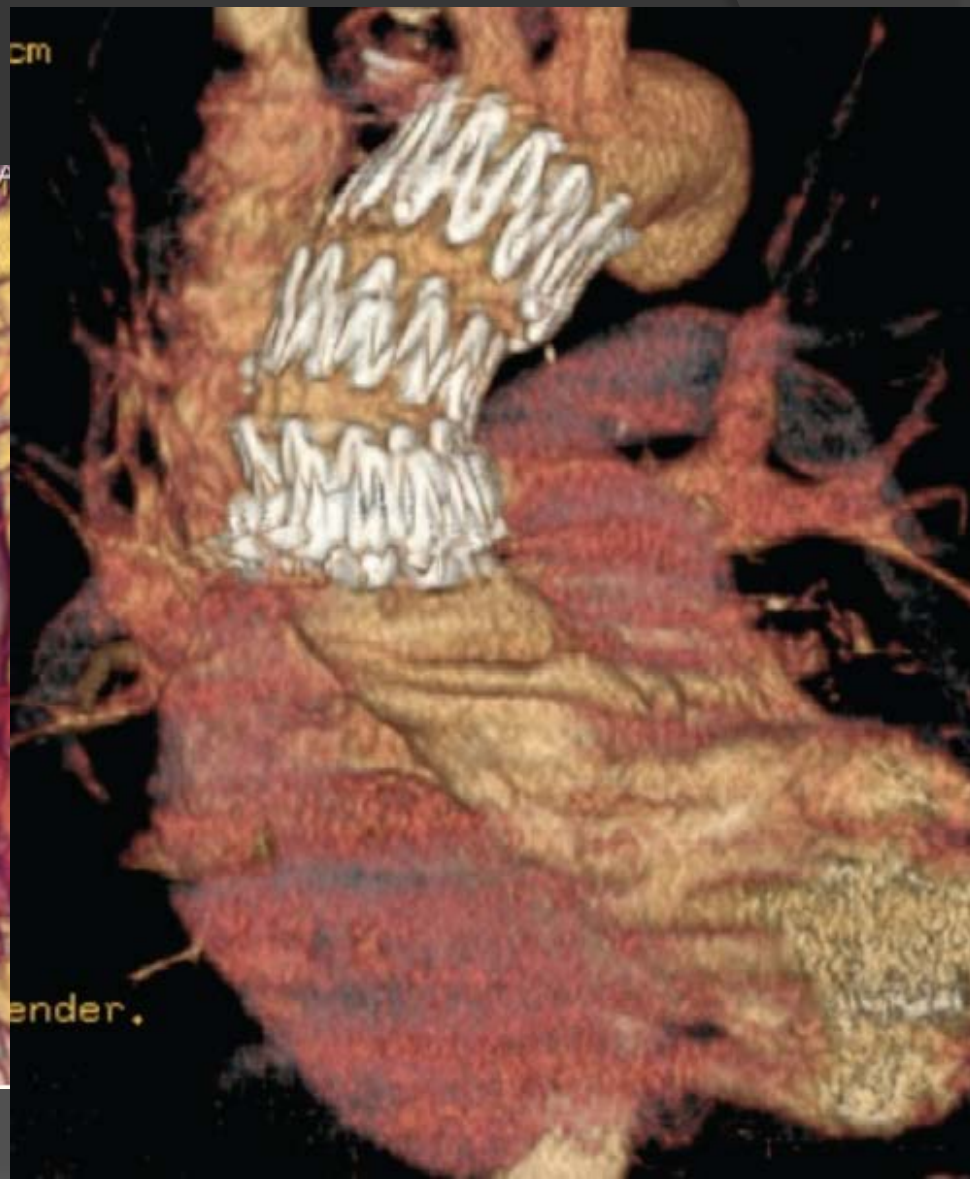
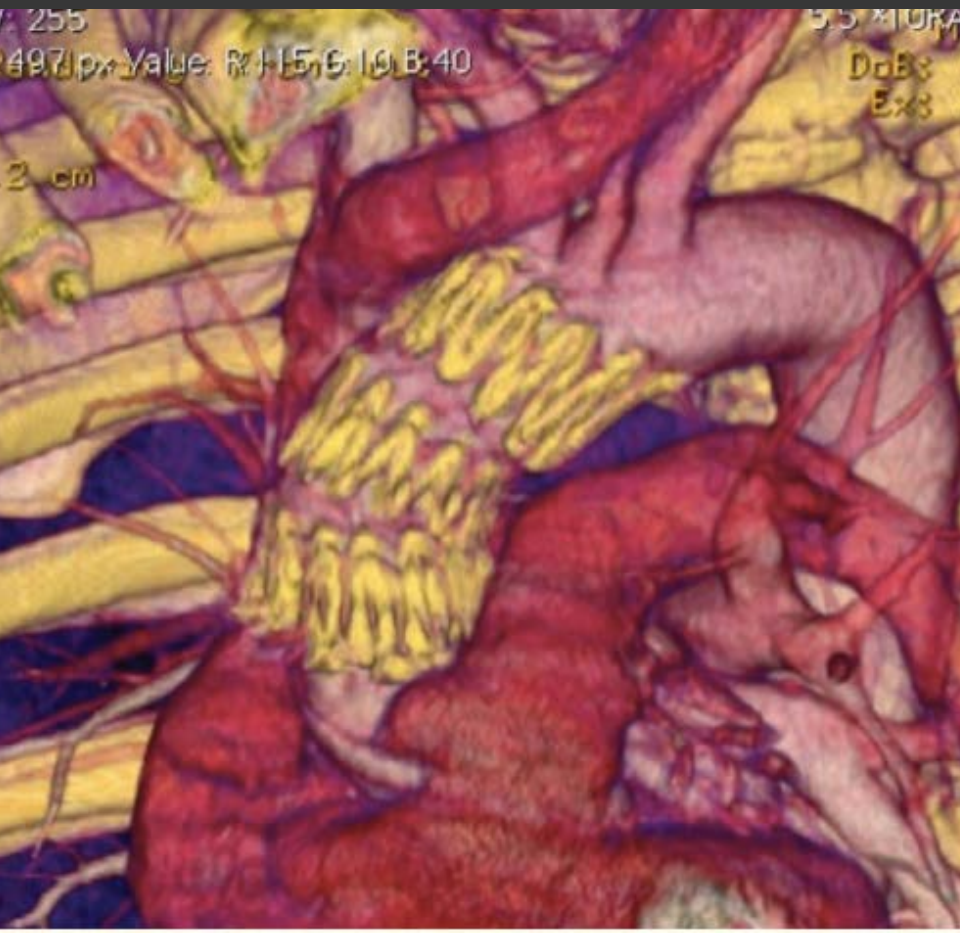
Hybrid options: staged approach



Final Frontier: Ascending Stents

- ◎ Most recent review in 2018: 118 patients worldwide in 46 papers
- ◎ Many limitations
 - Adequate proximal landing zone
 - Distance from tear to coronary ostia
 - Problems with proximal and distal migration

Ascending Aortic Stenting



Ascending Stents

- Type A dissection
- Pseudoaneurysm
- Ascending aneurysm
- PAU
- Acute aortic rupture

Ascending Stents: Outcomes

- ⦿ Mortality 15%
- ⦿ Type I endoleak: 18%
 - Requiring reintervention: 9%
- ⦿ Conversion to open surgery: 3%
- ⦿ Stroke 3%