Combination of BAV, Aorta Aneurysm & Co-A;

What is the best Strategy?

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Conflict of Interest: None

BAV Prevalence is around **1-2** %

Co-A: incidence of **50 of 100.000** births

Congenital BAV is present in around **57%** of the COA cases

Patients with both BAV and COA have an increased risk for developing several **aortic complications** including aortic dissection, AS, AR, and aortic aneurysms.

41% of the patients who had a COA required a valve related re-operation.

14% of the patients require a reoperation somewhere in the adulthood .

Roos-Hesselink JW, Scholzel BE, Heijdra RJ, et al. Aortic valve and aortic arch pathology after coarctation repair. Heart 2003;89:1074-7.

Fernandes SM, Sanders SP, Khairy P, Jenkins KJ, Gauvreau K, Lang P, et al. Morphology of bicuspid aortic valve in children and adolescents. J Am Coll Cardiol. 2004;44(8):1648–51.

A 24 years stable, hypertensive gentleman refer to us with Early fatigue & DOE FC II and:

Co-A with	BAV with	Asc.Aorta Aneurysm with:	LVEF
• PG: 50 mmHg	• Mod. AS/AI • Thick	• Annulus 23 mm • Valsalva sinus diameter 48mm • Asc. Aorta 53mm • Arch 36Thoracic 18	• 40%

Your approach?

Two Stage

- Co-A Stenting Then Root Reconstruction
- Surgical Co-A repair Then Root Reconstruction
- Root Reconstruction then Co-A approach (Surgical/ Endovascular

Single stage

- Root reconstruction & Co-A surgical repair) Sternotomy+ Extra anatomic bypass
- Root reconstruction & Co-A surgical repair) Sternotomy+ Thoracotomy
- Root reconstruction & Co-A surgical repair) Sternothoracotomy

1- Co-A Stenting Then Root Reconstruction

Is common approach

Safe	Two admission
One Incision	More expensive
Less Invasive	Higher recurrence
More Rapid recovery	Limitations

Aortic Hypoplasia

Interrupted aorta

Long segment Co-A

COAST Trial

Circulation. 2015 May 12;131(19):1656-64

- 105 patients
- Safe and associated with persistent relief of aortic obstruction.
- Reintervention is common and related to early and late aortic wall injury and need for re-expansion of small-diameter stents.

Early and Midterm Results Following Interventional Coarctoplasty: Evaluation of Variables That Can Affect the Results

Hossein Ali Bassiri, MD, Seifollah Abdi, MD, Omid Shafe, MD, and Javad Sarpooshi, MD

(Korean Circ J 2017;47(1):97-106)

- 133 patients
- Safe with favorable early and late results
- Most mortalities related to the patients comorbidities not procedure

Int J Cardiol. 2016 Nov 15;223:1025-1034.
A systematic review and meta-analysis of outcomes of transcatheter stent implantation for the primary treatment of native coarctation.

17 reports comprising 561 patients were included.

The lowest Success rate was 77%, the largest study reported 81% using a definition of systolic pressure difference of less than 15mmHg. The pooled estimate of overall success rate was 98%

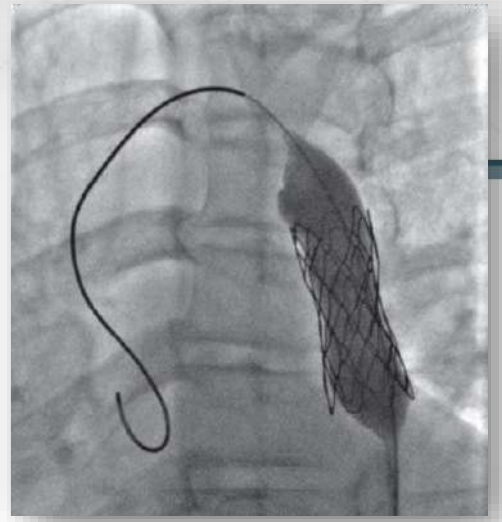
The pooled estimate of rate of complications was 10%

Imaging studies is not routinely performed after percutaneous repair, which results in suboptimal screening for long-term complications

CLASSIC

2-Surgical Co-A repair Then Root Reconstruction

Advantages	Disadvantages
Concomitant surgery	More pain /more bleeding
Durable	Prolonged hospitalization
Good results	Two admission
Excellent Hemodynamic	Higher early mortality



Intervention

Surgery

Higher mortality rates after surgical repair

Higher Reintervention after stent repair.

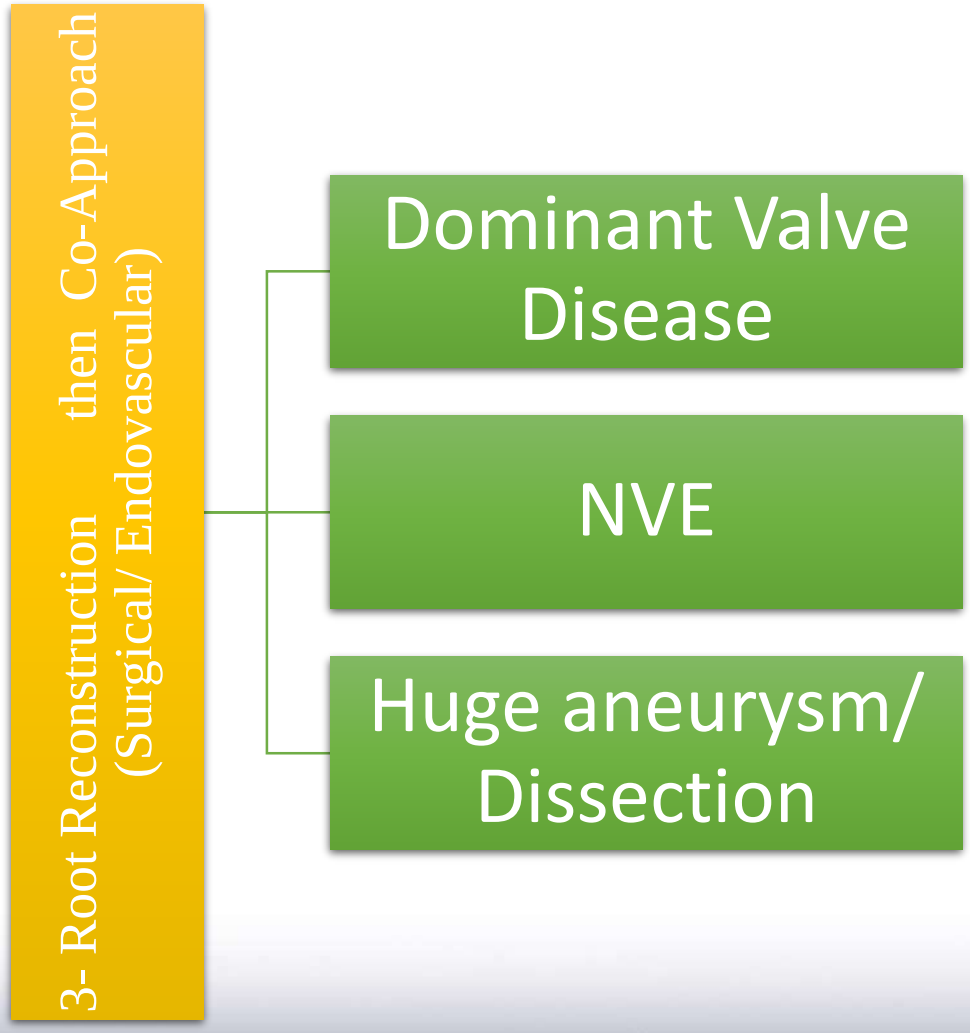
Most reinterventions involve redilatation due to under-dilatation during the initial treatment,

Difficulties with sheath delivery, vascular complications,

Restenosis

Aortic aneurysm formation

Failure to adapt to the growing


3- Root Reconstruction then Co-Approach
(Surgical/ Endovascular)
Dominant Valve Disease
NVE
Huge aneurysm/ Dissection

4-Single stage techniques

Root reconstruction & Co-A surgical repair

Sternotomy+ Extra anatomic bypass

Pros

- Single hospitalization
  Less stress/ less price
- Single Incision/Anesthesia
- Low neurologic problem/paraplegia
- Less bleeding
- Good early and late results

Cons

- Complex
- Not suitable for all
- Intact Co-A tissue /endocarditis risk

Ascending-to-Descending Aortic Bypass: A Simple Solution to a Complex Problem

Sameh M. Said, MD, Harold M. Burkhart, MD, Joseph A. Dearani, MD, Heidi M. Connolly, MD, and Hartzell V. Schaff, MD

Divisions of Cardiovascular Surgery and Cardiovascular Diseases, Mayo Clinic, Rochester, Minnesota

(Ann Thorac Surg 2014;97:2041–8)

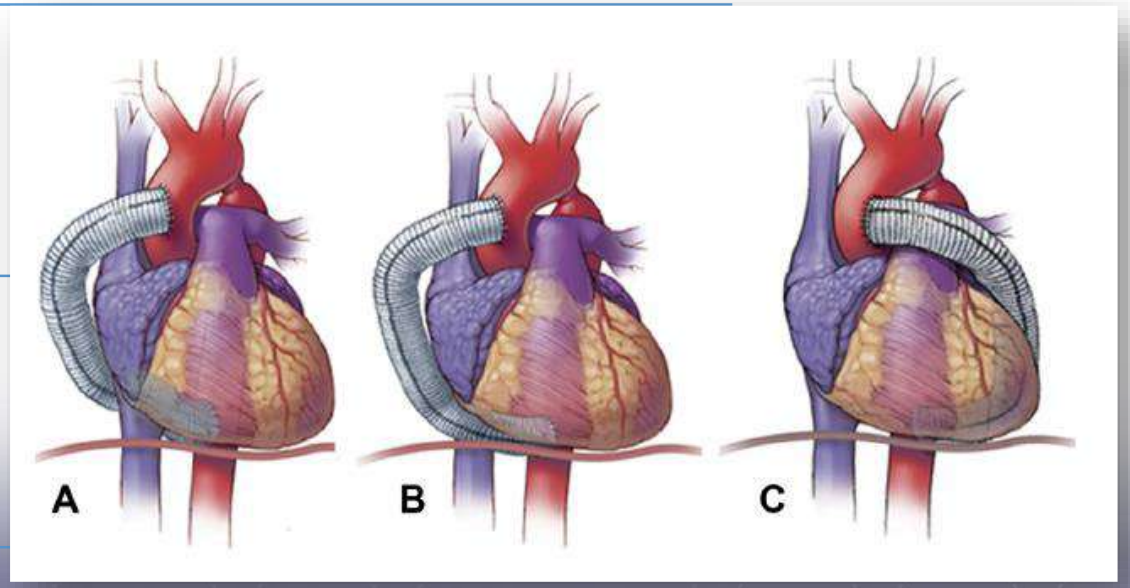
80 cases

The ascending-to-descending aortic bypass can be performed with low morbidity and mortality.

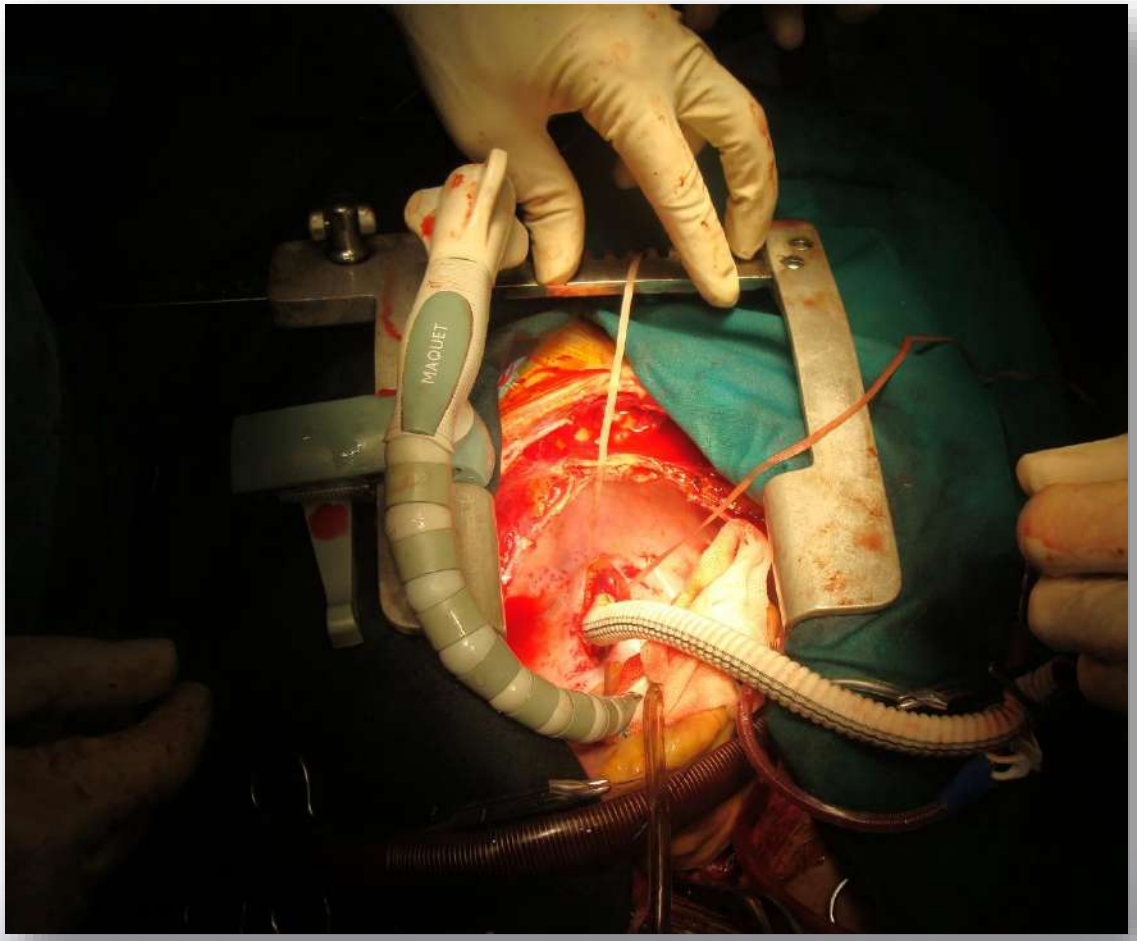
It is an effective solution to complex aortic coarctation

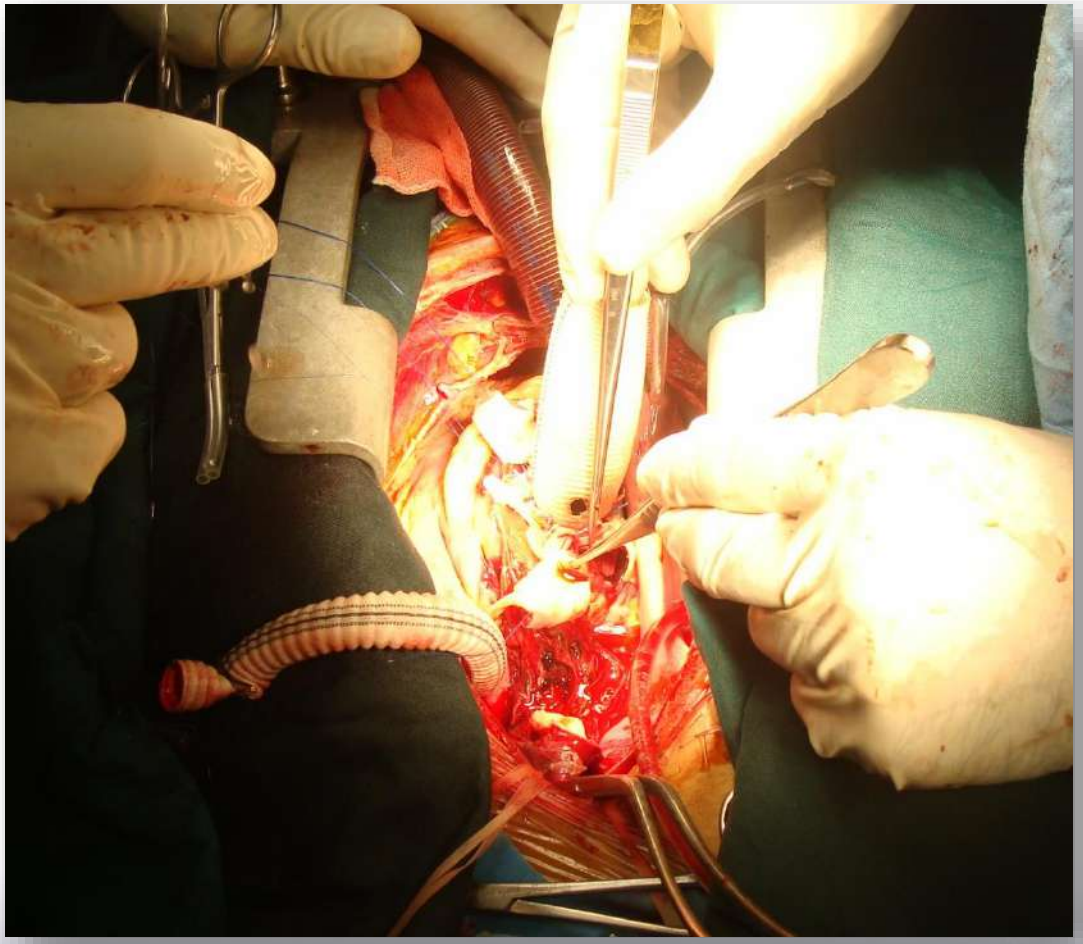
and represents

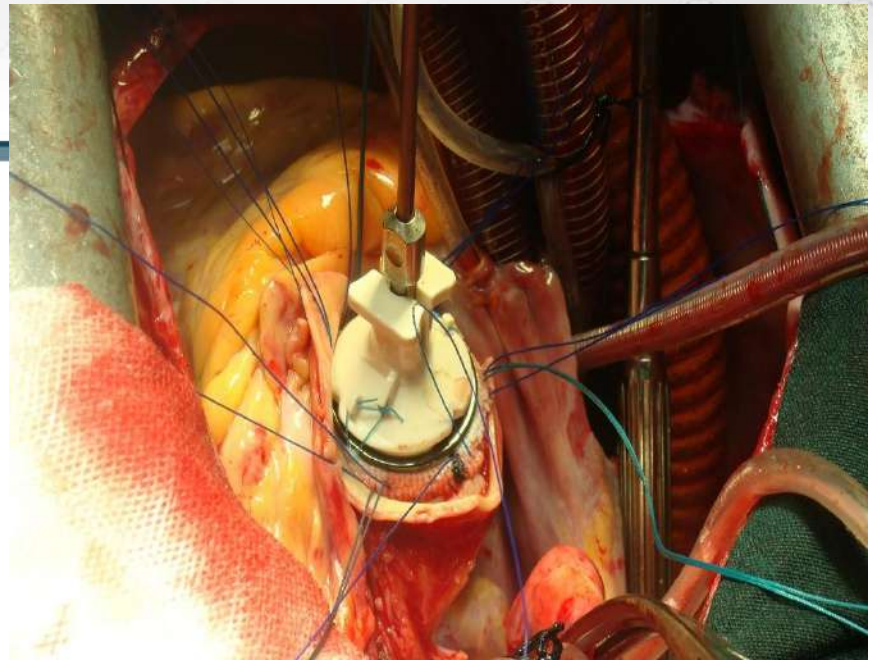
a safe single-stage approach for patients with concomitant cardiac pathology.

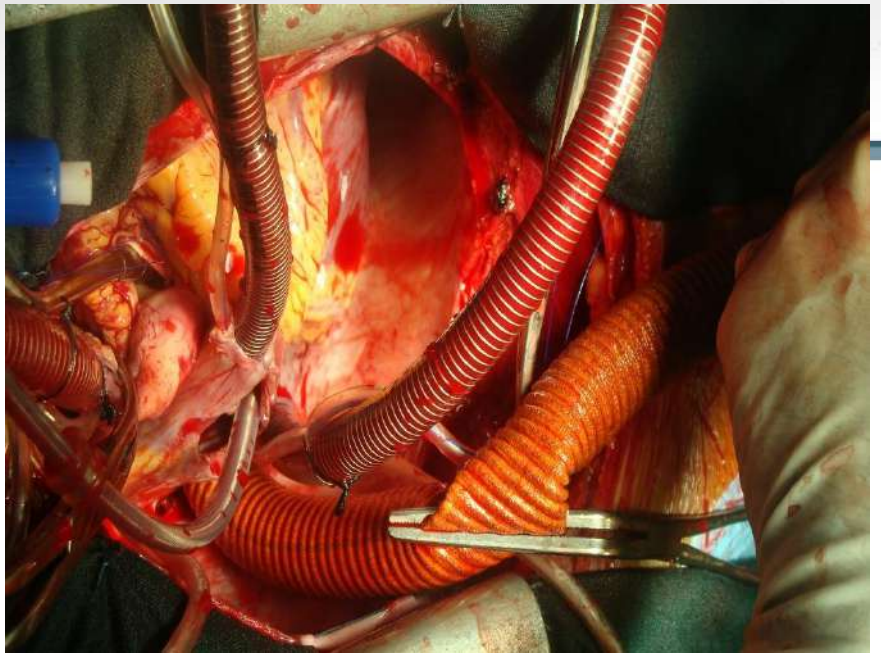


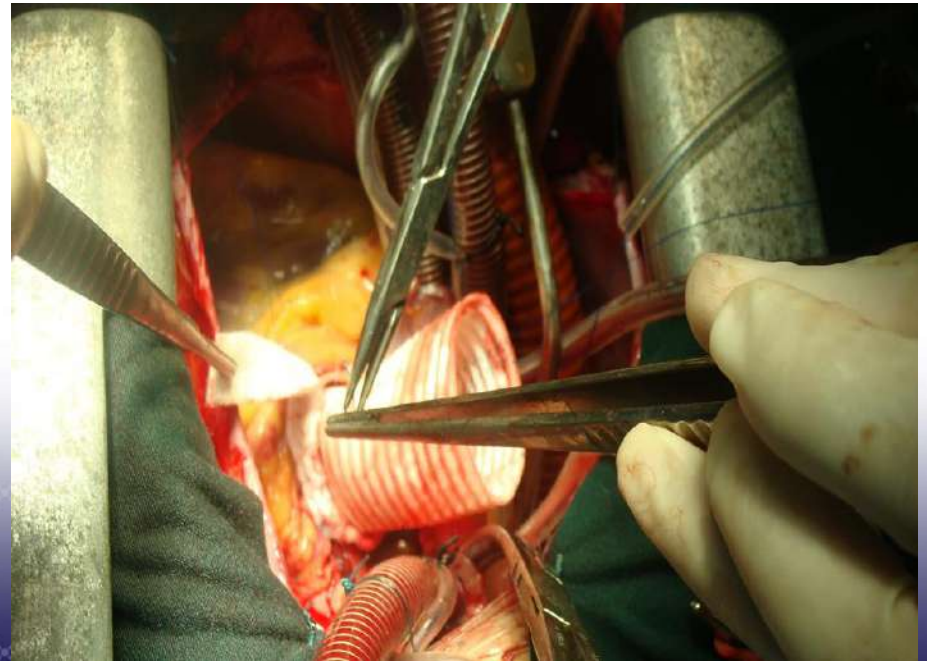
Bentall + left sided Asc to Desc Bypass

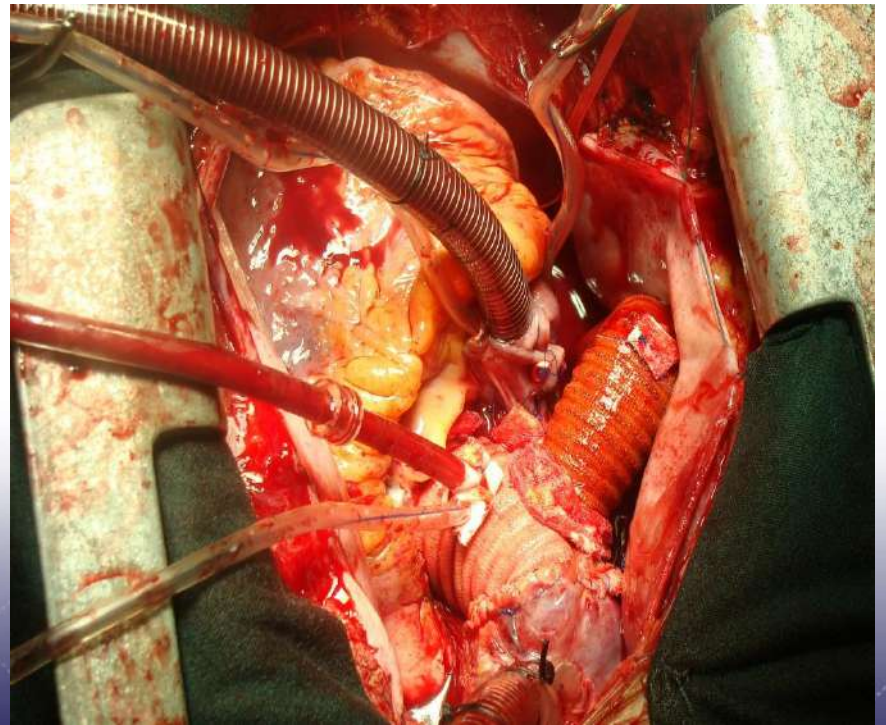












5- Root reconstruction & Co-A surgical repair)
Sternotomy+ Thoracotomy

Very rare condition

A 26 yrs gentleman

Dyspnea FC III

BAV+

SEVER CO-A

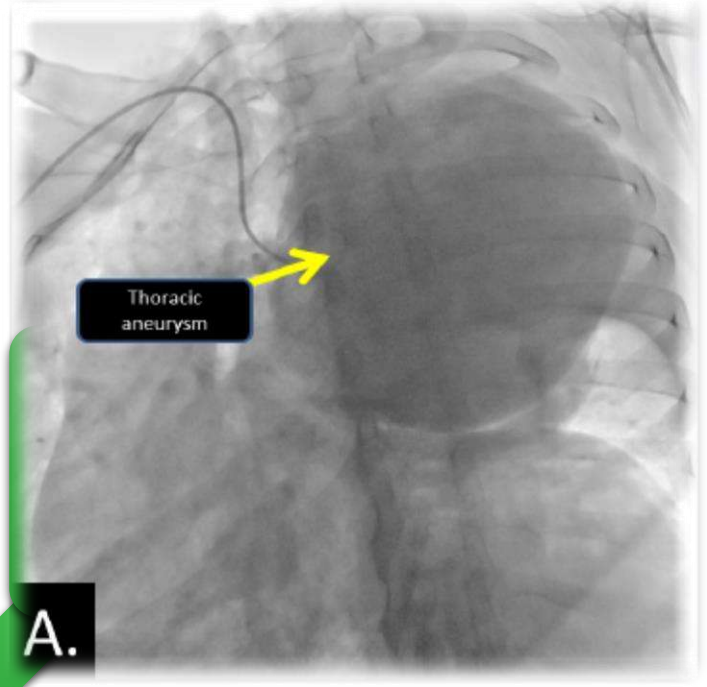
NVE+ large mobile vegetation/Acute AI

Endarteritis+ Large false aneurysm + mobile vegetation

6-Root reconstruction & Co-A surgical repair
Sternothoracotomy

BAV+ AS/AI

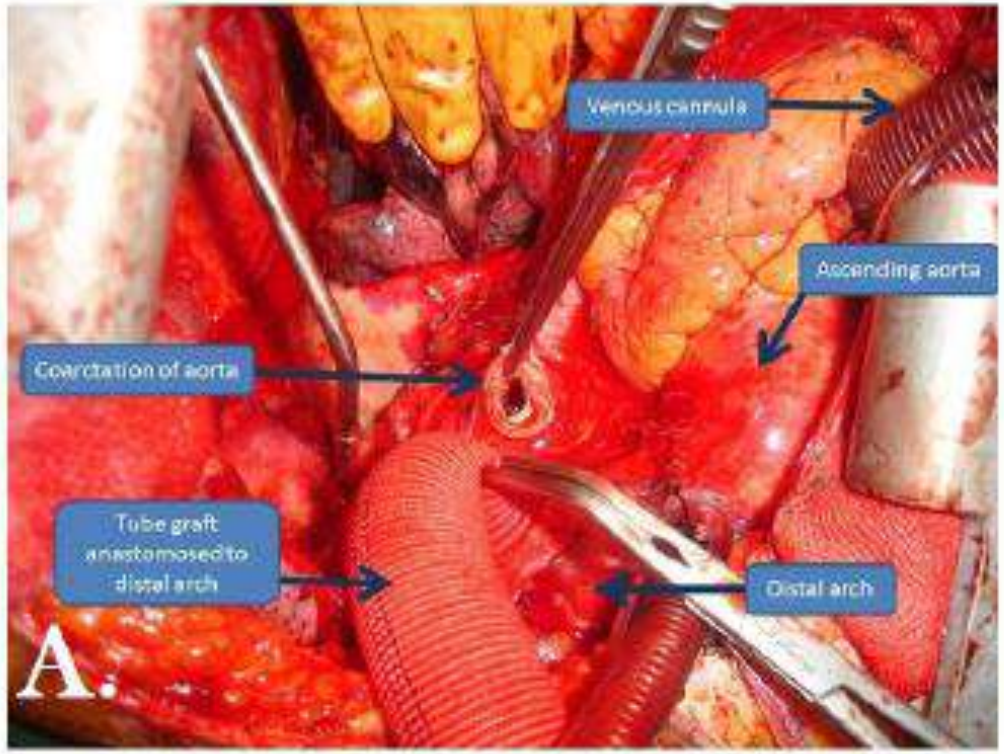
Sever Co-A



A 56 Yrs lady

Rare presentation

Huge proximal thoracic Aneurysm



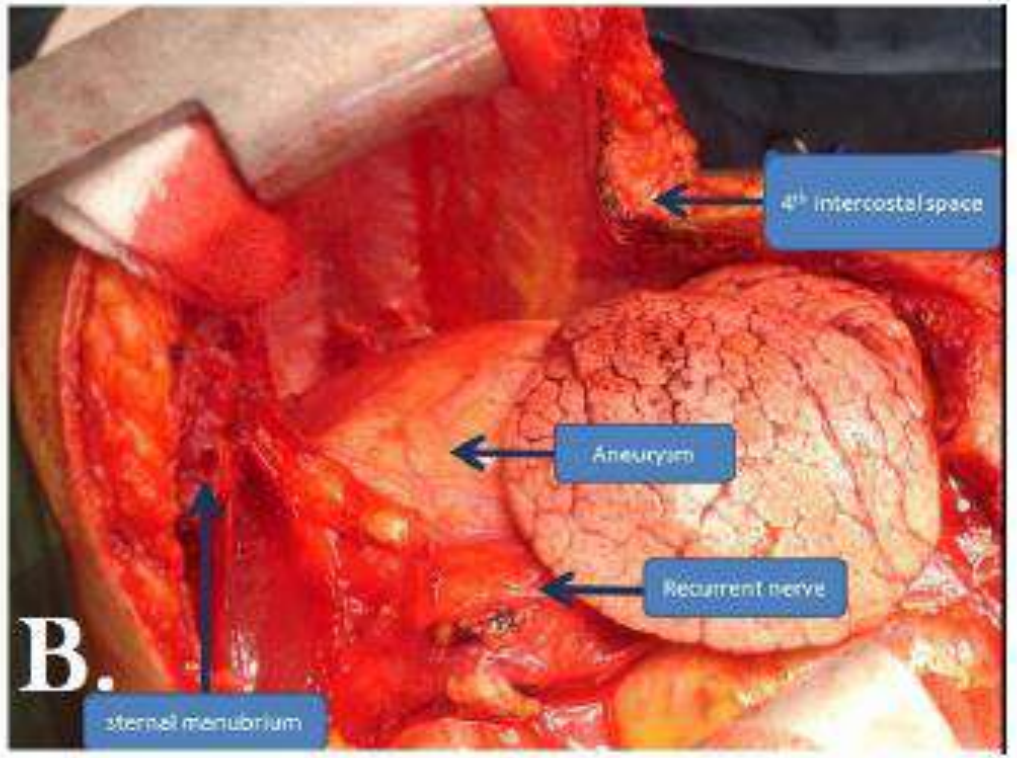


Figure 2: A. Sterno-thoracotomy incision and anatomic relation of the huge aneurysm
B. Proximal anastomosis and coarctation beyond the resected aneurysm

Thank you