# Giant Right Coronary Artery Aneurysm Resection

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## BACKGROUND

- Coronary artery aneurysmal disease is seen in 4.9% of patients who undergo coronary angiography.
- Giant coronary artery aneurysms (CAA) compose a small subset of this pathology, with a reported prevalence of 0.1 – 0.2%.
- No universally accepted definition of giant CAA, though diameters of 20, 40, and 50mm have been proposed.
- Aneurysms > 50mm in diameter carry a prevalence of 0.02%.
- Right CAAs occur more commonly than left.
- CAA formation arises from wall defects in the media, predisposing atherosclerotic vessels to elastic compromise and eventually to aneurysm formation.
- Associated conditions include:
  - Congenital heart disease
  - Connective tissue diseases (Ehlers-Danlos, Marfan syndrome)
  - Vasculitides
  - Autoimmune disease (SLE)
  - Fibromuscular dysplasia
  - Iatrogenic formation (as a complication of PCI)
- Most CAAs are asymptomatic, though patients may present with angina, CHF, MI, tamponade, or sudden death.
- Giant CAAs may present with SVC syndrome or as a misdiagnosed mediastinal mass or cardiac tumor.
- Sequelae include thromboembolic disease, fistula formation, and rupture.

## REFERENCES

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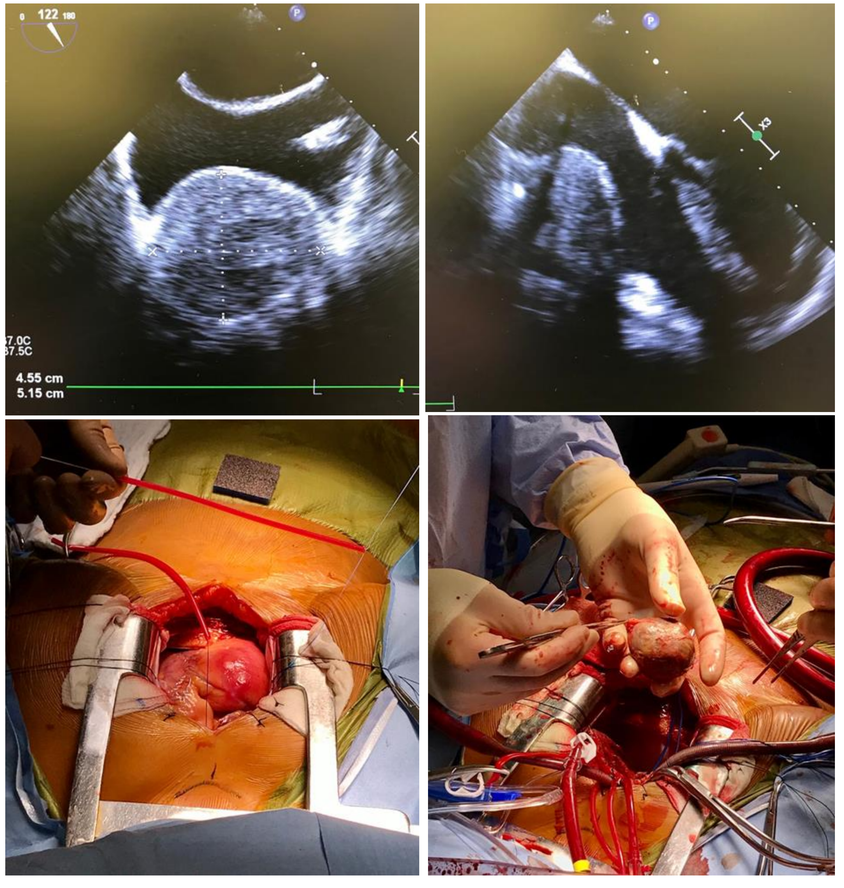
2. Naraen A, Reddy P, Notarstefano C, Kudavali M. *Giant Coronary Artery Aneurysm in a Middle- Aged Woman*. Ann Thorac Surg. 2017 Apr;103(4):313-315.






**Figures 1-2:** Intraoperative TEE showing giant right CAA measuring 52mm x 46mm (Fig 1) with extensive intraluminal thrombus and extracardiac compression of the RA, base of the RV, and tricuspid annulus (Fig 2).

**Figures 3-4:** Surgical approach. Once excised, the aneurysm was measured at 50mm x 80mm in the largest dimension.

## CASE PRESENTATION

- 48yo female with HTN, HLD, obesity, and a giant right CAA of unknown etiology presented for surgical resection of her aneurysm.
- After initial diagnosis of the aneurysm, she was medically managed and remained asymptomatic for 18 years.
- In early 2019, she developed worsening exertional dyspnea with chest pain and was referred for surgical resection.
- General anesthesia was induced with careful attention to maintenance of stable hemodynamics.
- Intraoperative TEE was utilized to guide surgical resection.
- The aneurysm was excised, the RCA was bypassed with a saphenous vein graft, and the patient was successfully weaned from CPB.
- Following surgery, the patient was transferred to the ICU in stable condition.
- Her postoperative course was uncomplicated and she discharged home on postoperative day four.

## DISCUSSION

- Induction of anesthesia and institution of positive pressure ventilation in a patient with a giant CAA can lead to cardiovascular collapse due tamponade-like symptoms, myocardial ischemia, or aneurysm rupture.
- A detailed history and physical examination can provide useful information, however a well-compensated patient in the awake state can rapidly develop hemodynamic instability after induction.
- Reviewing the preoperative echocardiogram allows for evaluation of ventricular function and any pre-existing compression of cardiac chambers.
- Surgical management of symptomatic giant CAAs is generally indicated, however some aneurysms may be amenable to percutaneous techniques.
- Options include aneurysmal ligation plus distal bypass grafting, isolated CABG, aneurysmal plication, and saphenous vein patch repair.
- Percutaneous techniques: aneurysmal-excluding stents and coil embolization.
- In the absence of surgery, many experts support therapeutic anticoagulation/antiplatelet agents to reduce the risk of thromboembolism.