

# Coronary Artery Fistulae: A rare cause of anginal chest pain in adult patients

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## INTRODUCTION

**Coronary artery fistulas (CAF)** communicate directly between a coronary artery and a cardiac chamber or a vessel around the heart. It could be complicated by coronary steal phenomena, especially found with larger fistulas.

They are rare abnormalities, with an estimated incidence of 0.002% in the general population. Approximately 50% of the fistulas were found to arise from the RCA, 42% from the left coronary artery, and 5% from both coronary arteries.

They are usually discovered incidentally.

It is often difficult to identify CAF clinically, and thus, radiological modalities are invariably required for diagnosis and treatment.

## INVESTIGATIVE STUDIES

Initial investigation showed normal cardiac enzymes.

However, ECG stress test on 09/2018 was positive for mild ST segment depression in infero-lateral leads.

CT angiography on 03/2019 initially showed moderate mid LAD plaque.

A transthoracic echocardiogram revealed normal-sized cardiac chambers and normal left ventricular systolic function.

Following these results, PCI was done on 11/2020 (figure 1 and 2), and showed abnormal vascular plexuses from RCA and LAD.

A revision of the CT angiography confirmed the diagnosis to be bilateral coronary artery-to-main pulmonary artery fistulae leading to coronary steal phenomena.

## CASE HISTORY

A 54-year-old female, known case of hypertension, presented to the clinic with complaints of chest pain associated with exertion that's has been on and off for the past 2 years.

There are no other associated symptoms.

She was being treated as a case of coronary artery disease (CAD), where percutaneous intervention (PCI) was recommended to her.



**Figure 1.** Coronary angiography of right coronary artery (RCA)

**Figure 2.** Coronary angiography of left coronary artery (LCA)

## OUTCOME

**Final diagnosis:** Bilateral coronary-pulmonary fistula with signs of coronary steal.

Cardiology team management considered 3 treatment options: conservative, PCI or surgery.

PCI was the first choice, but due to the location of the fistulae (close to the root of the RCA), injury to the RCA could occur, so it was dismissed.

**Final decision:** Start a trail of medical management (nitrates, aspirin, and  $\beta$ -blockers), if failed: surgery would be advised to the patient.

## EXAMINATION

### Vitals:

- **Temperature:** 36.8 °C
- **Pulse:** 86 bpm
- **Respiratory rate:** 18/min
- **BP:** 122/77

### Physical Exam:

- **General:** Conscious, alert, oriented
- **Chest:** clear to auscultation, no wheezes, rales or rhonchi, symmetric air entry
- **Abdomen:** soft, non-tender, non-distended, no masses or organomegaly
- **CVS:** normal rate, regular rhythm, normal S1, S2, no murmurs, rubs, clicks or gallops
- **Lower limb:** no edema

## DISCUSSION/CONCLUSION

- CAF can mimic CAD presentation clinically and the only method to differentiate is radiologically.
- Diagnosis is by percutaneous angiography (PCA) or CT angiography (CTA).
- Management can be conservative, PCI or surgical.
- In this case, all the symptoms and initial investigations presented as a case of CAD, until PCA was done wherein it was discovered to be a case of CAF. As a result, unless certain types of imaging (PCA, CTA) are done, it could be missed and misdiagnosed as a case of CAD.

## REFERENCES

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