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An incidental finding of an aortic ductus diverticulum in a patient with acute coronary syndrome

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A 51-year-old Asian male presented to the Emergency Department having recently returned from India. He had collapsed twice at home and reported tearing, central chest pain which radiated to his back. He was a smoker, with a history of alcohol excess and cocaine use. He had no family history of cardiac disease, no known medical problems, and no history of trauma, infection, or surgery.

Cardiovascular examination and chest radiograph were normal but there was a 17 mmHg difference in blood pressure between both arms. A 12-lead electrocardiogram demonstrated 1 mm inferior ST-elevation and the initial troponin I was >1000 ng/L with a negative D dimer. Before treating for acute coronary syndrome; an urgent non-gated computed tomography was performed and excluded aortic dissection; however, this instead demonstrated a focal bulging in the inferior aspect of the aortic isthmus at the site of the ductus arteriosus, forming an acute angle with the aortic arch (*Figure 1*). The

Figure 1 Computed tomography double oblique sagittal view demonstrating focal bulging of 38 mm by 38 mm in the inferior aspect of the aortic isthmus, at the site of the ductus arteriosus (black arrow).

Figure 2 Three-dimensional reconstruction of aorta demonstrating ductus diverticulum.

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differential diagnosis was an aortic pseudoaneurysm or an incidental ductus diverticulum (*Figure 2*). The patient proceeded with invasive angiography and had successful percutaneous coronary intervention to an acutely occluded left circumflex artery, 8 hours after presentation.

Ductus diverticuli generally form smooth margins and obtuse angles with the aorta. The absence of an intimal flap and haemomediastinum favour this diagnosis.[1] In contrast, pseudoaneurysms are saccular dilatations arising from the aorta with a narrow neck forming an acute angle with the aorta, due to inflammation, infection, or as a complication of surgery. The main risk is of enlargement and rupture and thus they require surgical repair.[2]

While a chronic pseudoaneurysm was a possibility here, the absence of alternate aetiologies and subsequent clinical outcome supports the physiological variant reported. This case highlights the importance of an understanding of anatomical variants in aortic arch structure, in order to prevent inappropriate delay from successful coronary intervention.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

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