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Images in Cardiology

Native coarctation of aorta and large hypertensive patent ductus arteriosus: Management using a covered stent



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A 7-year-old girl, weighing 18 kg, presented with NYHA class III. Chest X-ray showed left lung collapse (Fig. 1). Echocardiography showed large (14 mm) patent ductus arteriosus (PDA) with bidirectional shunt, coarctation (CoA) of aorta with total PG = 22 mmHg with diastolic spill, dilated main pulmonary artery (MPA), and left pulmonary artery (LPA). Normal left ventricular (LV) dimensions were observed. CT angiography showed same findings (Fig. 2A and B). Her catheterization study showed systemic pulmonary artery pressures and high PVRI (14 Woodunits m²). She was ventilated for 36 h. Post ventilation, her chest X-ray improved and echocardiography showed PDA with left to right shunt and pandiastolic flow reversal in arch. She was re-catheterized with significant

reduction in pulmonary artery pressures after balloon occlusion of the ductus (Fig. 3), increased qp/qs to 8:1, and decreased PVRI (2.9 Wood units m²). She underwent covered stenting (Atrium Advanta V12) of CoA and thus the PDA closure too. Post stenting, there was marked reduction in PA pressures (Fig. 3). At 5-year follow-up, she is asymptomatic with echo showing CoA stent in situ, no residual gradient across CoA, with small residual flow PDA, and gradient of 60 mm Hg (systemic pressures of 98/60 mmHg). The case highlights to treat respiratory issues before evaluating such a case and when possible, an effort should be made to treat both the coarctation and PDA simultaneously in one setting with covered stent (Fig. 4).

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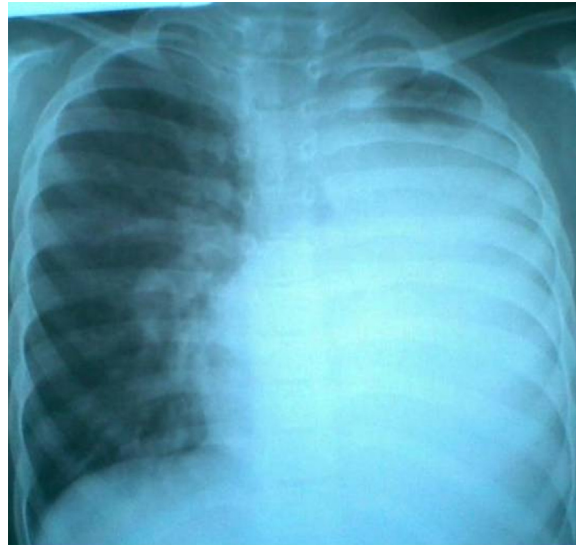


Fig. 1 – Chest X-ray frontal view showing collapsed left lung segment in the patient.

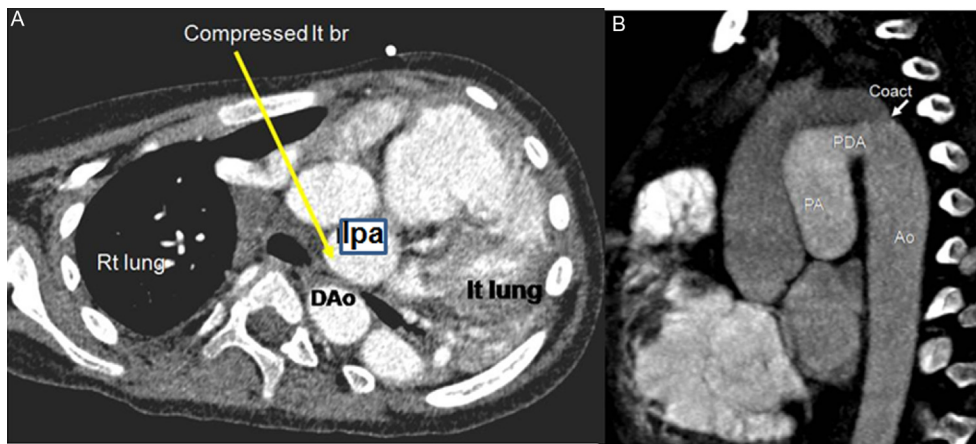


Fig. 2 – (A) Computerized tomography scan in sagittal view showing large patent ductus arteriosus almost the size of the transverse arch. (B) Computerized tomography scan of the axial view showing the compression of the left bronchus by the dilated left pulmonary artery leading to left lung collapse (marked by arrow).

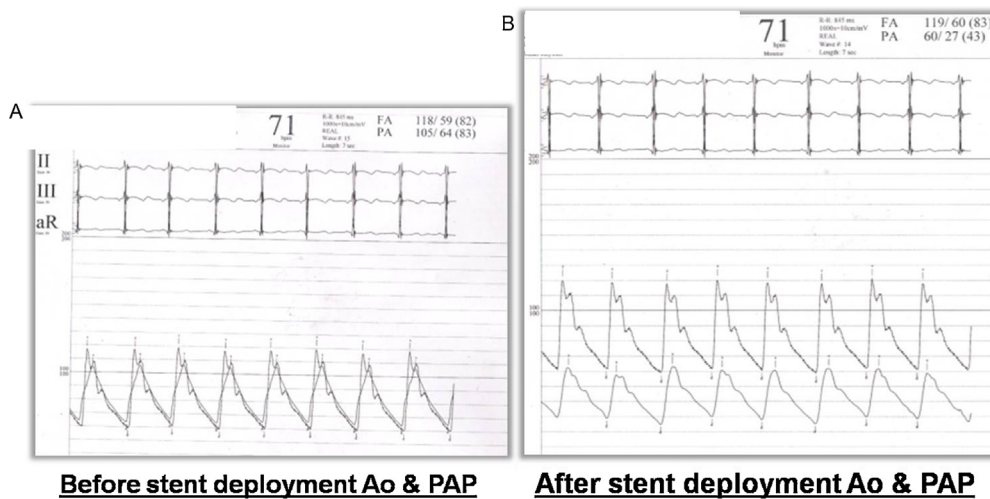


Fig. 3 – (A) Pressure tracing from the pulmonary artery and systemic artery showing systemic pulmonary artery pressures. (B) Systemic and pulmonary artery pressure tracings from the patient after stent deployment showing subsystolic pulmonary artery pressures.

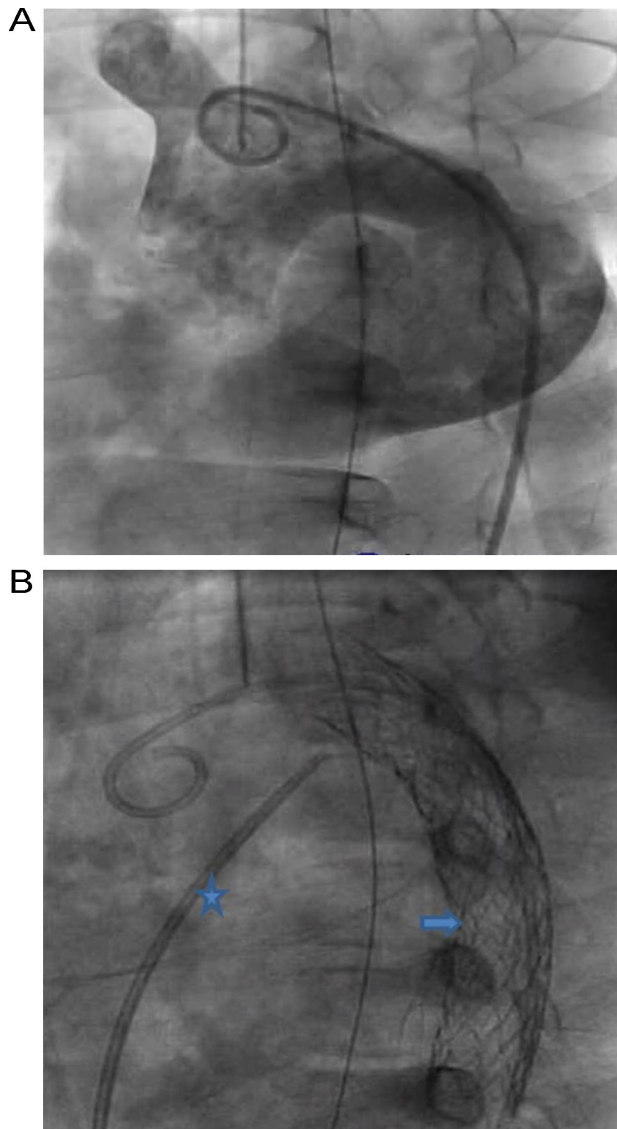


Fig. 4 – The coarctation and PDA simultaneously in one setting with covered stent.

Conflicts of interest

The authors have none to declare.