Newly diagnosed aortic arch interruption in an adult presenting with heart failure

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A 52-year-old man diagnosed in childhood with bicuspid aortic valve (BAV) was admitted with heart failure. Echo showed severe BAV stenosis (Panel A) (gradient 80/50 mmHg, AVA 0.8 cm²), significant LV dysfunction [ejection fraction (EF) 27%, global longitudinal strain — 8%], severe pulmonary hypertension (RVSP ≈ 115 mmHg), and narrowing/interruption of the descending aorta with holodiastolic forward flow in the abdominal aorta (Panel B). CT demonstrated type B IAA-proximal and distal segments of the aortic arch were positioned at 90° relative to each other with a gap of 2 mm between segments at the site of left common carotid artery origin from proximal segment and left subclavian artery origin from distal segment; proximal segment was extended beyond distal aortic arch and distance between interruption edges was 15 mm (Panel C–F, Supplementary material online, Video S1). Multiple collaterals (Panel C, Supplementary material online, Video S1) and ascending aortic dilatation (46 mm) were also visualized. Patient underwent two-stage surgery. On the first day, in the aortic orifice, an SJM Regent 23 mm valve was implanted and supracoronary ascending aorta and arch were replaced by intervascular prosthesis 30 mm, to which cerebral vessels were anastomosed. As preparation of aortic interruption site was unsafe, intervascular prosthesis 20 mm was implanted to the edge of ascending aorta closing its distal end and leaving it in the left pleural cavity. On the next day, left-sided thoracotomy was performed and connection between distal end of previously implanted vascular prosthesis and descending aorta was established (Panel G and H, Supplementary material online, Video S2). 6 months later the patient is in NYHA class I and has good LV function (EF 58%).

Supplementary material is available at European Heart Journal online.