Stent implantation as treatment for coarctation of the aorta with near total aortic occlusion.

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Objective: To determine the safety and efficacy of endovascular treatment of coarctation in the setting of near total vessel occlusion.

Methods: From the total institutional database of 125 patients who had stent implantation for coarctation of the aorta, we identified 27 patients (15 male) over a 10 year period where the occlusion was near total as defined by a minimum aortic diameter of less than 4 mm on angiography. Median age was 18.4 years (range 12.4-61), median weight 65 kg (range 31.1-91kg). All but 2 had native coarctation. Procedures were performed under general anaesthesia with intended final diameter equivalent to the transverse arch or isthmus, whichever was greater. Stents employed were Cheatham Platinum (CP) in 19 of which 5 were covered, self expanding in 3, Intrastent in 1, Palmaz in 1 and LD max in 2. Hand inflation only was employed for balloon mounted stents.

Results: Mean systolic pressure gradient fell from 34±8 (1SD) to 5.5±5 mmHg acutely and mean minimum diameter increased from 2.6±1.2 to 11.9±3 mm. The only procedure related complications were stent migration in two patients and a small dissection into the left subclavian in another which did not extend. One aneurysm was detected on post procedure CT scanning at 6 weeks which was successfully treated with a covered CP stent after a further 2.5 years. 5 patients have undergone successful stent re-dilations and one patient had a further stent implanted for stent fracture. At latest follow up median interval 2.6 range 1.1-9.6 years, none are hypertensive although 12 remain on treatment (monotherapy in 5).

Conclusions: In this age group, expansion to a ‘normal diameter’ of even near total vessel occlusion is readily achieved with a low complication rate. Bare metal stents appear to be safe, however in the absence of robust evidence and considering the consequences of vessel rupture, we would advocate the use of covered stents for near total occlusion.