

## Images in Congenital Heart Disease

# Recanalization of occluded modified Blalock–Taussig shunt using topical recombinant tissue plasminogen activator with balloon angioplasty

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**A** THREE-YEAR-OLD GIRL WITH HETEROTAXY syndrome presented with severe cyanosis of 3 days duration, 14 months after construction of a left Glenn anastomosis and modified Blalock–Taussig shunt, during which a 4 mm Gore-tex graft had been interposed between the right common carotid artery and the divided right pulmonary artery.<sup>1</sup> Emergency angiography (Fig. 1a), demonstrated complete occlusion of the shunt 5 mm beyond its attachment to the right common carotid artery (arrowhead), as well as the aftermath of multiple previous surgical and interventional procedures (repair of totally anomalous pulmonary venous connection, banding of the pulmonary trunk, and attempted total cavopulmonary connection). A Judkins right 1.5 coronary catheter (Create Medic, Yokohama, Japan) and a 0.032" J-shaped Radifocus guidewire (Terumo, Tokyo, Japan) were advanced through the occluded shunt. Lateral view of selective injection into the graft (Fig. 1b) showed thrombi floating in the proximal right pulmonary artery (arrowheads). Recombinant tissue plasminogen activator, in a dose of  $2 \times 10^4$  units/kg, followed by  $5 \times 10^4$  units/kg over 10 min, was given via a 4 French multi-purpose catheter (Mitsuya Medical, Yao, Japan). A repeated angiogram (Fig. 1c) now showed discrete thrombus in the proximal shunt (arrowhead). In order to increase the surface area for more effective thrombolysis, a  $4 \times 14$  mm balloon (INVAtech, Besica, Italy) was

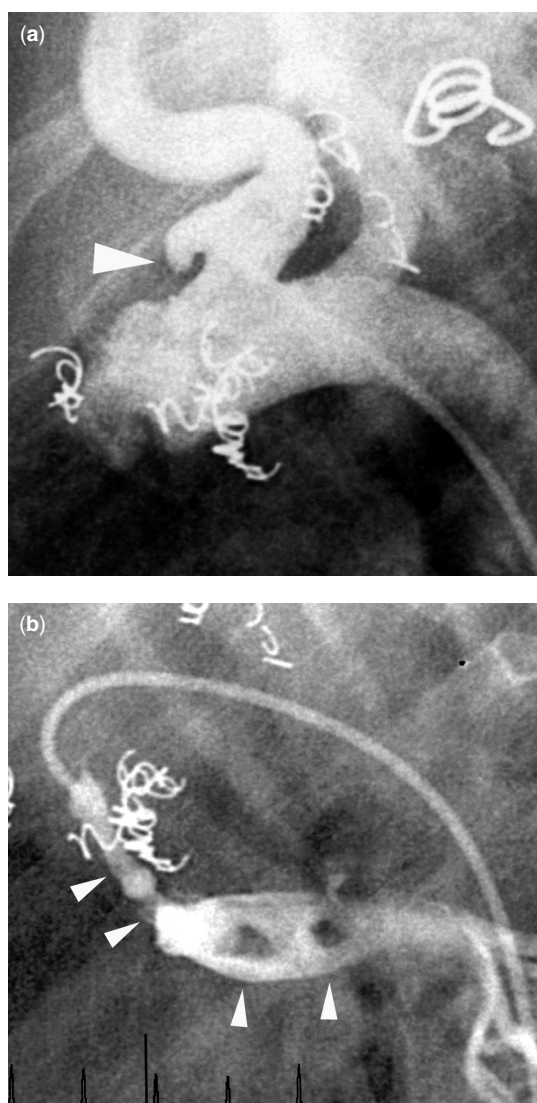


Figure 1.

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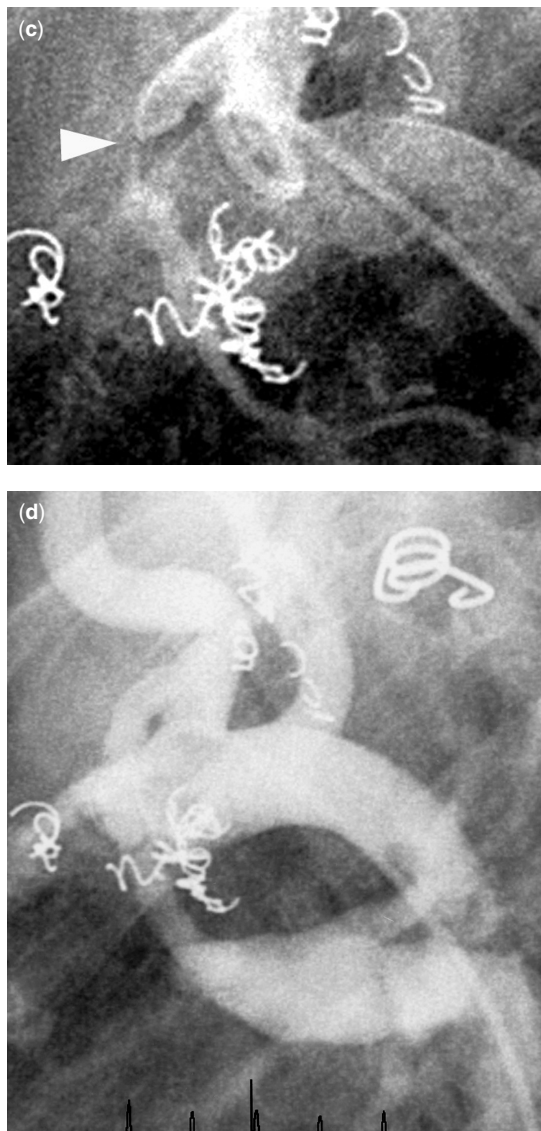


Figure 1.  
(Continued).

advanced over a stiffer guidewire (Miracle, Asahi Intec, Nagoya, Japan) and inflated from proximal to distal four times with 6–12 atmospheres of pressure. As there was still irregularity of the lumen on angiography, another  $5 \times 10^4$  units/kg recombinant tissue plasminogen activator was given over 10 min, and the shunt was again dilated three times with 10–12 atmospheres of pressure. The final angiogram (Fig. 1d) confirmed laminar flow through the graft. Arterial oxygen saturation increased to 80%, with recurrence of a continuous shunt murmur. The patient was maintained on a continuous infusion of heparin at 20 units/kg/h, and was commenced on oral warfarin the following day. A scan of the lungs 4 days later showed no perfusion defect in the right lung, and 2 months after the procedure, the oxygen saturation remains at 75%.

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### Reference

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