The Amplatzer vascular plugs to occlude various shunts in congenital heart disease.

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The Amplatzer Vascular Plugs (AVPs) are self-expandable devices made from a nitinol wire mesh that have been used to occlude various collateral vessels and shunts in congenital heart disease. We report here one centre experience.

From 2004 to January 2013, 65 AVPs were implanted in 53 pts (24 females and 29 males). AVPs were employed to occlude arterial systemic shunts (n = 14), venous systemic shunts (n = 11) mainly in Fontan circulation, arterio-venous fistulas in Rendu-Osler (n = 9), patent vertical vein (n = 8), fenestration (n = 4), Blalock-Taussig shunts (n = 3), coronary artery fistulas (n = 2), VSD (n = 1) and PDA (n = 1).

Mean age of patients was 13.9 ± 10.5 years, mean weight 28.8 ± 11 kg. The AVPs implanted included: Plug I (n = 31, mean size 8.3 ± 4.0 mm), Plug IV (n = 30, mean size 5.6 ± 1.4 mm), and Plug II (n = 4, mean size 17 ± 3.8 mm). Implantation succeeded in all but 3 in whom the plug was retrieved. One patient with PDA underwent surgical ligation subsequently, a second had successful occlusion of a Blalock-Taussig shunt with another plug, and the remaining had complete VSD occlusion with another larger device. One device embolized in pulmonary artery that could be retrieved during the procedure. The fluoroscopic time was 19 ± 10.4 minutes and radiation dose 26 ± 28 Gycm². Full occlusion was confirmed by control angiography, CT scan or echocardiography. During follow-up, no evidence of hemodynamic or vascular compromise was noticed.

AVPs are effective and safe in the percutaneous closure of collateral vessels and shunts. The AVP IV is really appropriate to occlude difficult-to-reach tortuous vessels/shunts using small delivery catheter; it is a good alternative to the classic detachable coil. Plugs I and II are appropriate for occlusion of larger vascular shunts. The choice of AVP is mainly determined by the anatomy and morphology of the shunt.