The use of peripheral premounted Palmaz-Genesis stents in patients with congenital heart disease

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Background: The use of peripheral premounted Palmaz-Genesis stents in patients with congenital heart disease has increased rapidly in the past few years. They are available in diameters of 3-10mm and different lengths up to 8cm. There are no available follow-up data following their implantation in cardiac chambers or vessels. The aim of this study was to assess the utility of those peripheral stents, complications and patient mid-term follow-up.

Methods: Retrospective review of the medical records and catheterizations of all patients who underwent stenting of cardiac vessels or the atrial septum at the Evelina Children’s Hospital, London between Dec 2005-Jan 2010 and the Mitera Children’s Hospital, Athens, Greece, between Nov 2010-Dec 2012. Patients in whom stents were implanted in the arterial duct during a hybrid procedure for hypoplastic left heart syndrome were excluded.

Results: 26 patients with median age of 10+/-3 months and weight 6.5 +/- 2.9 kg underwent implantation of 34 premounted Palmaz-Genesis stents (PMS) during 26 cardiac catheterization procedures. The stents were implanted in branch pulmonary arteries (n=20), atrial septum (n=5), SVC (n=3), patent arterial ducts (n=2), pulmonary valves (n=2), Fontan fenestration (n=1) and Blalock-Taussig shunt (n=1). One patient developed pulmonary haemorrhage due to pulmonary trauma from the edge of the wire. All atrial septum stents have remained in situ. No embolisation or stent migration has been recorded.

There have been no procedure-related deaths. The patients have been followed-up for a median period of 12 +/- 21 months following stent implantation. Intimal proliferation or severe re-stenosis have not been recorded. Two patients have undergone stent re-dilation to match somatic growth. One patient with stent implantation in a branch pulmonary artery has had the stent excised during subsequent surgery.

Conclusions: The use of premounted Palmaz-Genesis stents in patients with congenital heart disease is feasible and effective, avoiding the need for re-operation in patients with branch pulmonary artery stenosis and securing a good size intracardiac or extracardiac communication when mixing between venous and arterial blood is required. The long-term results depend on the patient’s individual anatomy and need for re-operations.