Extended application of the Amplatzer Vascular Plug II for elongated arterial duct occlusion

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Introduction
• PDA occlusion is the second commonest congenital interventional procedure with 592 cases in the UK 2014/2015
• The vast majority of ducts can be closed using coils or the St. Jude ADO1 device
• Tubular, complex and elongated arterial ducts can still pose a challenge
• In these cases the ADO1 aortic retention disc may need to distort to allow capture of the narrowest diameter with the risk of device embolisation

Aim
• To describe the use of the St. Jude, Amplatz Vascular Plug (AVP) II to close non type A arterial ducts in 2 UK centres.

Krichenko classification

Patients
• Between September 2013 and October 2015, a total of 35 patients (24 female) underwent attempted duct occlusion using the AVP II
• Median age was 1.3 years (range 0.46-14.5)
• Median weight was 9.25 kg (range 4-54)
• 11 were born prematurely
• 17 had clinical evidence of large left to right shunt
• 21 had LVEDD z score > 2

Procedures
• All under GA with biplane angiography and percutaneous entry into the femoral artery and vein
• Angiographic projections were RAO and lateral
• Approach was antegrade in 14 patients and retrograde in 21 patients

Duct sizes and types
• Median narrowest diameter 3 mm (range 1.2-7.2)
• Median length 12.5 mm (range 6.2-21)
• Types were A (n=1), C (n=3), D (n=8) and E (n=23)

Results
• AVP II sizes were (diameter times unconstrained length):
  – 6 x 6 (n=11)
  – 8 x 7 (n=21)
  – 10 x 7 (n=3)
• 1 device migrated to LPA and retrieved duct then closed using ADO 1
• 1 device retrieved before release because of unsatisfactory appearance
• Remainder complete occlusion with no flow disturbances in adjacent structures

Type E duct in a 5kg male before and after occlusion with an 8 x 7 AVP II

Type D duct in an 8.5kg male before and after occlusion with an 8 x 7 AVP II

Conclusions
• It is essential to carefully consider duct morphology before selecting a device
• In tubular, complex and elongated ducts (often found in ex-prems.) the AVP II performs well and should be a first line choice

References