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Percutaneous Access to atrial mass in following TCPC surgery (Modified Fontan) for single ventricle physiology

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Introduction: The final palliation for single ventricle physiology these days utilises the surgical technique of Total Cavo Pulmonary Connection (TCPC) using a ptfe conduit between the inferior caval vein and the

pulmonary arteries. Entry into the LA mass through the conduit is not easy, sometimes impossible and not without risk. We describe a technique to enter the atria mass (AM) from the right internal jugular vein, usually using a transeptal needle.

Method: The procedure is carried out under general anaesthesia and with TEE guidance.

Angiography is carried out simultaneously from the superior caval vein and the left atrium. This helps with the puncture site, direction of needle and distance between the PA and AM.

Results: We carried out this procedure in 6 patients, 5 children and 1 adult. The ages of the children ranged

from 4 to 11 years and the adult was 30 years old. In 4 of the cases, the procedure was mainly carried out to create a stent fenestration, 2 within weeks of the TCPC and 2 much later for protein losing enteropathy (PLE). In 2 patients, concomitant IVC/conduit anastomosis stenting was carried out one with a CP stent and one with an Optimus stent because of documented stenosis. One older child required access to the AM for electrophysiology and radio frequency ablation and the adult patient required a permanent transvenous atrial pacing lead.

The procedures were all successful. In one patient, there was early closure of the stent fenestration and this was initially managed with i.v. TPA and once flow was reinstated, the stent was dilated with a balloon and has remained open and with no recurrence of the PLE.

Conclusion. Access to the AM in TCPC Fontan is increasing, in part as this population is rising, they are living longer and hence will develop problems with age. Although we have used this technique safely and showed proof of concept for fenestration, permanent transvenous pacing and for arrhythmia therapy, other indications will arise in future.