

## CO 2

## Improved ventilation and hospital stay in premature babies after transcatheter closure of patent ductus arteriosus as compared to surgical ligation: A multi-center comparative study



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**Background** Patent ductus arteriosus (PDA) is very common in extremely low birth weight babies and may contribute to prolonged mechanical ventilation, bronchopulmonary dysplasia, renal failure, periventricular leukomalacia and necrotizing enterocolitis. When PDA closure is indicated with failure of medical therapy (cyclooxygenase inhibitors or paracetamol), surgical ligation is usually performed with excellent results. Transcatheter closure has been recently developed with promising results but comparative studies with surgical ligation are lacking.

**Objectives** To compare results and outcomes after transcatheter closure using the Amplatzer Piccolo device versus surgical closure in 2 matched groups of pre-term infants weighing  $\leq 3000$  g.

**Methods** One hundred and forty seven babies (3 tertiary centres) were retrospectively analysed. Sixty-four patients who underwent transcatheter closure were compared with 83 matched surgical patients, using Wilcoxon signed-rank tests.

**Results** PDA closure was successful in all surgical and transcatheter cases. During NICU course, mortality was 6.3% ( $n=4$ ) after transcatheter closure and 12% ( $n=10$ ) after surgery ( $P=0.24$ ). Median duration of mechanical ventilation was shorter after transcatheter closure than after surgical ligation (3 vs. 5 days,  $P=0.035$ ). In babies undergoing duct closure before 4 weeks of age the difference between transcatheter and surgical closure for mechanical ventilation during the NICU course was even more pronounced (3 vs. 9 days,  $P=0.022$ ). When transcatheter closure was performed before 4 weeks, babies were discharged home earlier as compared to those who underwent closure later in life (39 + 1 vs. 41 + 5 weeks,  $P=0.021$ ). Such difference was not found in the surgical group.

**Conclusion** Transcatheter PDA closure in low birth weight babies is safe, effective and associated with improved mechanical ventilation as compared to surgery. It may offer shorter hospital stay when performed earlier in life.

**Keywords** Patent ductus arteriosus; Preterm; Transcatheter closure; Piccolo device

**Disclosure of interest** Alban-Elouen Baruteau and Alain Fraisse are proctors for Abbott Medical. The other authors declare that they have no competing interest.

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## CO 3

## Liver stiffness: A useful tool in the longitudinal follow-up of patients with Fontan circulation



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**Background** Liver diseases usually appears after a Fontan operation (FO), often without obvious clinical features, but it may lead to life-threatening complications.

**Objective** We aim to assess the usefulness of the liver stiffness (LS), assessed by transient elastography (TE), in the follow-up of Fontan patients.

**Material and method** In our center, patients with a Fontan circulation (FC) were prospectively evaluated since 2012 through an annual work up including physical examination, laboratory tests, transthoracic echocardiography and TE. This work up was also performed in case of clinical complications, which were classified as follows: cardiac complications (including arrhythmias or catheter interventions) and subdiaphragmatic complications (including clinical sign of portal hypertension (PH) or protein losing enteropathy (PLE)).

**Results** Forty-eight patients (21.7  $\pm$  8.2 years of age and 9.7  $\pm$  6.5 years post-Fontan) were included, 28 of them (58%) had least two LS measurement. Mean time between first and last LS measurements was 3.27  $\pm$  1.9 years. Mean LS at baseline was 15.3  $\pm$  6.9 kPa (4.3–47.2 kPa) No correlation was found between LS and age ( $r=1$ ,  $P=0.73$ ), or time since FO ( $r=0.3$ ,  $P=0.64$ ). LS did not vary regarding the presence of a fenestration (15  $\pm$  6.8 vs. 15.1  $\pm$  6.7 kPa,  $P=0.82$ ). During the follow-up, a clinical complication occurred in 19 patients (39.6%) including 8 cardiac complications and 11 subdiaphragmatic. Among the subdiaphragmatic complications group, 3 had PLE and 8 developed PH. LS was significantly higher in patient with liver complication (17.2  $\pm$  7.7 vs. 13.8  $\pm$  5.9,  $P<0.01$ ). Patient with an increasing LS value during the follow-up had a higher complications rate than patients with a decreasing or unchanged LS (4/11 (36%) vs.  $n=5/17$  (29%);  $P<0.04$ ).

**Conclusion** LS measurement using TE is a good tool for the non-invasive follow-up of patient with FC. Indeed, a significant elevation of the LS is associated with the occurrence of liver and/or cardiac complications.

**Keywords** Univentricular disease; Liver disease; Fontan circulation; Liver stiffness; Elastography

**Disclosure of interest** The authors declare that they have no competing interest.

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