Pre-BT ACA peak systolic (0.37 m/s) and mean velocity (0.19 m/s) decreased significantly post-BT (0.32 and 0.16 respectively; p < 0.01). There was no significant change in RI (p = 0.57) and PI (p = 0.53) in the ACA and SVC flow (p = 0.16) post-BT.

The cerebral HbO2 increased significantly (mean difference 12.53 μM; p < 0.001) post-BT. The pre-BT mean cerebral tissue oxygenation index (TOI) (66.5%) increased significantly post-BT (73.6%; p < 0.001).

Conclusion The cerebral blood flow velocity decreased but there was no change in SVC flow volume; cerebral tissue oxygenation improved following BT during the 2nd to 4th week of life in preterm infants.

Background and aim The need for ligation of a patent ductus arteriosus with a haemodynamically significant left to right shunt (hPDA) on echocardiography remains controversial. Aim was to determine echocardiographic and clinical differences of preterms with hPDA after ibuprofen therapy who underwent ligation and those who had no further intervention.

Methods Echocardiographic and clinical parameters of preterms with hPDA (< 30 weeks of gestation) were retrieved for the “ligation group” before surgical ligation and for the “non-ligation group” after the last ibuprofen cycle. Recruitment criteria for hPDA were an enddiastolic maximal velocity of the left pulmonary artery (LPAdia) ≥ 0.2 m/s and/or a ratio of the left atrium/aorta (LA/Ao-ratio) ≥ 1.4. Preterms who died before ligation/ductal closure were excluded.

Results In 53 of 461 preterms a hPDA was still present after ibuprofen. Thirty-nine preterms were included to the “ligation-group”, 14 to the “non-ligation group”. Significant differences were detected for diastolic and systolic blood pressure, LPAdia, LA/Ao-ratio, stroke volume, backward flow in the aorta abdominals and the period until total enteral nutrition. Further differences were detected in airway support, hPDA flow patterns, gestational age, intraventricular haemorrhage and necrotising enterocolitis before and after ductal closure.

Conclusions The hPDA of the “ligation-group” was haemodynamically more relevant and preterms were more morbid than in the “non-ligation group”. The observed differences reflect our policy of constraining the need for ligation a hPDA on echocardiography to selective ligation subject to both the severity of echocardiographic findings and the hPDA’s clinical impact.