TTTS: umbilical artery Doppler in donor survivors at one week from endoscopic laser

Objective
To examine the clinical significance of umbilical artery Doppler changes in donor survivors at one week from endoscopic equatorial laser for twin-to-twin transfusion syndrome (TTTS).

Methods
The study population comprised 125 consecutive monochorionic diamniotic twin pregnancies with severe TTTS undergoing endoscopic laser treatment using the equatorial technique at our Centre. Prenatal ultrasound data, procedure-related details and postnatal outcome were recorded and analysed. Umbilical artery end-diastolic flow (UA EDF) was classified as positive (normal) and absent or reversed (abnormal). For the definition of selective fetal growth restriction (s-FGR) we considered the co-existence of an abdominal circumference (< 22 weeks) or estimated fetal weight (> 22 weeks) < 5th percentile and an inter-twin estimated weight discordance of > 25%.

Results
On the total of 125 donors, 21 (16.8%) died within one week from laser treatment and 26 (20.8%) thereafter, for an overall survival at hospital discharge of 62.4%. Of the 104 donors surviving at one week from the procedure, the umbilical artery end-diastolic flow (UA EDF) remained positive (Group A) in 71 (68.3%) cases, it became positive (Group B) in 21 (20.2%) and it was persistently absent or reversed (Group C) in the remaining 12 (11.5%) fetuses. Therefore, UA EDF did not change after treatment in 12 (36.4%) of 33 cases with preoperative abnormal findings. The incidence of s-FGR was significantly lower in Group A (15.5%) compared with Group B (42.9%) and Group C (66.7%), and postnatal survival in the three groups was 84.5%, 71.4% and 33.3%, respectively. The UA EDF became positive at one week from laser treatment in 9 (52.9%) of 17 donors with preoperative abnormal Dopplers and s-FGR.

Conclusion
In more than one third of donors with preoperative abnormal umbilical artery Doppler there was persistence of this finding at one week from endoscopic laser and, in this group, the proportion of cases with co-existing s-FGR was very high. Post-operative ultrasound re-assessment of umbilical artery Doppler can differentiate hypovolemic from hypoxemic growth-restricted donors and provides clinically useful prognostic information.