

Placental Pathology, Birthweight Discordance and Growth Restriction in Twin Pregnancy; Results of the ESPRiT Study

E Kent¹, F Breathnach¹, J Gillan, F McAulliffe², M Geary³, S Daly⁴, JR Higgins⁵, J Dornan⁶, J Morrison⁷, G Burke⁸, S Higgins⁹, S Carroll², P Dicker¹, F Manning¹ FD Malone¹

¹Royal College of Surgeons in Ireland, ²National Maternity Hospital, ³Rotunda Hospital, ⁴Coombe Women and Infants University Hospital, ⁵Cork University Maternity Hospital, ⁶Royal Victoria Maternity Hospital, ⁷National University of Ireland, Galway, ⁸Regional Maternity Hospital, Limerick, ⁹Our Lady of Lourdes Hospital, Drogheda

Objective:

To evaluate the association between placental histological abnormalities and both birthweight discordance and intrauterine growth restriction in twin pregnancies.

Study Design:

In a multicenter prospective study evaluating growth in structurally normal twin pregnancies consent was obtained for detailed placental examination. Placentas were examined for evidence of infarction, retroplacental haemorrhage, chorangioma, subchorial fibrin or abnormal villus maturation. Birthweight (BW) discordance was defined as >20% and small for gestational age (SGA) as birthweight <10th centile. Frequency of placental abnormalities was compared in BW discordant and concordant twins and in SGA and appropriate for gestational age controls. Results were stratified by chorionicity.

Results:

668 twin pairs were studied, 21.1% monochorionic (MC) (n=141) and 78.9% dichorionic (DC) (n=527). Overall 34.7% of placentas demonstrated one or more of the placental lesions evaluated. Histological abnormalities were seen more frequently in placentas of smaller twins of BW discordant pairs (44.7% vs 33.8%, p=0.02) and in placentas of SGA infants (57.8% vs 33.1%, p=0.0001) when compared to controls. The association of placental abnormalities with both BW discordance and SGA was significant for dichorionic twins (p=0.01 and 0.0001 respectively). No such association was seen in MC twin pregnancies.

Conclusion:

In a large, prospective, multicenter study, we observed a strong relationship between abnormalities of placental histology and BW discordance and growth restriction in DC, but not MC twin pregnancies. This study provides further evidence for the differing etiologies of growth abnormalities in MC and DC twins.