

Perinatal outcome in fetal weight discordance with normal umbilical artery Doppler in twin pregnancy



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Objective

The aim of this study was to compare the perinatal outcome between fetal weight discordance (FwD) with fetal weight concordant (FwC) twins.

Methods

This was a retrospective case-control study of twin pregnancy over a 11-year period in a tertiary referral center. For each discordant twin pairs, it was selected 2 controls of concordant twin pairs matched for gestational age at delivery (GAD) and chorionicity. The inclusion criteria were: estimated fetal weight (EFW) discordance $\geq 20\%$, normal umbilical artery Doppler (figure 1), absence of fetal malformation or chromosomal abnormalities, known chorionicity, diamniotic pregnancies, both fetuses alive at the first assessment, absence of monochorionic (MC) complications, delivery in our institution. Fetal growth restriction (FGR) was defined as EFW < 10 th percentile. The perinatal outcomes considered were: GAD, length of hospital stay (LOS), admission to the neonatal intensive care unit (NICU), length of NICU stay, need for ventilator support, intraventricular hemorrhage (IVH), jaundice, necrotizing enterocolitis (NE), sepsis, intrauterine and neonatal death. Perinatal outcome comparisons between FwD with FwC were also analyzed according to chorionicity. In addition, perinatal outcome was compared between FwD with and without FGR. Statistical significance was set at $p < 0.05$.

Table 2. Comparison of perinatal outcome between FwD with FGR in at least one twin and FwD without FGR in at least one twin.

Perinatal Outcomes	Discordant Twins		p
	Both twins EFW \geq p10 (n=42)	At least one twin EFW $<$ p10 (n=62)	
GAD – weeks; mean \pm SD	36.44 \pm 1.20	34.94 \pm 2.37	.010*
BW–grams; mean \pm SD	2481.40 \pm 251.5	1877.82 \pm 603.28	<.001*
LOS – days; mean \pm SD	6.64 \pm 5.57	19.52 \pm 20.65	<.001*
NICU – N (%)	5 (11.9%)	26 (41.9%)	.001#
Length of NICU stay; days-median (Minimum-Maximum)	3 (1 - 18)	12 (1 - 23)	.041#
VS – N (%)	1 (2.4%)	8 (12.9%)	.080 [§]
Length of VM; days-median (Minimum-Maximum)	4	4 (2 - 26)	.999 [∞]
IVH - N (%)	0 (0%)	9 (14.5%)	.010 [§]
NE - N (%)	0 (0%)	3 (4.8%)	.271 [§]
Jaundice - N (%)	21 (50%)	41 (66.1%)	.100#
Retinopathy - N (%)	0 (0%)	0 (0%)	-
Sepsis - N (%)	0 (0%)	12 (19.4%)	.001 [§]
Neonatal death – N (%)	0 (3.2%)	2 (2.3%)	.514 [§]

Statistical Tests: * T Student; [§] Exact Fisher; # Chi-Square; [∞] Mann-Whitney.

Figure 1. Normal umbilical artery Doppler

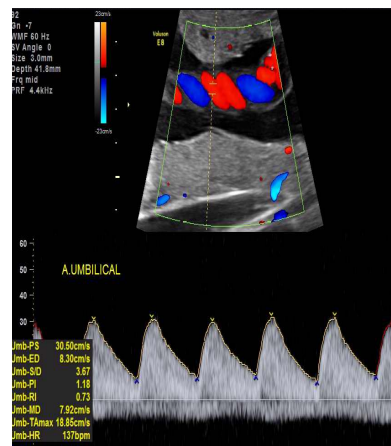


Table 1. Comparison of perinatal outcome between FwC and FwD groups according to chorionicity

Perinatal Outcomes	MC (n=84)		p	DC (n=228)		p
	FwC (n=56)	FwD (n=28)		FwC (n=152)	FwD (n=76)	
GAD – weeks; mean \pm SD	35.08 \pm 1.51	34.88 \pm 1.51	.091 [†]	35.83 \pm 2.37	35.79 \pm 2.25	.947 [†]
BW–grams; mean \pm SD	2102.77 \pm 398.45	1838.21 \pm 533.86	.025 [†]	2379 \pm 507.54	2225.97 \pm 636.29	.070 [†]
BW Discordance (%)	7.32 \pm 4.48	29.53 \pm 6.77	<.001 [†]	8.28 \pm 5.74	30.15 \pm 7.70	<.001 [†]
LOS – days; mean \pm SD	11.36 \pm 11.67	22.50 \pm 19.27	.008 [†]	8.24 \pm 9.04	11.30 \pm 15.85	.122 [†]
NICU – N (%)	15 (26.8%)	10 (35.7%)	.403#	33 (21.7%)	21 (27.6%)	.326#
Length of NICU stay; days-median (Minimum-Maximum)	8 (1-33)	17.5 (1-47)	.216 [∞]	7 (1-36)	10 (1-106)	.429 [∞]
VS – N (%)	3 (5.4%)	3 (10.7%)	.395 [§]	10 (6.6%)	6 (7.9%)	.716 [§]
Length of VM; days-median (Minimum-Maximum)	2 (1-7)	14.5 (3-26)	.400 [∞]	3.5 (1-23)	4 (2-12)	.999 [∞]
IVH - N (%)	4 (7.1%)	7 (25%)	.037 [§]	6 (3.9%)	2 (2.6%)	.722 [§]
NE - N (%)	0 (0%)	1 (3.6%)	.333 [§]	0 (0%)	2 (2.6%)	.110 [§]
Jaundice - N (%)	20 (35.7%)	20 (71.4%)	.002#	42 (27.6%)	42 (55.3%)	<.001#
Retinopathy - N (%)	1 (1.8%)	0 (0%)	.999 [§]	0 (0%)	0 (0%)	-
Sepsis - N (%)	3 (5.4%)	5 (17.9%)	.110 [§]	3 (2%)	7 (9.2%)	.017 [§]
Neonatal death – N (%)	0 (0%)	0 (0%)	-	4 (2.6%)	2 (2.6%)	.999 [§]

Statistical Tests: [†] T Student; [§] Exact Fisher; # Chi-Square; [∞] Mann-Whitney.

Results

A total of 52 pregnancies with FwD and 104 with FwC were selected. The mean gestational age at FwD diagnosis was 30.64 \pm 5.71 weeks. Overall the FwD group presented longer LOS (14.32 \pm 17.47 days vs 9.08 \pm 9.89 days; $p=0.005$), higher frequency of NE (2.9% vs 0%; $p=0.036$), jaundice (59.6% vs 29.8%; $p<0.001$) and sepsis (11.5% vs 2.9%; $p=0.003$) compared to the FwC FwD with FwC were compared according to chorionicity (table 1) and according to presence of FGR (table 2).

Conclusion

Regardless the chorionicity, FwD with normal umbilical artery Doppler is associated with worse morbidity outcome compared to FwC. FwD associated with FGR has a higher perinatal morbidity compared to FwD without FGR.