

EP07.55. Assessment of Inter-twin Placental Vascularity Discordance using MV-Flow Imaging in Twin Pregnancies with Fetal Growth Restriction

Seong Eon Park¹, Gi Su Lee¹, Seung Hyub Nam¹, Sung Hun Na², Young-Han Kim³, Geum Joon Cho⁴, Han-Sung Hwang⁵, Jin Gon Bae^{1,*}

¹Department of Obstetrics and Gynecology, Keimyung University School of Medicine, Daegu, Korea, ²Department of Obstetrics and Gynecology, Kangwon National University, School of Medicine, Republic of Korea, ³Department of Obstetrics and Gynecology, Yonsei University College of Medicine, Republic of Korea, ⁴Department of Obstetrics and Gynecology, Korea University College of Medicine, Republic of Korea, ⁵Department of Obstetrics and Gynecology, Konkuk University School of Medicine, Republic of Korea

Objectives

This study aimed to compare placental microvascular flow indices, specifically the inter-twin disparity, between twin pregnancies without fetal growth restriction (FGR) and those where one fetus is affected by FGR.

Methods

A total of 40 twin pregnancies were included in the study, with 14 classified into the “no FGR” group and 26 into the “1 baby FGR” group. Placental microvascular structure ultrasound imaging by MV-Flow was performed.

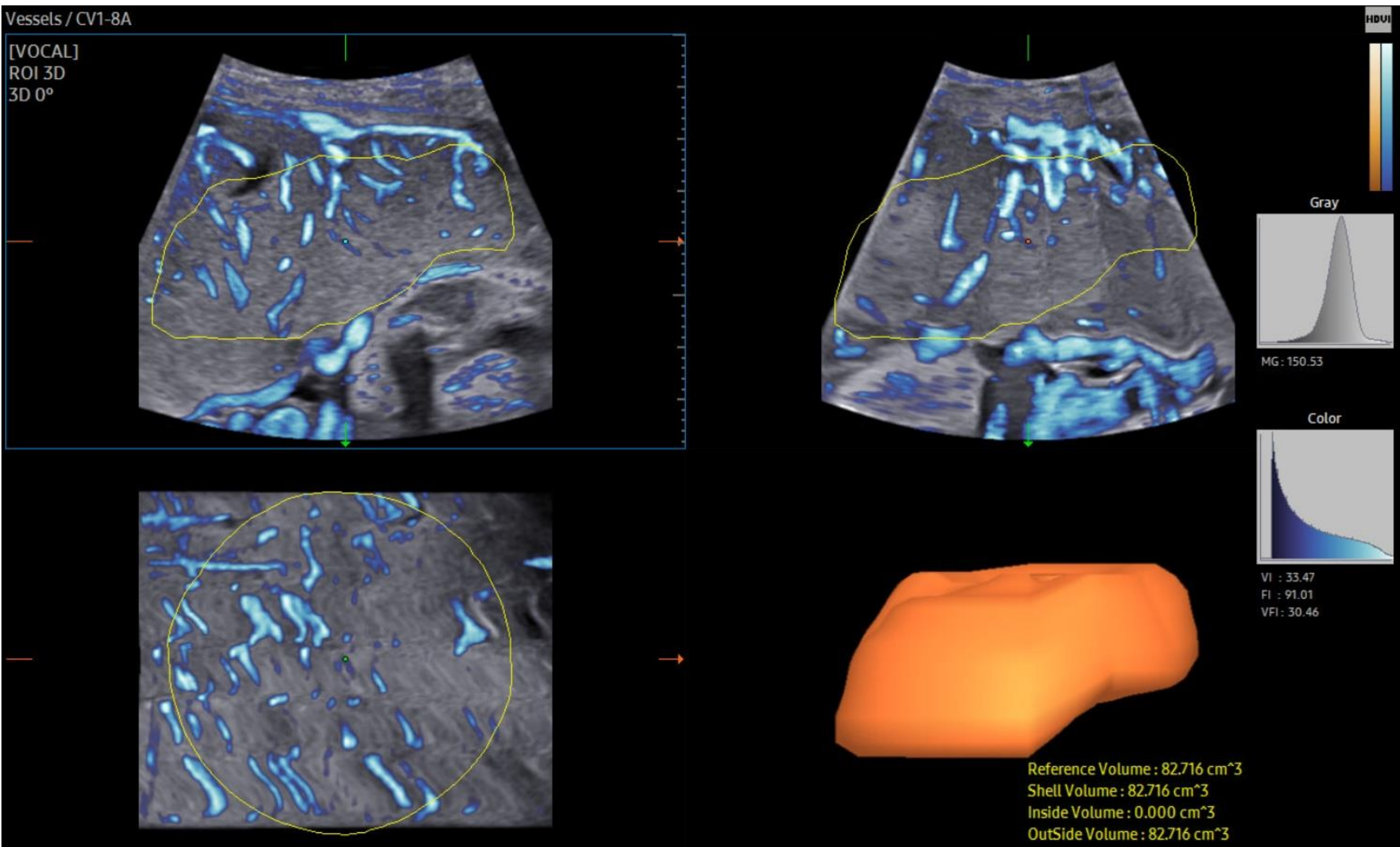


Figure 1. VI^{MV} obtained by 2D and 3D images

(continue) A placental vascular index (VI^{MV}) was acquired by application of MV-Flow, using both 2D and 3D imaging techniques to obtain VI^{MV} (2D) and VI^{MV} (3D), respectively. The VI^{MV} gap, representing the disparity in microvascular flow indices between the two placentas within each twin pair, was calculated. Statistical analysis was performed using the student’s t-test to compare continuous variables between groups and the chi-square test for categorical data.

Results

There were no significant differences in gestational age, maternal age, height, or weight between the two groups. Similarly, the VI^{MV} (2D) gap did not show a statistically significant difference between the "no FGR" and "1 baby FGR" groups. However, the VI^{MV} (3D) gap was significantly larger in the “1 baby FGR” group compared to the “no FGR” group (10.54 ± 6.90 vs. 4.58 ± 3.99 , $P = 0.003$).

Conclusion

The significant increase in the $VIMV$ (3D) gap observed in twin pregnancies with one FGR fetus suggests that FGR is associated with distinct changes in placental microvascular flow disparity.

	Both no FGR n=14	1 baby FGR n=26	p-value
Gestational age (day)	33.68±2.68	33.39±2.38	0.569
Age (year)	35.20±3.87	35.20±3.70	0.948
Height (m)	1.63±0.06	1.61±0.05	0.032
Weight (kg)	74.74±13.99	70.97±10.47	0.122
MCDA	4	4	0.414
DCDA	11	21	0.414
Preeclampsia	1	3	0.586
GDM	3	5	1.000
ART	12	18	0.572

Table 1. Baseline characteristics of twin without FGR and twin with FGR in one fetus

* VI^{MV} : Placenta vascular index

	FGR (n=26)	Control (n=54)	p-value
VI^{MV} (2D)	41.08±15.89	40.90±15.73	0.962
VI^{MV} (3D)	40.04±11.12	39.78±7.58	0.904

Table 2. Comparison of $VIMV$ between FGR and control

* VI^{MV} : Placenta vascular index

	Both no FGR n=14	1 baby FGR n=26	p-value
VI^{MV} (2D) gap	16.47±14.93	16.45±16.50	0.996
VI^{MV} (3D) gap	4.58±3.99	10.54±6.90	0.003*

Table 3. Comparison of $VIMV$ gap between twin without FGR and twin with FGR in one fetus

* VI^{MV} : Placenta vascular index