

Table S1. Clinical characteristics of the study groups

	Training cohort			Internal validation cohort			External cohort 1			External cohort 2		
	FGR	Control	P-value	FGR	Control	P-value	FGR	Control	P-value	FGR	Control	P-value
Maternal pre-gestational BMI (kg/m ²)	20.4 ± 0.9	21.6 ± 0.4	0.029	21.2 ± 1.4	21.1 ± 0.6	0.885	20.9 ± 1.2	21.5 ± 0.1	0.342	20.9 ± 0.3	21.5 ± 0.1	< 0.001
Maternal age (y)	31.1 ± 1.3	31.8 ± 0.6	0.351	31.1 ± 2.3	30.9 ± 0.9	0.821	31.3 ± 1.7	31.4 ± 0.8	0.983	30.9 ± 1.5	30.9 ± 0.3	0.989
Gestational hypertension, BP >140/90 mm Hg												
Yes	13(22.8%)	0(0%)	/	1(4.0%)	0(0%)	/	3(7.9%)	0(0%)	/	0(0%)	0(0%)	/
No	44(77.2%)	228(100%)	/	24(96.0%)	100(100%)	/	35(92.1%)	152(100%)	/	42(100%)	168(100%)	/
Gestational age at blood collection (wk)	19.2 ± 1.6(17.6*)	18.3 ± 0.6(16.7*)	0.260	16.4 ± 1.5(16.7*)	16.4 ± 0.7(15.7*)	0.972	19.5 ± 2.1(15.8*)	19.2 ± 0.9(17.9*)	0.830	18.5 ± 1.0(17.5*)	18.5 ± 0.5(17.4*)	0.987
Gestational age at delivery (wk)	38.0 ± 2.2	39.4 ± 1.0	< 0.001	38.9 ± 1.0	39.5 ± 0.9	0.003	38.4 ± 0.7	39.4 ± 0.3	< 0.001	38.6 ± 0.5	39.3 ± 0.4	< 0.001

Birth weight (g)	2247.9 ± 95.9	3292.2 ± 40.6	< 0.001	2491.6 ± 122.2	3311.1 ± 55.2	< 0.001	2228.9 ± 107.1	3289.3 ± 9.09	< 0.001	2337.1 ± 52.2	3218.2 ± 47.4	< 0.001
Umbilical artery Doppler PI	0.90 ± 0.06	0.77 ± 0.02	< 0.001	0.87 ± 0.07	0.77 ± 0.03	0.017	0.90 ± 0.08	0.75 ± 0.01	< 0.001	0.86 ± 0.02	0.77 ± 0.01	< 0.001
Placental weight (g)	456.0 ± 12.6	539.8 ± 4.9	< 0.001	503.8 ± 23.1	545.2 ± 6.9	0.001	447.4 ± 16.3	532.2 ± 2.1	< 0.001	461.0 ± 3.8	531.0 ± 3.6	< 0.001
Birth weight/Placental weight	4.96 ± 0.23	6.10 ± 0.06	< 0.001	4.98 ± 0.29	6.08 ± 0.10	< 0.001	5.01 ± 0.26	6.18 ± 0.03	< 0.001	5.07 ± 0.09	6.05 ± 0.06	< 0.001

*, The median

FGR, fetal growth restriction; BMI, body mass index

Data are given as the mean ± standard deviation (SD) or n (%)

Table S2. Relative contribution of different types of fetal growth restriction to the total samples

Characteristic	Training cohort (n=57)	Internal validation cohort (n=25)	External cohort 1 (n=38)	External cohort 2 (n=42)
3rd centile ≤ BW ≤ 10th percentile ^a				
Prenatal evidence of uterine placental insufficiency*	5(8.8%)	1(4.0%)	2(5.3%)	0(0%)
AC < 10th centile	11(19.3%)	13(52.0%)	6(15.8%)	10(23.8%)
Both of the above	2(3.5%)	0(0%)	1(2.6%)	2(4.8%)
BW < 3rd centile ^a	39(68.4%)	11(44.0%)	29(76.3%)	30 (71.4%)

^a Base on the Chinese birthweight reference of Dai L et al. [16]

*, Prenatal evidence of uterine placental insufficiency, defined as umbilical or uterine artery Doppler pulsatility index [PI] > 95th centile or absent end-diastolic flow in the umbilical artery (<32 weeks gestation) or cerebroplacental ratio (CPR; calculated as the fetal middle cerebral artery PI divided by the umbilical artery PI) <5th centile (≥32 weeks gestation)

BW, birth weight; AC, abdominal circumference

Data are given as n (%)

Table S3. Performance of C_{FGR1} in first and second trimester

	First trimester	Second trimester
Number	110 (FGR:22)	700 (FGR:140)
AUC	0.839(0.744-0.933)	0.797(0.757-0.836)
Accuracy	87.9%	82.4%
Sensitivity	77.3%	75.0%
Specificity	90.4%	84.3%
P-value	0.422	