Incidence, risk factors and impact on perinatal outcomes of the antenatal diagnosis of bilobate placenta

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OBJECTIVE

To assess the impact of bilobate or succenturiate placenta on pregnancy outcomes and investigate for potential risk factors.

METHODS

A prospective study of singleton pregnancies, undergoing routine 2nd trimester anomaly scan, was conducted between January 2018 and June 2022. The impact of antenatally diagnosed bilobate placenta on PE, PTD and SGA was evaluated using the t test, nonparametric Mann–Whitney U test and chi-square test. The independent association between bilobate placenta and the main outcomes was assessed by employing a multivariate logistic regression model, using specific confounders. In addition, a risk factor analysis was performed.

RESULTS

The study included a total population of 6454 pregnancies. Bilobate placenta was found to be associated with PE group (aOR: 1.721; 95% CI: 1.014-2.922), while no statistically significant association was found between this anatomical placental variation and SGA (aOR: 1.059; 95% CI: 0.665-1.686) or spontaneous PTD (aOR: 1.317; 95% CI: 0.773-2.246). An increased prevalence of abnormal cord insertion (9.8% vs 27.1%; p<0.001) along with increased mean UtA z-score (0.03 vs 0.23; p=0.039) was identified in pregnancies with antenatally diagnosed bilobate placenta. Major risk factors for bilobate placenta were the advanced maternal age (aOR: 1.069; 95% CI: 1.031-1.110), the conception using ART (aOR: 3.669; 95% CI: 2.248-5.989) and the previous history of 1st trimester miscarriage (aOR: 1.814; 95% CI: 1.218-2.700).

DISCUSSION

Bilobate placenta involves about 1 in 50 singleton pregnancies and these women have an almost two-fold increased risk for PE, compared to the control group. This finding implies that bilobate placenta and PE may share the same pathophysiological procedure of abnormal placentation. This is further supported by the significant association noted between the existence of bilobate placenta and a higher mean UtA z-score in our study, indicating a potential indirect mechanism where bilobate placentas may cause PE through abnormally high UtA PI; abnormal UtA PI is a well-studied predictor of PE. Additionally, we found that bilobate placenta was linked to a higher prevalence of abnormal cord insertion, which is also linked to an increased risk of PE.

Table 1. Characteristics of the study population

Variables	Overall (n=6,454)	Non-bilobate placenta (n=6,325)	Bilobate placenta (n=129)	P-value
Maternal age, mean (SD)	31.7 (5.1)	31.6 (5.1)	34.5 (5.7)	**<0.001**
No smoking, n (%)	4,124 (63.9)	4,043 (63.9)	81 (62.8)	0.405
Quit in pregnancy	1,648 (25.5)	1,610 (25.5)	38 (29.5)	
Current smoking	682 (10.6)	672 (10.6)	10 (7.8)	
Multiparous, n (%)	2,593 (40.2)	2,539 (40.1)	54 (41.9)	0.762
ART, n (%)	307 (4.8)	280 (4.4)	27 (20.9)	**<0.001**
BMI, median [IQR]	23.0 [21.0, 26.0]	23.0 [21.0, 26.0]	23.3 [20.9, 26.3]	0.595
Bleeding in 1st trimester, n (%)	323 (5.0)	315 (5.0)	8 (6.2)	0.670
Previous history of 1st trim miscarriage, n (%)	1,015 (15.7)	976 (15.4)	39 (30.2)	**<0.001**
Previous history of PTD, n (%)	154 (2.4)	148 (2.3)	6 (4.7)	0.158
Abnormal cord insertion, n (%)	652 (10.1)	617 (9.8)	35 (27.1)	**<0.001**
UtA z-score, mean (SD)	0.04 (1.10)	0.03 (1.09)	0.23 (1.29)	**0.039**
PE, n (%)	482 (7.5)	463 (7.3)	19 (14.7)	**0.003**
PTD, n (%)	537 (8.3)	519 (8.2)	18 (14.0)	**0.029**
SGA, n (%)	1,056 (16.4)	1,031 (16.3)	25 (19.4)	0.415
GA at delivery, median [IQR]	39.0 [38.1, 39.9]	39.0 [38.1, 39.9]	38.4 [37.7, 39.1]	**<0.001**
BW, median [IQR]	3,250 [2,970, 3,540]	3,250 [2,980, 3,550]	3,100 [2,850, 3,400]	**<0.001**

CONCLUSIONS

Pregnancies with bilobate placenta, isolated from vasa previa, are correlated with higher incidence of PE, increased mean UtA z-score and higher probability of abnormal cord insertion, but not with increased risk for SGA neonates and spontaneous PTD.

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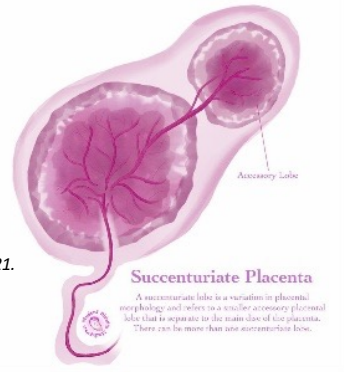

Table 2. Risk factor analysis on the incidence of bilobate placenta

	Univariate analysis			Multivariable analysis		
Variables	OR	95% CI	P-value	aOR	95% CI	P-value
Maternal age (years)	1.117	1.079, 1.157	0.001[a]	1.069	1.031, 1.110	0.001[a]
BMI (kg/m^2)	1.002	0.966, 1.039	0.902	-	-	-
Smoking (reference: no smoking)						
Quit smoking	1.178	0.798, 1.739	0.410	-	-	-
Current smoking	0.743	0.383, 1.440	0.378	-	-	-
Multiparity	1.074	0.754, 1.529	0.694	-	-	-
ART	5.715	3.678, 8.880	0.001[a]	3.669	2.248, 5.989	0.001[a]
Bleeding in 1st trimester	1.261	0.611, 2.603	0.530	-	-	-
Previous history of 1st trim miscarriage	2.375	1.621, 3.479	0.001[a]	1.814	1.218, 2.700	0.003[a]
Previous history of PTD	2.036	0.883, 4.695	0.095	-	-	-

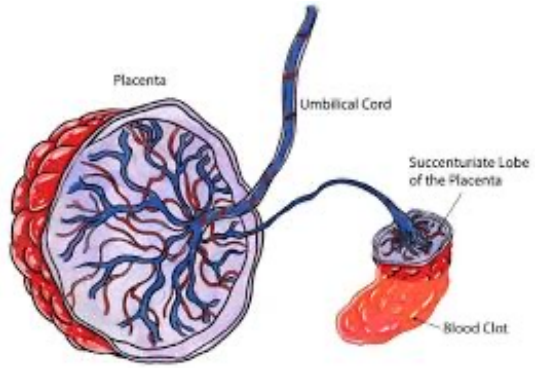

Table 3. Multivariable logistic regression models regarding the investigated outcomes