Low Lying Placenta – Do They all Need a CS?

Shiri Shinar
MFM fellow
January 23rd, 2020

Definitions

THEORETICAL AND PRACTICAL TREATISE

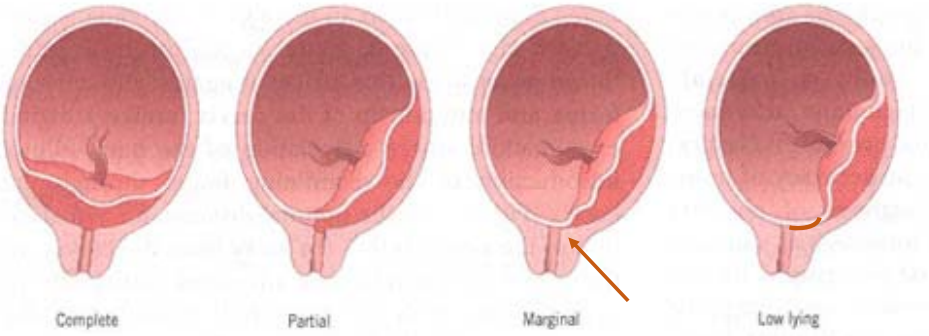
ON

MIDWIFERY,

INCLUDING THE

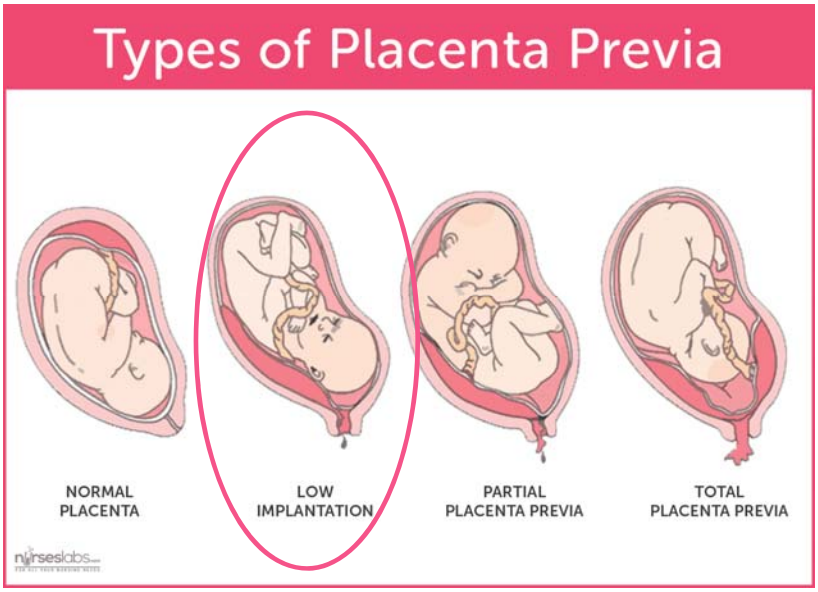
DISEASES OF PREGNANCY AND PARTURITION,

AND



Placental tissue at the edge of the internal os

Within 2 cm of the internal os but not reaching it



Risk factors for placenta previa

- Advanced maternal age
- Multiparity
- Previous cesarean delivery
- Previous placenta previa
- Chronic hypertension
- Diabetes
- Smoking and cocaine use
- Multiple gestation
- ART

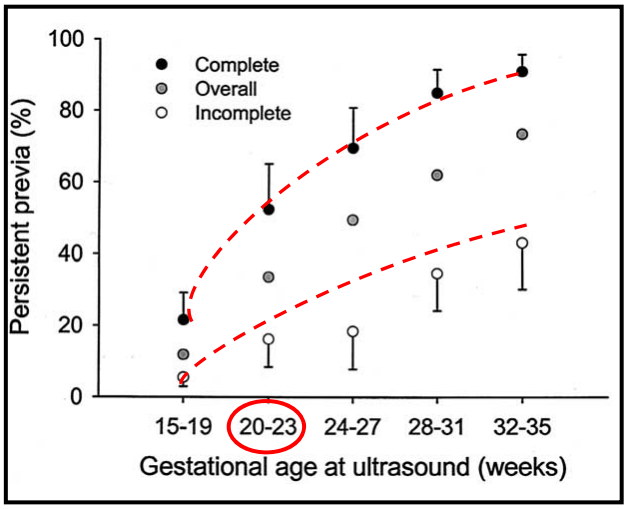
Diagnosis

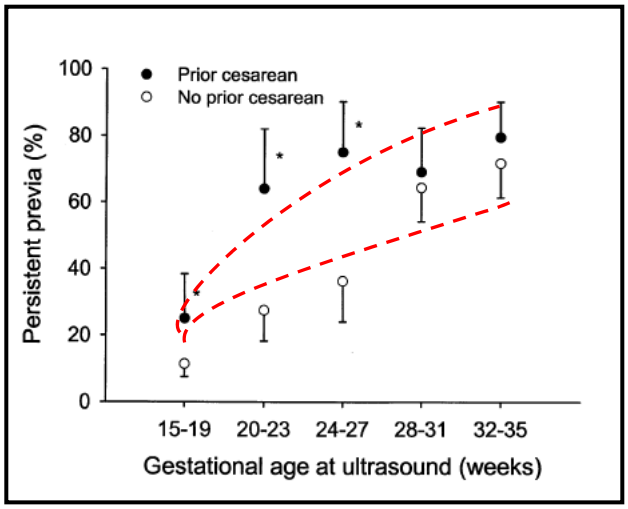
Silver. Placenta Previa, Vasa Previa, and Placenta Accreta. Obstet Gynecol 2015.

Incidence of placenta previa at ultrasound, persistence until delivery and incidence at birth

	n	GA at US (weeks)	P.p. def	US type	Incidence at US (n (%))	Persistence (n (%))	Incidence at birth (n (%))
Taipale *et al.* 1997[11]	6428	12–16	> 14 mm	TV	156/6428 (2.4)	10/156 (6.4)	10/6428 (0.16)
Lauria *et al.* 1996[12]	> 2910	15–20	≥ 0 mm	TA + TV	31/2910 (1.1)	5/36 (14)	5/ > 2910 (< 0.17)
Rizos *et al.* 1979[16]	1098	16–18	> 0 mm	TA	58/1098 (5.3)	5/52 (10)	5/1098 (0.46)
Taipale *et al.* 1998[9]	3696	18–23	> 0 mm	TV	57/3969 (1.5)	5/57 (8.8)	5/3696 (0.14)
			> 15 mm		27/3969 (0.68)	5/27 (18.5)	5/3696 (0.14)
			≥ 25 mm		10/3696 (0.27)	4/10 (40)	4/3696 (0.11)
Present study	8650	20–23	> 0 mm	TA + TV	42/8650 (0.48)	*28/42 (67.0)	*28/8650 (0.32)
			≥ 25 mm		12/8650 (0.14)	12/12 (100)	12/8650 (0.14)

Becker et al, Ultrasound Obstet Gynecol 2001; 17: 496–501





Dashe, Placenta Previa Persistence. Obstet Gynecol 2002.

Follow-up ultrasound in second-trimester low-positioned anterior and posterior placentae: prospective cohort study

C. H. J. R. JANSEN[1], C. E. KLEINROUWELER[1], A. W. KASTELEIN[1], L. RUITER[1], E. VAN LEEUWEN[1], B. W. MOL[2] and E. PAJKRT[1]

[1]*Amsterdam UMC, University of Amsterdam, Department of Obstetrics and Gynaecology, Amsterdam, The Netherlands;* [2]*Monash University, Department of Obstetrics and Gynaecology, Clayton, Victoria, Australia*

- 958 women with a low-lying placenta or previa between 2014-2018
- TVUS examination between 18 - 24 weeks
- Repeat TAUS +/- TVUS > 28 wks
- If still low-lying repeat assessments until delivery

doi: 10.1016/j.ejogrb.2019.06.020.

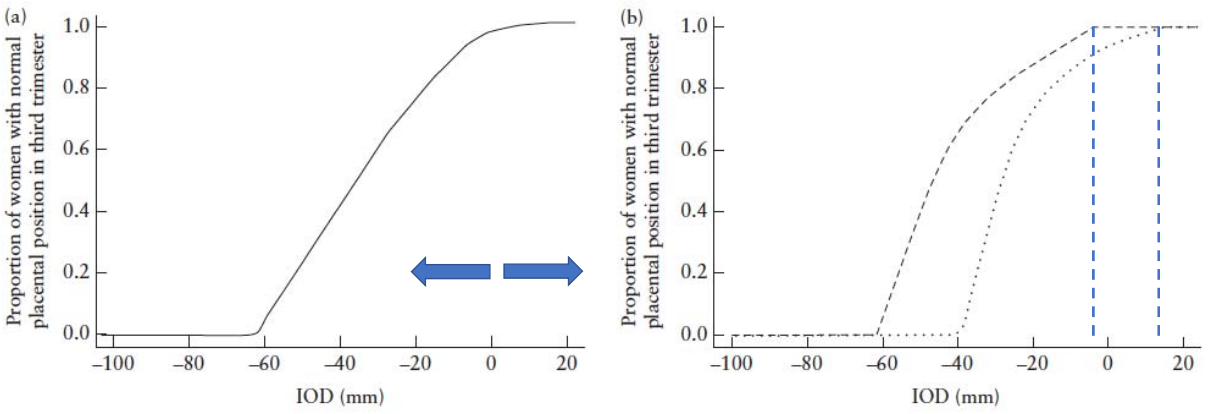


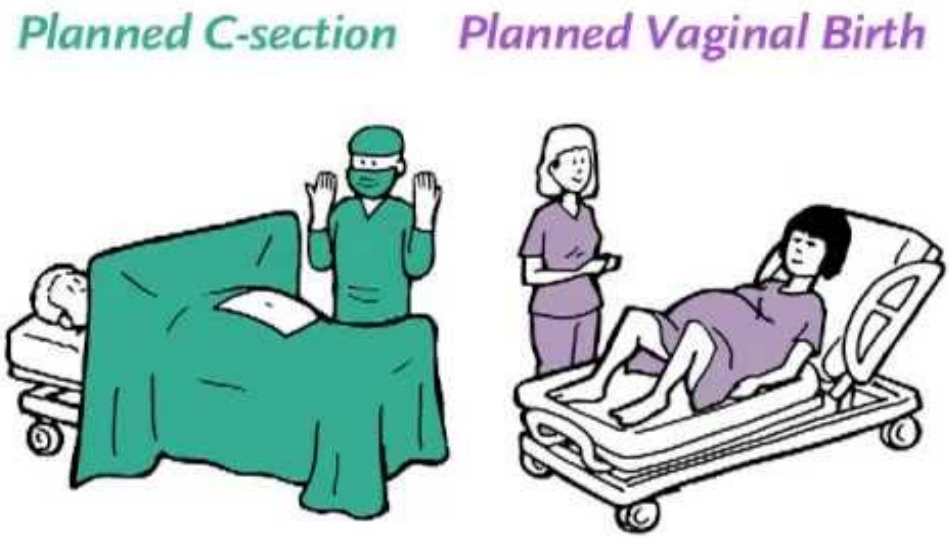
Figure 1 Association between distance from placental edge to internal os (IOD) in second trimester, in women with low-positioned placenta, and proportion of women with normal placental position in third trimester, in whole cohort (a) and in those with anterior (----) or posterior (·····) placenta (b).

Table 3 Multilevel likelihood ratios (LR) for abnormal third-trimester placental position for different ranges of distance between internal os and placental edge (IOD) in second trimester

	Third-trimester placental position		
IOD range	*Abnormal (n)*	*Normal (n)*	*LR*
Anterior placenta			
−100 to < −40 mm	3	3	35
−40 to < −25 mm	3	5	21
−25 to < −4.5 mm	4	36	3.9
−4.5 to < 0 mm	0	14	0
0 to < 5 mm	0	84	0
5 to < 10 mm	0	74	0
10 to < 15.5 mm	0	88	0
15.5 to < 20 mm	0	50	0
Total	10	354	—
Posterior placenta			
−100 to < −40 mm	7	0	∞
−40 to < −25 mm	3	6	7.3
−25 to < −15 mm	9	24	5.4
−15 to < −4.5 mm	5	41	1.8
−4.5 to < 5 mm	6	142	0.6
5 to < 10 mm	4	121	0.5
10 to < 15.5 mm	4	128	0.4
15.5 to < 20 mm	0	94	0
Total	38	556	—

Persistance of low lying placenta

- Only 5% of women with a low-positioned second trimester placenta have an abnormally located placenta in the third trimester.
- Risk factors for abnormal third trimester placenta
  - Placenta previa
  - Posteriorly located placenta
  - Previous CS
- All women with placenta previa should be followed up
- Cut-off for posteriorly located placenta = IOD<20 mm.
- For anteriorly located placenta = IOD<5 mm



Points to consider

- ~~Risk for PAS~~
- ~~Risk of vasa previa~~
- ~~Antenatal bleeding requiring an urgent CS~~

What is a low-lying placenta?

Lawrence W. Oppenheimer, MD, Dan Farine, MD, J.W. Knox Ritchie, MD, Reuven M. Lewinsky, MD, Joyce Telford, RN, and Lea A. Fairbanks, MD
Toronto, Ontario, Canada

- 52 patients with a placenta previa in the third trimester
- 8 patients with a placenta to cervical os distance of ≤2 cm, measured by TVUS
  - 7 delivered by CS due to bleeding
  - 1 delivered vaginally (last scanned 11 wks before delivery at 28 wks)

This 2-cm cut-off has persisted as the marker of a low lying placenta.

Oppenheimer LW et al, AJOG, 1991 doi: 10.1016/0002-9378(91)90465-4.

BJOG: an International Journal of Obstetrics and Gynaecology
September 2003, Vol. 110, pp. 860–864

Placental edge to internal os distance in the late third trimester and mode of delivery in placenta praevia

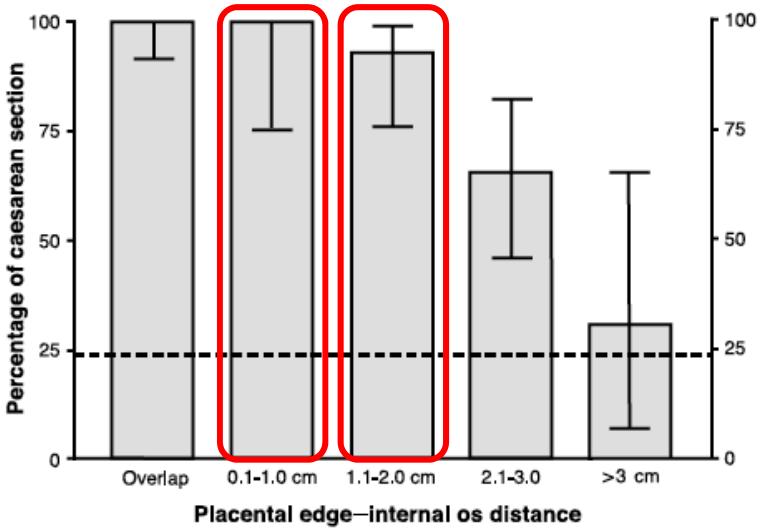
Amarnath Bhide, Federico Prefumo*, Jessica Moore, Brian Hollis, Basky Thilaganathan

Prevalence of antepartum haemorrhage and postpartum haemorrhage

Placental edge to internal os distance	No. of pregnancies	Delivery <34 weeks (*n*)	Delivery <37 weeks (*n*)	No. with antepartum haemorrhage (%)	No. with postpartum haemorrhage (%)
Overlap or reaching os (Group 1)	42	1	14	24 (57.1)	5 (11.9)
0.1–2.0 cm (Group 2)	40	0	9	19 (47.5)	2 (5.0)
2.1–3.5 cm (Group 3)	39	1	3	11 (28.2)	3 (7.7)
Total	121	2	26	54 (44.6)	10 (8.3)

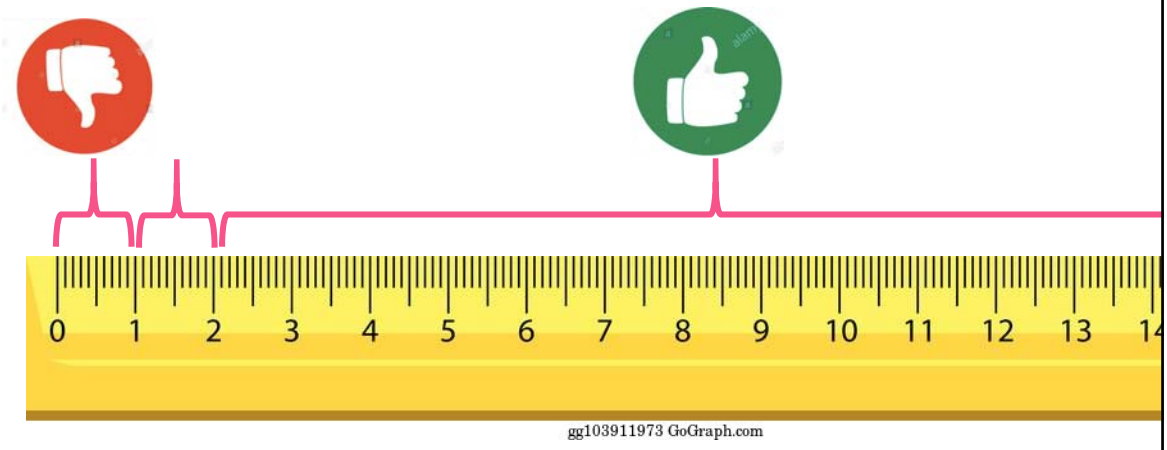
Likelihood of undergoing a caesarean section for any reason with an ultrasound diagnosis of placenta praevia

Placental edge–internal os distance	No.	Elective caesarean section	No. of women presenting in labour	Emergency caesarean section for bleeding in labour	Emergency caesarean section for other reasons	Vaginal delivery (% of labour)
Group 1 (overlap or reaching os)	42	25	17	10	7	0 (0)
Group 2 (0.1–2.0 cm)	40	20	20	6	12	2 (10)
Group 3 (2.1–3.5 cm)	39	12	27	2	8	17 (63)



Knowledge of placental location = Clinical bias

Bhide et al, BJOG, 2003



Translabial Ultrasonography and Placenta Previa: Does Measurement of the Os-Placenta Distance Predict Outcome?

William B. Dawson, MD, FRCPC, Michel D. Dumas, BSc, MD, Walter M. Romano, MD, FRCPC, Robert Gagnon, MD, FRCSC, Robert J. Gratton, MD, FRCSC, R. Douglas Mowbray, MD, FRCPC

TLUS Versus Obstetrical Interpretation and Mode of Delivery

TLUS		Obstetrical Interpretation		Mode of Delivery	
Complete	7	Complete	7	CS	7
Os-placenta distance					
< 1 cm	11	Partial	3	CS	3
		Marginal	7	CS	7
		No placenta previa*	1	SVD	1
≥ 1 cm and < 2 cm	7	Marginal	2	CS	2
		No placenta previa	5	SVD	5
≥ 2 cm and < 3 cm	6	No placenta previa	6	SVD	4
				CS	2
≥ 3 cm	9	No placenta previa	9	SVD	8
				CS	1

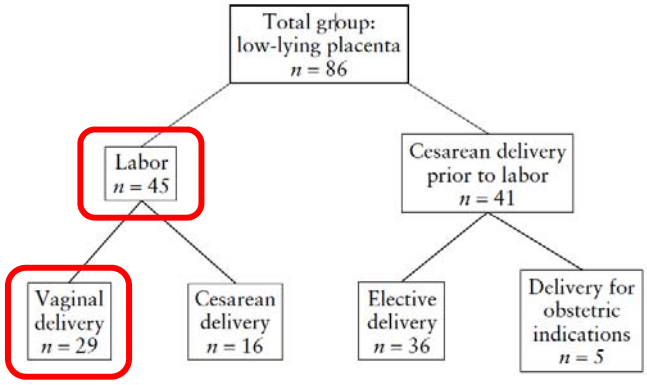
Maybe they were no longer previas?

J Ultrasound Med 15:441-446, 1996

Ultrasound Obstet Gynecol 2009; 33: 204–208
Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/uog.6304

Effect of a low-lying placenta on delivery outcome

R. BRONSTEEN*, R. VALICE*, W. LEE*, S. BLACKWELL†, M. BALASUBRAMANIAM‡ and C. COMSTOCK*



Route of delivery in laboring patients grouped according to the placenta to cervical os distance at last ultrasound examination

Mode of delivery	*Placenta to cervical os distance*	
	< 1 cm (Group 1, n = 11)	*1–2 cm (Group 2, n = 34)*
Vaginal	3 (27.3)	26 (76.5)*
Cesarean	8 (72.7)	8 (23.5)

Postpartum maternal and neonatal morbidity following different modes of delivery in pregnancies with low-lying placenta

Mode of delivery	*UA pH < 7.1*	*Maternal Hb < 8 g/dL*	*Maternal blood transfusion*	*Hysterectomy*	*Neonatal Hb < 13 g/dL*
Before onset of labor					
Elective Cesarean ($n = 36$)	0/19	2/17	2/36	2/36	1/14
Non-elective Cesarean ($n = 5$)	1/5	0/3	0/5	0/5	0/3
After onset of labor					
Vaginal ($n = 29$)	1/11	2/10	0/29	0/29	0/7
Cesarean ($n = 16$)	0/14	3/12	1/16	0/16	0/6

Placenta previa: distance to internal os and mode of delivery

Patrizia Vergani, MD; Sara Ornaghi, MD; Ilaria Pozzi, MD; Pietro Beretta, MD; Francesca Maria Russo, MD; Ilaria Follesa, MD; Alessandro Ghidini, MD

TABLE 1
Population characteristics among women with placenta previa

Characteristic	Placenta overlapping cervical os (n = 42)	Cervix-to-placenta distance of 1-20 mm (n = 53)	*P* value or odds ratio (95% CI)
Maternal age (y)[a]	34.4 ± 4.9	34.0 ± 3.4	.63
Nulliparity (n)	27 (64%)	32 (60%)	1.2 (0.5–2.7)
Days from last scan to delivery[a]	9.0 ± 6.1	10.0 ± 8.1	.51
Anterior placenta (n)	25 (59%)	21 (40%)	2.2 (0.9–5.1)
Antepartum hemorrhage (n)	11 (26%)	8 (15%)	2.0 (0.7–5.4)
Weeks of gestation at delivery[a]	35.5 ± 3.6	37.8 ± 3.2	.001
Delivery at <37 weeks of gestation (n)	21 (50%)	12 (23%)	3.4 (1.4–8.2)
Blood loss at delivery (mL)[a]	1195 ± 1588	579 ± 513	.009
Postpartum hemorrhage (n)	12 (28%)	8 (15%)	2.3 (0.8–6.0)
Postpartum hemorrhage >1000 mL (n)	12 (29%)	3 (6%)	6.7 (1.8–23.7)
Cesarean delivery (n)	42 (100%)	27 (51%)	< .001
Prelabor cesarean delivery (n)	39 (93%)	25 (47%)	14.6 (3.7–67.5)
Birthweight (g)[a]	2578 ± 717	3038 ± 690	.002

CI, confidence interval.
[a] Data are given as mean ± SD.
Vergani. Distance to internal os and mode of delivery. Am J Obstet Gynecol 2009.

Vergani et al, AJOG, 2009

TABLE 2
Comparison of women with placenta previa according to the placental edge to internal os distance

Variable	Cervix-to-placenta distance of 1-10 mm (n = 24)	Cervix-to-placenta distance of 11-20 mm (n = 29)	*P* value or odds ratio (95% CI)
Maternal age (y)[a]	35.2 ± 3.8	33.1 ± 2.8	.02
Nulliparity (n)	14 (58%)	18 (62%)	.9 (0.3–2.5)
Weeks of gestation at last scan[a]	36.2 ± 2.7	36.4 ± 2.8	.81
Days from last scan to delivery[a]	10.3 ± 9.5	10.2 ± 6.9	.96
Anterior placenta (n)	7 (29%)	14 (48%)	.4 (0.1–1.4)
Antepartum hemorrhage (n)	7 (29%)	1 (3%)	11.5 (1.6–76.7)
Weeks of gestation at delivery[a]	37.7 ± 3.3	37.9 ± 3.1	.83
Delivery at <37 weeks of gestation (n)	6 (25%)	6 (21%)	1.3 (0.4–4.5)
Blood loss at delivery (mL)[a]	662 ± 466	510 ± 547	.29
Postpartum hemorrhage (n)	5 (21%)	3 (10%)	2.3 (0.5–9.7)
Postpartum hemorrhage >1000 mL (n)	2 (8%)	3 (10%)	.8 (0.1–4.4)
Cesarean delivery (n)	18 (75%)	9 (31%)	6.7 (2.0–22.0)
Prelabor cesarean delivery (n)	16 (67%)	9 (31%)	4.4 (1.2–16.9)
Birthweight (g)[a]	3077 ± 652	3006 ± 729	.71

CI, confidence interval.
[a] Data are given as mean ± SD.
Vergani. Distance to internal os and mode of delivery. Am J Obstet Gynecol 2009.

Types of low lying placenta

<11 mm from placenta to iOS

- APH risk 29%
- Successful VD 9% - 38%
- Term delivery 75% to 80%

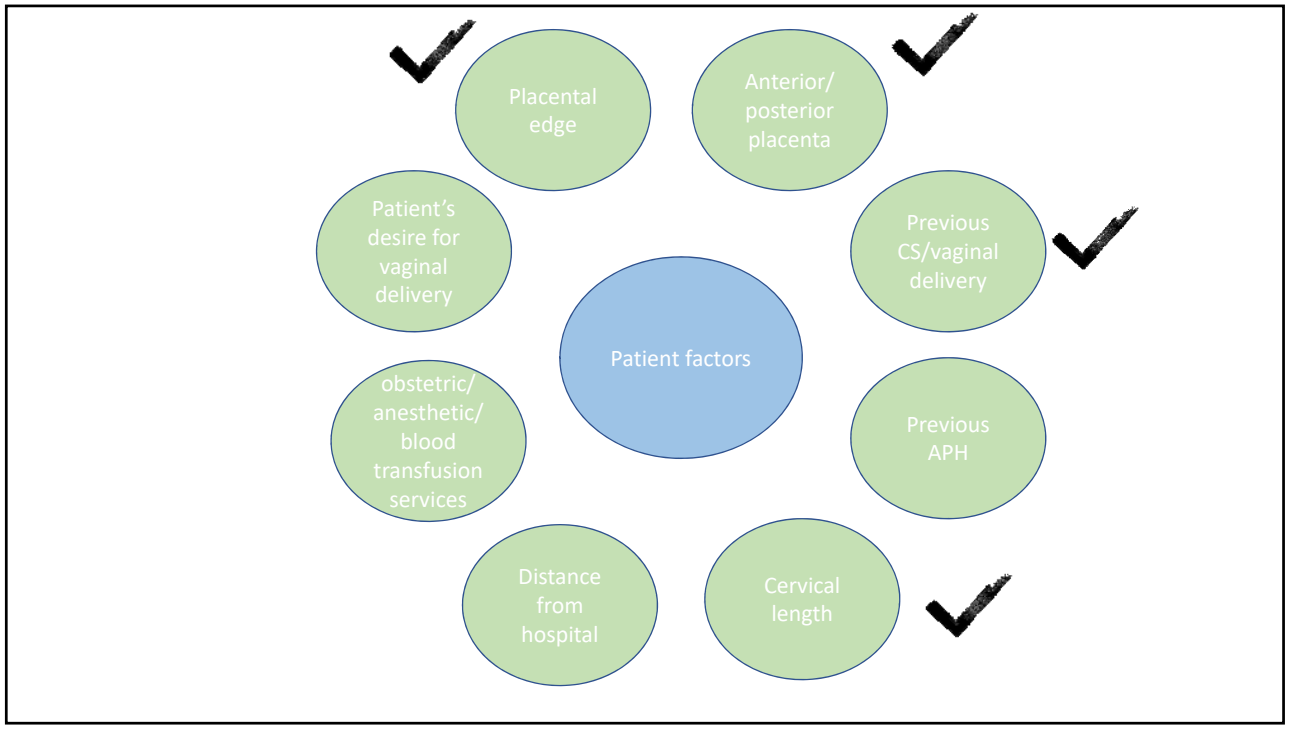
A trial of labor can be considered in very carefully selected women

11-20mm from placenta to iOS

- APH risk 3%
- Successful VD 57% - 93%
- Term delivery 75% to 80%

Consider a trial of labor

Can we stratify the risk?



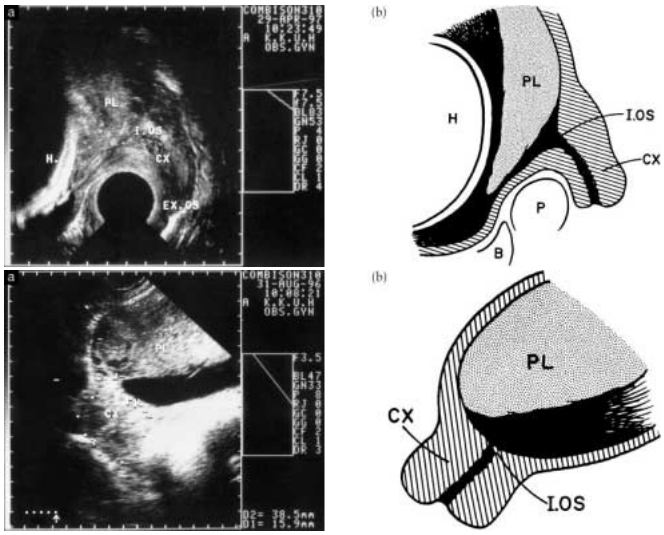
Placental edge appearance

Thickness

Marginal sinus

Third-trimester transvaginal ultrasonography in placenta previa: does the shape of the lower placental edge predict clinical outcome?

S. GHOURAB



Ghourab, Ultrasound Obstet Gynecol 2001; 18: 103–108

Table 2 Comparison of clinical outcomes between women with a thin-edge vs. a thick-edge low-lying placenta

	Thin-edge placenta (n = *54*)	*Thick-edge placenta* (n = *17*)	P *(two-tailed test)*
Gestational age at delivery (weeks), mean ± SD	35.8 ± 4.3	33.2 ± 3.7	0.0281
Migration of placental edge to distance of > 3 cm at 36 weeks' gestation, *n* (%)	16 (29.6)	1 (5.8)	0.039
Fetal head at or below placental edge at 36 weeks' gestation, *n* (%)	21 (38.8)	1 (5.8)	0.0077
Number of patients with APH, *n* (%)	22 (40.7)	15 (88.2)	0.016
Number of APH episodes per patient, mean ± SD	1.1 ± 0.9	2.4 ± 1.8	0.0002
Vaginal delivery, *n* (%)	19 (35.2)	1 (5.8)	0.0152
Emergency CS before 36 weeks, *n* (%)	16 (29.6)	11 (64.7)	0.0208
Placenta accreta, *n* (%)	0	3 (17.6)	0.0119
Cesarean hysterectomy, *n* (%)	0	1 (5.8)	NS
Peripartum blood transfusion (units), mean ± SD	1.03 ± 1.3	2.4 ± 2.6	0.0049
Mean birth weight (kg), mean ± SD	2.72 ± 0.86	1.93 ± 0.47	0.006

Ghourab, Ultrasound Obstet Gynecol 2001; 18: 103–108

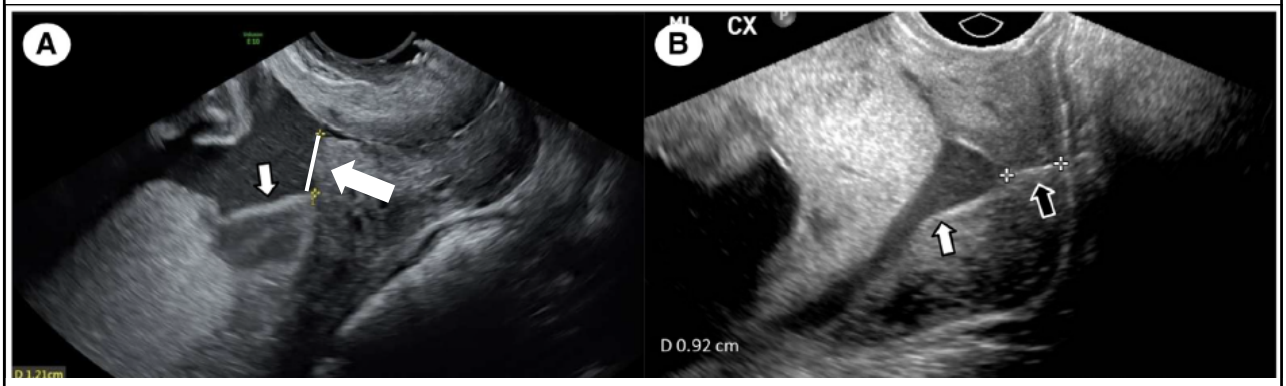


Table 3. Route of delivery according to the presence or absence of placental marginal sinus

Mode of delivery	Placental marginal sinus	
	presence (n = 7)	absence (n = 42)
Vaginal	2 (28.6)	38 (90.5)
Cesarean	5 (71.4)*	4 (9.5)

Values are n (%).
* $p < 0.01$ vs. cesarean section in the group of absence.

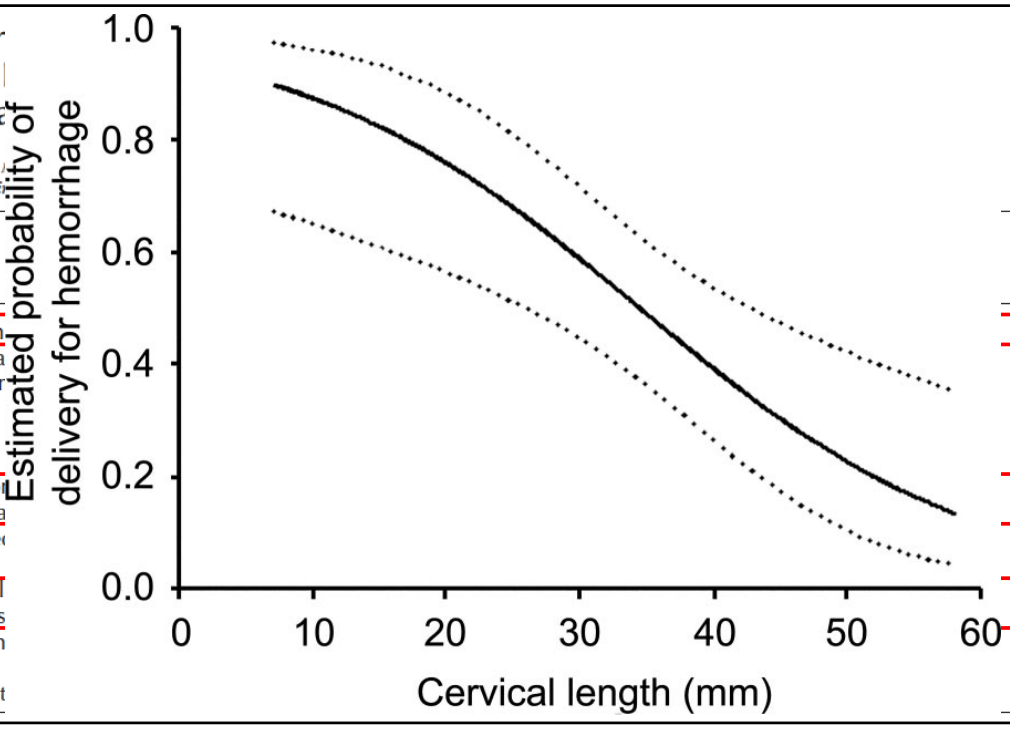
Ohira et al, Gynecol Obstet Invest, 2012

Cervical length

Ultrasor
Risk of
Placenta

Irene A. Stafford,
Donald D. McIntir

	P
Preterm birth	<.001
Gestational a	<.001
More thar	
34–36	
28–33	
Less than	
Indication for	<.001
Hemorrha	
Term, elec	
Other*	
Emergent del	<.001
Cesarean hys	.016
Indication	
Placental	.02
Uterine at	.6



Who are "carefully selected women"?

Box 1. Risk factors in presence of a placenta previa or low-lying placenta
✓ History of antepartum hemorrhage
First episode <29 weeks
Recurrent episodes (≥3)
✓ Thick placental edge (>1 cm)
✓ Presence of a marginal sinus
✓ Short cervical length
<3 cm with placenta previa
<2 cm with low-lying placenta
✓ Previous cesarean delivery
✓ Evidence of invasive placentation

SOGC guidelines on diagnosis and management of placenta previa, 2020

Current guidelines

SOGC CLINICAL PRACTICE GUIDELINE

Guideline No. 402: Diagnosis and Management of Placenta Previa

No. 402, July 2020 (Replaces No. 189, March 2007)

RECOMMENDED CHANGES IN PRACTICE

1. Diagnosis of placenta previa or low-lying placenta should not be made <18 to 20 weeks gestation, with the provisional diagnosis requiring confirmation ≥32 weeks gestation.
2. Ultrasound evaluation of placenta previa or low-lying placenta should include determination of distance of placental edge from cervical os (or overlap beyond the cervical os) and characteristics of placental edge, including thickness and presence/absence of a marginal sinus.
3. In women with a low-lying placenta, a trial of labour is recommended in cases where the placental edge is 11 to 20 mm from the cervical os and can be considered in carefully selected cases where the placental edge is ≤10 mm from the cervical os.
4. In women with a low-lying placenta, a recent ultrasound (within 7 to 14 days) should be used prior to a cesarean delivery to confirm placental location.
5. Antenatal corticosteroids should be administered only if risk of delivery within 7 days is very high.

Take home messages

- The time-honored definitions of “marginal previa” vs “low-lying placenta” should be abandoned.
- A direct measurement of the placental edge to cervical os distance with TVUS optimally permits the identification of women with different risk of CD.
- Threshold distance of 11 mm not only identifies cases with a high likelihood of successful vaginal delivery but also identifies cases that are at low risk of bleeding either before or during labor.
- Individual risk factors need to be considered to select the best candidates for a vaginal delivery.

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KEY MESSAGES

1. History of antepartum hemorrhage <29 weeks or recurrent episodes (≥3), a thick placental edge covering (or close to) the cervical os, short cervical length, and a previous cesarean delivery are factors associated with an increased risk of urgent/preterm cesarean delivery.
2. In absence of risk factors, outpatient management of placenta previa should be considered.
3. When determining the location of delivery, consider placental location, any other associated findings, the patient's history, and logistical factors, including resources available at the delivery unit.
4. Cesarean delivery for placenta previa is recommended at 36^0 to 36^6 weeks gestation in the presence of risk factors and at 37^0 to 37^6 weeks gestation in the absence of risk factors.
5. Cesarean delivery for a low-lying placenta with placental edge ≤10 mm from cervical os is recommended at 37^0 to 37^6 weeks gestation in presence of risk factors and at 38^0 to 38^6 weeks gestation in the absence of risk factors.