

ASSOCIATION OF PLACENTAL UMBILICAL CORD INSERTION SITE WITH PERINATAL OUTCOMES

BRINDA SABU , SAMEERA HAKKIM, ROSHINI AMBAT

Department Of Obstetrics And Gynaecology & Maternal And Fetal Medicine, KIMSHEALTH, Trivandrum, Kerala, India

Introduction

Adequate growth of the fetus during pregnancy is dependent on the normal development and insertion of the umbilical cord(UC) through which the fetus derives its nutrition and oxygen requirement.

Placental Umbilical Cord insertion site

- Central Normal
- Paracentral/eccentric
- Marginal/battledore Abnormal (ACI)
- Velamentous/membranous

1) **Normal placental UC insertion site (90%):** All Central cord insertions and paracentral cord insertions > 2 cm from the placental margin.

2) **Abnormal placental UC insertion site (ACI):**

- **Marginal placental cord insertion site (6.3-7%)**– UC gets inserted within 2 cm from the placental margin.
- **Velamentous cord insertion(VCI) (0.5-1.69%)** – Cord vessels get inserted into the membranes before reaching the placenta. When VCI is diagnosed we looked for the presence of vasa previa.

Objectives & Methodology

Primary Objective

- Study of association of ACI with birth weight of babies

Secondary Objective

- Association between ACI & maternal obstetric complications, intrapartum adverse events, nuchal cord and early neonatal complications
- Evaluate USG sensitivity in diagnosing ACI in Targeted Imaging For Foetal Anomaly (TIFFA)

Study design: Prospective cohort study

Study Setting: Tertiary care center in South Kerala, KIMSHEALTH

Study Duration: 18 months (1/1/2021 to 30/6/2022)

Study Population: Antenatal women attending OBG OPD for TIFFA between 16-20 weeks. Babies assessed in immediate neonatal period till discharge from hospital.

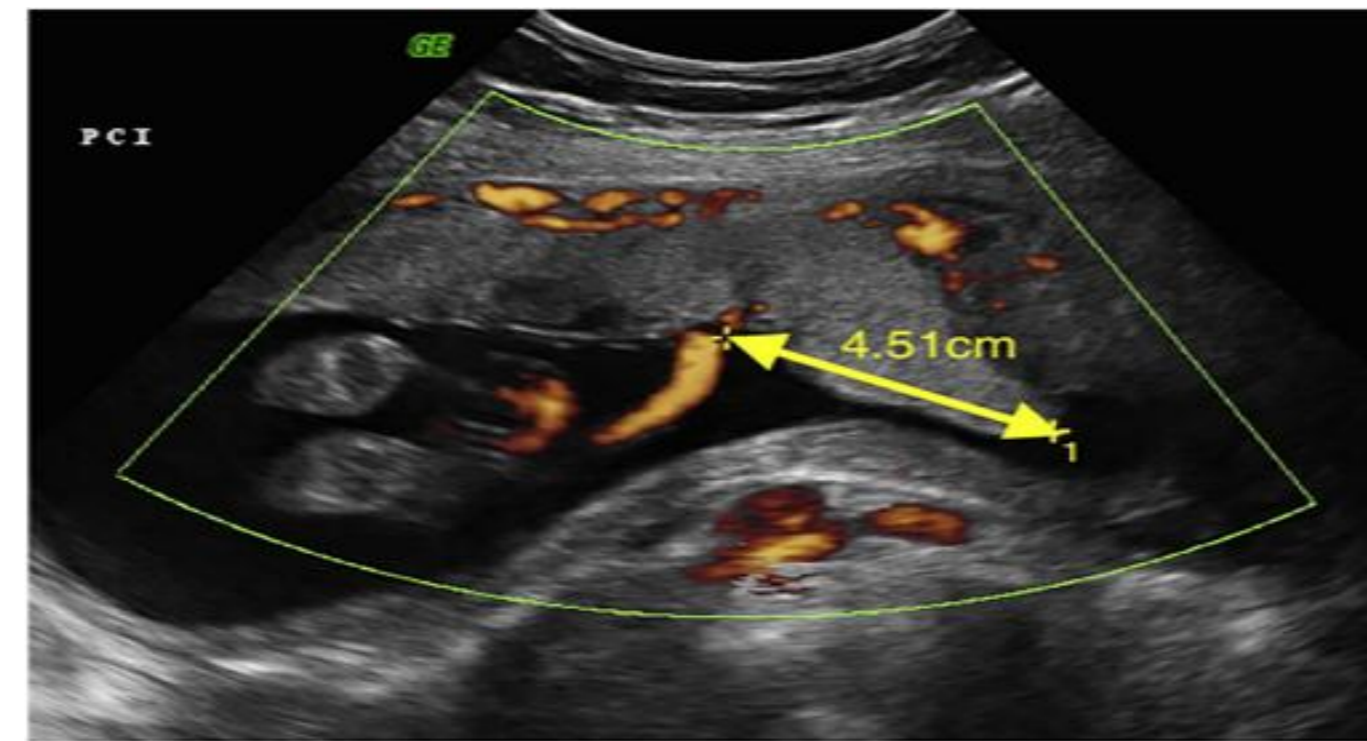
Sample Size: 364

Abnormal: Normal - placental umbilical cord insertion was taken in the ratio 1:3

Results

ACI had high incidence of-

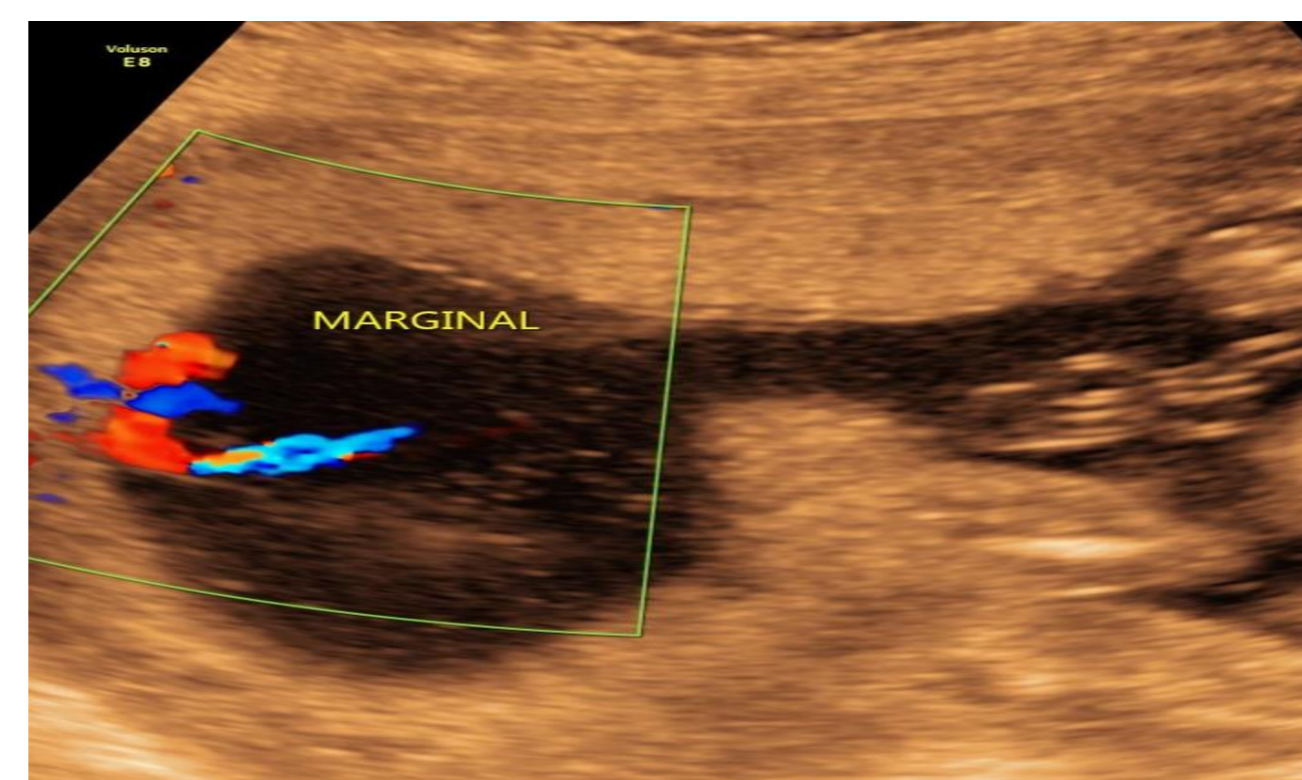
- Increasing maternal age
- High BMI
- Multiparity
- Previous history of Myomectomy
- Miscarriage
- Conceived by ART



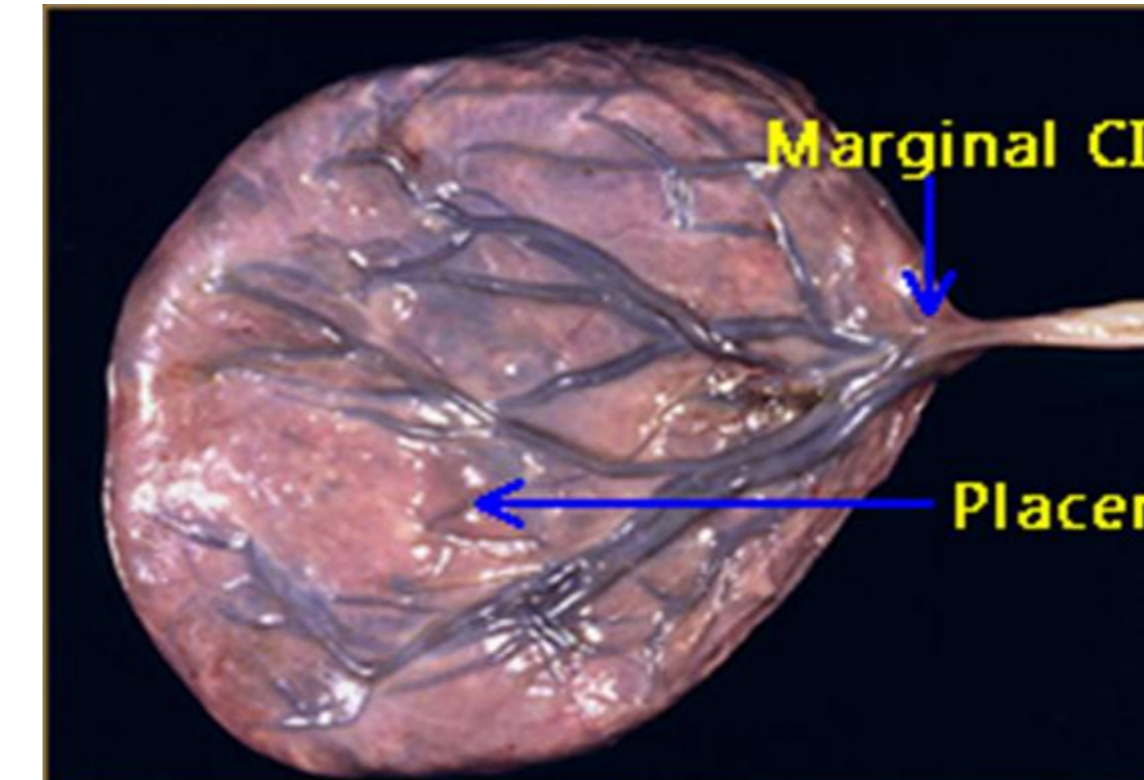
USS documentation of central cord insertion



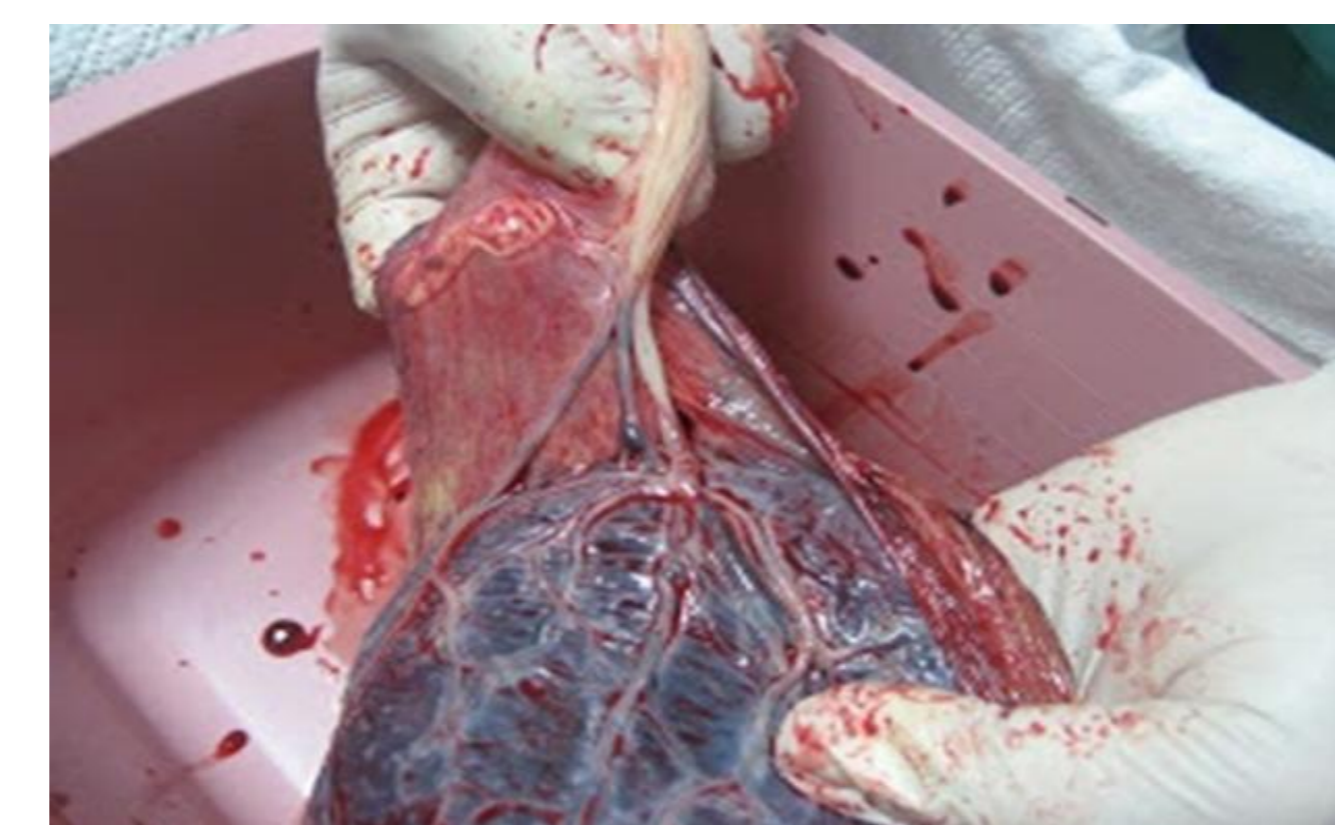
Gross appearance of central cord insertion



USS documentation of marginal cord insertion



Gross appearance of marginal cord insertion



Gross appearance of velamentous cord insertion

USS documentation of Cord insertion

- Sensitivity- 100 %
- Specificity- 100 %

Association of cord insertion with Antepartum hemorrhage (APH), Intrapartum hemorrhage(IPH), Nuchal cord

Associations	Cord insertion site in placenta		p value	Odds ratio 95% CI	
	Normal Cord insertion n (%)	Abnormal Cord Insertion n (%)			
APH	No	315 (90.8)	32 (9.2)	<0.0001	23.63 (7.83-71.32)
	Yes	5 (29.4)	12 (70.6)		
IPH	No	319 (88.9)	40 (11.1)	<0.0001	31.9 (3.47-292.49)
	Yes	1 (20)	4 (80)		
Nuchal cord	No	306 (90)	34 (10)	<0.0001	6.43 (2.65-15.58)
	Yes	14 (58.3)	10 (41.7)		

Characteristics with statistically significant association

Increasing maternal age, history of myomectomy predisposes more to ACI

IUGR, APH,IPH seen more in ACI

Nuchal cord seen more with normal cord insertion.

Low APGAR score, neonatal resuscitation, history of NICU admission seen more for babies with ACI

Characteristics with high incidence, but no statistically significant association

Multiparous women with high BMI, ART conception, history of miscarriage or suction evacuation , uterine anomalies was associated with ACI

Average birth weight of babies with ACI was **2.7kg** whereas normal cord insertion babies had and average birth weight of **2.9kg**.

- ✓ No association between **gestational age at delivery and weight of placenta**
- ✓ The **gender** of baby had no association with the cord insertion site.
- ✓ **Emergency LSCS**
Normal cord insertion-15.4%
Abnormal cord insertion-17.3%

Conclusion

- ✓ It is not a routine practice to look for placental cord insertion in singleton pregnancies in a TIFFA scan
- ✓ Our study concluded that placental cord insertion can be identified with confidence and accuracy in the TIFFA scan.
- ✓ Hence, we recommend that it will be a good practice to document the placental cord insertion so as to identify the subset of pregnant women who are prone to develop the above-said complications, thereby providing adequate surveillance for an optimal perinatal outcome.

Reference:

- Ismail KI, Hannigan A, O'Donoghue K, Cotter A. Abnormal placental cord insertion and adverse pregnancy outcomes: a systematic review and metaanalysis. Syst Rev. 2
- Brouillet S, Dufour A, Prot F, Feige JJ Influence of the umbilical cord insertion site on the optimal individual birth weight achievement. BioMed research international. 2014 May 25;2014.4 8.