

ULTRASOUND LOCATION OF PLACENTAL SITE IN RELATION TO FETAL PRESENTATION

By

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SUMMARY

Placenta has been localized ultrasonographically in 1250 patients with more than 34 weeks pregnancy. The location site has been correlated with fetal presentation in utero. Of total 83.28% cases had cephalic presentation, 11.76% breech and in 4.96% fetus was lying transversely.

Breech presentation was associated with cornuofundal location of placenta in a significantly higher percentage of cases as compared to cephalic, while patients with transverse lie were noted to have a fundal or low lying placenta more frequently in comparison to other presentation.

Introduction

Various techniques have been used to accurately determine the location of placenta. In the last few years ultrasound has become established as the most reliable, non invasive procedure to localize the placenta.

Many theories have been propounded to explain why human fetus presents by breech or lies transversely. Stevenson (1949, 1950, 1951) observed that the location of placenta in the uterine cavity had an important influence on the fetal position by causing an alteration in the shape of uterine cavity. Subsequently Kian (1963) and Fianu and Vaclavinkova (1978) also noticed a relation between placental location site and fetal present-

ation, while Wingate and Pauls (1968) could not demonstrate a direct relation between the site of placental implantation and fetal malpresentation by 51 Cr placental localization studies. Hoogland and de Haan (1980) studied the placental location site in relation to the position of fetal spine in utero. The present study has been undertaken to correlate the placental location site as studied by ultrasound with fetal presentation.

Material and Methods

A total of 1250 patients attending high risk pregnancy clinic of All India Institute of Medical Sciences and undergoing ultrasonic evaluation during pregnancy were included. Since fetal lie changes frequently before 34 weeks only cases screened from 34 weeks onwards with normal singleton pregnancy were included. In all these cases clinical and ultra-

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sound dating of pregnancy using biparietal diameter and femur length measurements were in agreement.

Ultrasound screening was performed with grey scale real time scanning equipment (Aloka) operated at 3.5 MHZ. All scans were done with patient lying supine and initial midline longitudinal scan was done for orientation followed by scanning in different planes. Placental location was categorised by the position of the greatest bulk of the placental tissue and in the event of an overlap of two uterine sectors a compound category was used. Four main location sites were identified viz. anterior, posterior, fundal and low lying with various sub-categories. A note of the fetal lie, presentation and position of fetal spine was also made at the same time.

Results

A total of 1250 patients were examined. Out of these 1041 (83.28%) had cephalic presentation, 147 (11.76%) breech presentation and in 62 (4.96%) cases the fetus was lying obliquely or transversely (Table I). (The incidence of abnormal presentations is higher than normal in our cases as our hospital caters to only high risk cases) Relevant obstetric data in the three groups is listed in

Table II. All patients are comparable with regard to age, parity and gestational age. The location of placenta in these three groups have been shown in Table III.

TABLE I
Distribution of Various Presentations

Presentation	No.	Percentage
Cephalic	1041	83.28
Breech	147	11.76
Transverse	662	4.96
Total	1250	100.00

An anteriorly situated placenta was seen in 42.84%, 35.37% and 32.26% cases respectively in cephalic, breech or shoulder presentation. On statistical comparison using student T test the difference between three groups was insignificant statistically ($x^2 = 7.46$).

Posteriorly situated placenta was also noted to occur more frequently in association with cephalic presentation (18.15% vs 15.64% and 11.29%) but statistically this association was not significant ($x^2 = 3.27$).

Other placental locations showed a wider variation in frequency with regard to fetal presentation. Overall fundal placenta was seen in 35.35% cases with cephalic presentation 43.53% cases with breech and 41.93% cases with transverse

TABLE II
Relevant Obstetric Data in Three Groups

	Cephalic (N=1041)	Breech (N=147)	Transverse (N=62)
Age Range	18-31	21-30	19-36
Mean	26.2	27.9	27.3
Parity Range	0-5	0-3	1-6
Mean	0.89	0.91	1.11
Gestational Age-Range	34-41	34-42	36-40
Mean	36.4	37.6	37.8

TABLE III
Placental Position in Relation to Fetal Presentation

Placenta	Cephalic (N=1041)		Breech N=147		Transverse N=62	
	No.	%	No.	%	No.	%
1. Anterior						
Midline	362	34.77	43	29.25	14	22.58
Left lateral	30	2.88	6	4.08	4	6.45
Right lateral	54	5.19	3	2.04	2	3.23
Total	446	42.84	52	35.37	20	32.26
2. Posterior						
Midline	163	15.65	22	14.96	7	11.29
Left lateral	10	0.96	1	0.68	—	—
Right lateral	16	1.54	—	—	—	—
Total	189	18.15	23	15.64	7	11.29
3. Fundal						
Midline	117	11.24	19	12.93	6	9.68
Antero-fundal	67	6.44	12	8.16	8	12.90
Postero-fundal	145	13.93	13	12.24	5	8.06
Cornual	39	3.74	15	21.20	7	11.29
Total	368	33.35	64	43.53	26	41.93
4. Low lying						
Anterior	22	2.11	7	4.76	3	4.84
Posterior	16	1.54	1	0.68	6	9.68
Total	38	3.65	8	5.44	9	14.56

lie. On statistical correlation this association was significant ($P < 0.05$). Most significant association was noted with cornuo fundal location of placenta which was seen in 3.74% cases with cephalic presentation as compared to 10.20% and 11.29% respectively, in breech and transverse lie respectively. The difference between cephalic and breech and cephalic and transverse was highly significant statistically ($P < 0.01$) while the difference between breech and transverse was not significant ($\chi^2=2.16$).

When low lying placental positions were correlated with fetal presentation it was

noticed that low lying placenta occurred with a greater frequency in association with abnormal presentation. With cephalic in 3.65% cases the placenta was low lying while with breech in 5.44% cases the placenta was situated over the lower segment. With transverse lie placenta was low lying in 14.56% cases. These results could not be compared statistically due to lesser number of cases in these groups ($\chi^2=5.12$).

Discussion

Initially the use of ultrasound to localize placenta was limited to determining

the presence or absence of placenta praevia in patients with vaginal bleeding and as a pre-operative procedure before amniocentesis. By a comparative study of various techniques to localize placenta Gottesfeld (1966) concluded ultrasonography to be the most accurate.

Stevenson studied placental location by soft tissue radiography in cases with abnormal fetal presentation. Out of 52 cases with transverse lie, placenta was seen to occupy a fundal or a lower segment position in 92.3% of his cases. Placenta was seen in fundal region in 48.2% cases and directly over the lower segment in 26.8%. He was convinced that this was the primary cause of malpresentation as occupancy of fundus or lower uterine segment by placenta interfered with the longitudinal lie of the fetus. Most of his cases with breech presentation were noted to have a cornuo-fundal implantation of placenta.

In our series the placenta was implanted in the fundal region in 41.93% and 43.53% cases with transverse and breech respectively, while it was noted at fundus in 35.35% cases with cephalic presentation. Placenta praevia was also noted in a significantly higher percentage of cases in association with transverse fetal lie and fundal and low lying placenta together were present in 56.49% cases with transverse lie. This is in contrast to 92.3% cases of Stevenson but he included all the cases as low lying where even a bit of placenta was seen over the lower segment.

Kian (1963) analysed the relationship between breech presentation and placental attachment and noted cornuo-fundal attachment of placenta in 66% cases with breech as compared to 3.9% in cases with cephalic presentation. We did not observe such a high percentage of cornuo-

fundal implantations in our series, but none the less a significantly higher rate was observed. It is possible that a precise localization was lacking in Kian's series as the placental implantation site was determined by manual exploration of the uterus.

Fianu and Vaclavinkova (1978) considered placental attachment site to be an important factor in the aetiology of breech presentation and demonstrated sonographic evidence of cornuo-fundal implantation in 73% cases with breech as compared to only 5% in cases with cephalic presentation.

Fell (1956) in a study of placental position in 100 cases with breech presentation noted cornuo-funda' placental implantation more frequently with breech as compared to other presentations. He observed that placental position may not be the principal cause for breech but knowing the position may help in management planning.

Hoogland and de Haan (1980) have correlated placental location with fetal position in utero. It was observed that 57.4% of anteriorly located placentae were situated on the right side of the uterus which might result in the fact that fetal spine and occiput were more commonly situated toward left of uterus. In our series also there was a slight preponderance of right antero-lateral placental position as compared to left antero-lateral in cephalic presentation (5.67% vs 3.72%). In most cases it was observed that fetal spine was lying opposite the placenta. This might explain a high association of fundal and low lying positions in association with transverse fetal lie.

Thus we have observed a high percentage of cornuofundal or lower segment placental implantations in association with abnormal fetal lie. We conclude

that placental implantation site can influence fetal position and presentation in utero.

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