

ROLE OF SONOGRAPHY IN PREVIOUS CAESAREAN SECTION

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SUMMARY

Present study consists of study of 64 cases of previous caesarean section who were sonographically assessed for thinning or defect in scarred lower uterine segment and were compared with intra-operative findings during elective section. scar defect was noted in 17.18% of study population on USG but noted only in 15.6% during operation. The 1 positive case accounted for 1.56%, the sensitivity and specificity being 100% and 98.2% respectively, thereby demonstrating that sonographic surveillance of lower uterine segment is possible and accurate.

INTRODUCTION

The last 3-4 decades have witnessed a increasing number of pregnancies following previous caesarean section, as a consequence of which there is an increased likelihood of pregnancies with scar ruphure. The inability to precisely confirm the integrity of scarred lower uterine segment (LUS) is many a time the most common indication for the repeat caesarean section. Several recent reports suggest that sonography can be utilised

to evaluate LUS.

The sonographic LUS is measured by thinnest anterior surface of the uterus measurable beneath a moderately distended bladder. It is a 3 layered structure comprising from within of chorioamnionic membrane and decidualised endometrium, middle layer of myometrium and outer layer of visceral parietal peritoneum reflection that is juxta-posed with bladder. For analysis it is described as [1] Asymmetric or symmetric [2] Progressive thinning resulting in loss of sonographic delineation [3] Variable degree of movement of LUS, that resulted

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in distortion of LUS and may show banjo string or flag like rippling effect when severely attenuated [4] Abnormal ballooning [5] Wedge defect when deformity persisted despite development or thinning of LUS.

AIMS

To assess whether USG is a reliable and practical means of evaluating lower uterine scar after conception or during labor before delivery.

MATERIALS AND METHODS

A prospective study was carried out over a year from April 92 to July 93 in Dept of Obstetrics and Gynecology in Grant Medical College and J.J. Group of Hospitals on 64 gravidas with previous caesarean section to detect defects in LUS on USG. Scan was done at time of ANC registration and monthly. The total study population was divided into

- Class 1 : Normal patients with LUS thickness more than 5 mm.
- Class 2 : Abnormalities showing obvious defect or abnormal thinning considered as classical windows.
- Class 3 : Patients showing well circumscribed defects unrelated to thickness or movement.

The patients were admitted at 36 weeks or earlier if they developed any complication and delivered by elective caesarean section. Intra-operative findings were compared with USG, Intra-operative were classified as:

- Class 1 : Normal LUS with continuous and well defined myometrial layer.

Class 2 : Abnormal paper thin segments and was thin enough to visualise contents.

Class 3 : Wedge defect involving circumscribed area of myometrium.

OBSERVATIONS

Majority of patients in the study group were from age group 21 to 30 years with 80% [52] being second or third gravida.

Commonest indication for repeat caesarean section was previous 2 LSCS [37.5] followed by previous LSCS with Cephalopelvic disproportion [31.2%]. Severe PIH and malpresentation were other common indications.

A total of 250 USG examinations were carried out. The study population was divided into positive or negative group on USG finding as shown in table I.

The mean thickness of LUS was significantly less in abnormal group of patients [2.8mm] as compared to normal or negative group [7.8%].

Initial scan showed 12 of the 64 patients having defect, however repeat scan showed defect only in 11 [17.18%] of these patients.

At the time of elective section only 10 [15.6] of the positive diagnosed were found to have a defect. The youngest gestation at which true positive diagnosis was made was 24 weeks and oldest gestation was 36.0 weeks.

As shown in table 3 three stage classification was evolved on basis of anatomy of LUS on USG. Of the 64 cases 53 [82.8%] were class I whereas 11 [17.1%] were either class II or III.

Table I
Gestation and age at diagnosis and clinical outcome

Case No	Initial Scan			Repeat Scan			Final Scan			Status of D		Delivery Confirmation	USG Class At Time Surg
	Age	+	-	Age	+	-	Age	+	-	Initial	Final		
05	28.0	P	-	33.0	P	-	36.0	P	-	TP	TP	Window	2
08	20.0	P	-	33.0	-	N	36.0	-	N	TP	TN	Normal	1
11	24.0	P	-	30.0	P	-	35.0	P	-	TP		Ab. Thinning	2
15	29.3	P	-	32.0	P	-	36.2	P	-	TP	TP	Ab. Thinning	2
17	32.0	P	-	34.0	P	-	36.0	P	-	TP	TP	Window	2
24	29.0	P	-	31.0	P	-	36.5	P	-	TP	TP	Ab Thinning	2
30	26.0	P	-	31.0	P	-	35.1	P	-	TP	TP	Normal	2
38	28.5	P	-	33.0	P	-	36.0	P	-	TP	TP	Ab Thinning	2
39	24.5	P	-	32.0	P	-	35.5	P	-	TP	TP	Wedge Def	3
48	30.0	P	-	34.0	P	-	35.0	P	-	TP	P	Ab Thinning	2
55	27.0	-	N	34.0	P	-	35.0	P	-	TP	TP	Ab Thinning	2
58	29.2	P	-	31.5	P	-	34.0	P	-	TP	TP	Ab Thinning	2

P = Positive, TP = True Positive, N = Negative

Table II

Thickness of lower uterine segment in transverse longitudinal plane

Diagnostic Group	Number	Mean	Range
Positive (< 5.0 mm)	11	2.8 mm	2.0-4.6 mm
Negative (> 5.0 mm)	53	7.8 mm	5-15 mm

Table III

Distribution of sonographic and intraoperative class

Classes	Based on USG		Diagnostic No.	At C. Section %
	No.	%		
Normal	53	82.8	53	100
Abnormal Thinning	10	15.6	9	90
Wedge Defect	1	1.5	1	100

There were no false negative findings in the study group but one false positive finding accounting for 1.56%.

DISCUSSION

Criteria employed to judge scar integrity namely afebrile post operative period, type of incision, indication and knowledge of previous surgeon do not guarantee a scar that will withstand labour [Pedowitz & Schwartz 1957] USG offers a better tool for scar visualisation. The 17.18% incidence of confirmed defects in our study was many times higher than that reported. Sullivan et al 1981 at 3%. But similar studies with Micheal et al 1988 and Vaclavin-cova & westin 1984 reported 20.7% & 21.6% respectively. The discrepancies have been

explained as [i] small study population [ii] biased view [iii] confirmation by USG could be more specific and sensitive.

On USG although some defects are distinguishable in the 2nd trimester, the most advantageous time to perform USG is 29 to 36 weeks [Micheal et al 1988]. This allows for adequate LUS development and avoids problems of diagnosis when liquor volume is physiologically decreased or when presenting part is deep in pelvis. One case illustrated the possibility that when a positive diagnosis is made too early a later follow up USG may require reclassification. The study was unable to demonstrate total number of previous incision and diagnosis of defect. In the study by Fukuda et al 1988, 41 transverse scars showed good healing i.e.

more than 2mm in 31 patients rest showed poor healing which was demonstrable intra-operative.

In Vaclavincova & Westin [1984] study of 68 previous caesarean section, only 10 to 15 [22%] deficiently healed scars were diagnosed with aid of USG before onset of labour. Sensitivity being 87% and specificity 96%. Micheal et al [1986] conducted a study on 70 patients to diagnose defects in LUS by USG and found it to have high positive and negative predictive value of 92.3% & 100% which correlates well with our study.

Our study was only observational and did not evaluate the defective scar as all patient underwent selective caesarean section for various reasons.

CONCLUSION

This study demonstrates that sono-

graphic surveillance of the scarred lower uterine segment for defects or abnormal thinning before labour is both possible and accurate. If the USG screening for diagnosis of lower uterine segment defects are adopted at least 75% of candidates with previous caesarean section can be considered for trial of labour with improved safety.

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