

Research Article

Study of obstetric and perinatal outcome in previous cesarean by sonographic evaluation of scar thickness of lower uterine segment at term

Devindra Kaur¹, Harminder Singh^{2*}

¹Gynaecologist, General Hospital, Rohtak, Haryana, India

²Department of Physiology, PT. BDS PGIMS, Rohtak, Haryana, India

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*Correspondence:

Dr. Harminder Singh

E-mail: harminder697@gmail.com

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ABSTRACT

Background: Aim of study was to evaluate sonographically the scar thickness in pregnant women with previous one cesarean and study obstetric and perinatal outcome after trial of labour based on scar thickness.

Methods: 50 pregnant women of gestational age >37 weeks were included in this prospective study. They were subjected to transabdominal ultrasound to search for thinnest zone of lower segment. Cases with scar thickness <3.5 mm were subjected to elective caesarean LSCS. Cases with scar thickness ≥3.5 were subjected to a trial of labour. Obstetric, perinatal outcome and hospital stay was studied.

Results: 32 women had scar thickness ≥3.5 mm (mean = 3.99 ± 0.32). 18 women had scar thickness of <3.5 mm (mean = 3.16 ± 0.29). All patients subjected to elective LSCS showed Grade 2 and Grade 3 thinning of lower segment. This finding was found to be highly significant (p<0.001). Cases who delivered vaginally had hospital stay ranging from 30 hours to 70 hours while those undergoing LSCS stayed 230 to 280 hours. This difference was statistically highly significant (p<0.001). The perinatal outcome was good.

Conclusions: Sonographic evaluation of scar thickness is safe and accurate procedure and is recommended in considering a trial of labour after previous one caesarean.

Keywords: Trans abdominal ultrasound, Lower segment, Previous caesarean, LSCS, Trial of labour

INTRODUCTION

The incidence of cesarean sections is rising in many parts of the world. In USA cesarean birth has increased from 2% to 5% in 1950s to a high of 25% to 30% in 1990, all without evidence of comparable reduction in neonatal morbidity and mortality.¹ In 1985, WHO in consensus statement suggested that there may be no health benefits from cesarean section rates exceeding 10-15%.² Hospital charges are typically higher for cesarean delivery than for vaginal delivery, Vaginal Birth After Cesarean (VBAC) has been advocated as a way to decrease the cost of

health care by reducing the rate of cesarean delivery. In women with a single prior cesarean delivery, a trial of labour is more cost effective than an elective repeat cesarean delivery.³ It is difficult to precisely calculate the maternal and fetal risks associated with a trial of labour. Prenatal sonographic examination is potentially capable of diagnosing a uterine defect and determining degree of lower uterine segment thinning in patients with previous cesarean delievery.⁴ Ultrasound evaluation permits better assessment of scar complication intrapartum and could allow for safer management of delivery.⁵ The present study was conducted to sonographically evaluate scar

thickness in previous cesarean and study the obstetric and perinatal outcome.

METHODS

The present study was a prospective study conducted in Department of Obstetrics and Gynecology. 50 pregnant women of gestational age >37 weeks were included in the study.

Inclusion criteria

Pregnant women with previous one LSCS, singleton pregnancy, vertex presentation, gestational age >37 weeks were included.

Exclusion criteria

Cephalo-pelvic disproportion in present pregnancy, previous cesarean done for absolute indication, fetal malpresentation, antepartum haemorrhage, pregnancy with medical disorder like Diabetes mellitus, Heart disease, Congenital anomalies in baby or uterus, Post maturity, Intrauterine growth restriction, High estimated fetal weight.

Detailed history was taken. General physical, systemic and obstetrical examination was done. Local examination of stitch line was done for healing defects, scarring or pain. After obtaining consent, the cases were subjected to trans-abdominal sonography with full bladder. Both longitudinal and transverse scans were done to search for thinnest zone of lower segment.

Group A - cases with scar thickness ≥ 3.5 mm were allowed a trial of labour.

Group B - cases with scar thickness <3.5 mm were taken up for cesarean section. The lower segment was measured perioperatively by ophthalmic calipers to confirm the ultrasonographic findings. The lower segment thinning was graded as:

Grade 1 - no thinning of lower uterine segment.

Grade 2 - thinning and loss of continuity of lower uterine segment but fetal hair not visible.

Grade 3 - thinning of lower uterine segment and fetal hair visible.

Obstetric outcome, perinatal outcome and hospital stay was studied.

RESULTS

Both groups were comparable for age and period of gestation (Table 1).

Table 1: Demographic distribution of cases.

	Group A (scar ≥ 3.5) Total=32	Group B (scar<3.5) Total=18	p value
Mean age	26.21 \pm 2.93	24.94 \pm 2.50	0.128
Mean period of gestation	39.0075 \pm 0.63	37.5978 \pm 0.34	<0.001

Plus-minus values are mean \pm SD

Table 2: Distribution of cases according to scar thickness.

Scar thickness (mm)	Group A	Group B	Total	Percentage (%)
2.5-3.0	-	6	6	12
3.0-3.5	-	12	12	24
3.5-4.0	24	-	24	48
4.0-4.5	7	-	7	14
4.5-5.0	1	-	1	2

Mean 3.99 \pm 0.32 (SD) 3.16 \pm 0.29 (SD); p value <0.001

36% cases had scar thickness <3.5 mm (Group B) with mean of 3.16 \pm 0.29. 64% cases had scar thickness ≥ 3.5 mm (Group A) with mean of 3.99 \pm 0.32. This difference was statistically highly significant p<0.001.

Table 3: Intraoperative findings.

Findings	Group A	Group B	Percentage (%)
Grade 1	7	-	14
Grade 2	-	17	34
Grade 3	-	1	2

p<0.001

7 cases with scar thickness ≥ 3.5 mm who underwent emergency LSCS showed no thinning of Lower Uterine Segment (LUS). All 18 pregnant women of Group B who underwent elective LSCS showed Grade 2 and Grade 3 thinning of LUS.

Table 4: Obstetric outcome.

Scar thickness	Successful trial of labour	Elective LSCS	Emergency LSCS
≥ 3.5 mm	25	-	7
<3.5 mm	-	18	-

p<0.001

25 out of 32 pregnant women left for trial of labour delivered successfully with success rate of 78.12%. Cut-off value of 3.5 mm showed sensitivity of 100%,

specificity of 72%, positive predictive value of 78.12% and negative predictive value of 100%.

Table 5: Perinatal outcome and hospital stay.

	Group A	Group B	p value
Mean birth weight	2.77 ± 0.25	2.81 ± 0.30	0.627
Mean APGAR at 1 minute	8.25 ± 0.91	8.44 ± 0.51	0.411
Mean APGAR at 5 minute	9.06 ± 0.66	9.22 ± 0.42	0.367
Hospital stay	90.37 ± 86.70	238.22 ± 12.9	p<0.001

Plus minus values are mean ± SD

The mean birth weight, APGAR at 1 and 5 minutes were comparable in both the groups. Only one neonate born after successful trial of labour had mild birth asphyxia and was admitted to Neonatal Intensive Care Unit (NICU) for 3 days. There was no neonatal mortality. Cases who delivered vaginally had hospital stay ranging from 30 hours to 70 hours while those undergoing LSCS stayed from 230 to 280 hours. This difference was statistically significant ($p<0.001$).

DISCUSSION

For years the scarred uterus was believed to be not strong enough to withstand labour due to paucity of a modality which could study the scar status in pregnant female. Ultrasonographic study of scar thickness filled this gap and proved to be a boon.

The present study attempted to study the thickness of lower uterine segment sonographically and come upon a cut off value deemed safe for allowing trial of labour in previous cesarean. Out of 50 women studied, 18 had scar thickness <3.5 mm. 17 of these showed Grade 2 changes and 1 showed Grade 3 changes peroperatively. Thus incidence of defects in our study was 1/50 i.e. 2%. Rozenberg studied scar thickness in women with one and more than one LSCS and found median thickness of 4.05mm and 2.2% incidence of defects in patients with previous one cesarean section.⁶

25 out of 32 cases with scar thickness ≥ 3.5 mm delivered successfully. A cut-off value of 3.5 mm for deciding trial of labour in our study showed sensitivity of 100%, specificity of 72%, positive predictive value of 78.12% and negative predictive value of 99.3%. A good sensitivity and negative predictive value reiterates that a thick lower uterine segment is usually strong.⁶

Fukuda examined 84 lower segment scars and found that all 14 cases with scar thickness <2 mm had Grade 2 and Grade 3 thinning peroperatively while 4/70 cases with scar thickness >3 mm showed Grade 2 thinning.⁷

Tanik found Grade 2 thinning in all 19 patients with scar thickness <3 mm while only 4 out of 31 patients with scar thickness >3 mm showed Grade 2 thinning.⁸

The mean hospital stay in patients with scar thickness <3.5 mm was 238.22 hours ± 12.93 (SD) while those with scar thickness ≥ 3.5 had a stay of 90.37 hours ± 86.70 (SD). The difference in hospital stay was highly significant statistically. Flamm reported mean hospital stay of 2.2 \pm 0.81 days for group that delivered vaginally and 4.6 \pm 1.29 days for cases with failed trial of labour.⁹ Average length of stay for patients with elective repeat cesarean was 4.3 days. There was no neonatal mortality or uterine rupture in our study. There was one NICU admission for mild birth asphyxia in successful trial of labour group.

The results of our study show that trial of labour in a good healed scar is cost effective and results in economizing the resources of blood bank, nursing care and anaesthesia sources. Highly co-related with operative findings, sonographic evaluation of lower uterine segment is an accurate and safe procedure and is highly recommended in considering a trial of labour after previous lower segment cesarean section.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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