

Original Article

Intra-Operative Uterine Scar Dehiscence and Its Relation to Feto-maternal Outcome in Patients of Previous Lower Segment Cesarean Section with Scar Tenderness

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Abstract

Objective: To determine frequency of scar dehiscence and its association with feto-maternal outcomes among patients undergoing repeat lower segment cesarean section (LSCS) with scar tenderness.

Methodology: A descriptive case series study was done at Obstetrics and Gynae department, Amna Inayat Medical College (AIMC) Lahore from December 2024 to May 2025. Women aged 20 to 40 years, ≥ 37 weeks with history of previous cesarean section delivery undergoing repeat LSCS due to scar tenderness were included. Patients were evaluated intraoperatively for scar dehiscence. Additionally, fetal and maternal outcomes were observed and compared based on the presence or absence of scar dehiscence. Data was analyzed by SPSS version 22.

Results: Overall mean age and mean gestational age of the patients was 30.0 ± 6.196 years and 38.97 ± 1.287 weeks respectively. Average BMI was 26.43 ± 2.551 kg/m². Overall, scar dehiscence was observed in 22 (19.1%) patients and was significantly associated with pulmonary complications, urinary complications, blood transfusion requirements, and meconium-stained liquor ($p < 0.05$), while no statistically significant association was found with Apgar score ($p > 0.05$).

Conclusion: Scar dehiscence was observed in 19.1% of patients undergoing repeat lower segment cesarean section with scar tenderness and was significantly associated with adverse feto-maternal outcomes.

Keywords: Repeated C-section, Scar dehiscence, Pregnancy Outcome.

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Introduction

Cesarean section represents the most frequently performed surgical procedure among women of reproductive age. This rising trend of cesarean section deliveries has been documented worldwide and also in South Asian countries including Pakistan, where it has increased from 3.2% to 20% in 1990 and 2018 respectively.¹ As Pakistan is also facing this increment which has become a public health issue, in Pakistan the current CS rate according to a cross sectional study in an underdeveloped region of the country showed 67%

rate of the Cesarean section.² There are many causes of this increase in caesarean section rate including modern technologies and safety of caesarean section, so females request CSD. Caesarean section is associated with increased fetal and maternal morbidity including wound infection, endometriosis, risk of placenta previa, placenta accreta, hemorrhage, urinary tract and bowel injuries.³ The major contributing factor in reducing the cesarean section rate is offering a trial of labor to patients with a history of one previous cesarean section.³ However, offering a trial of labor after a

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cesarean section carries the risk of scar dehiscence or uterine rupture, both of which are associated with increased fetal and maternal morbidity.⁴⁻⁶ Additionally the uterine scar dehiscence is a relatively common complication of cesarean delivery that increases the risk of subsequent uterine rupture.⁷⁻⁹ It refers to the complete separation of all three uterine layers the perimetrium, myometrium, and endometrium whereas uterine dehiscence represents an incomplete separation of these layers, with the fetus sometimes visible through an intact perimetrium, and is often asymptomatic.^{9,10} Though, the progression of a cesarean scar dehiscence may lead to uterine rupture, posing serious risks to both the mother and fetus; hence, early detection is crucial for improving obstetric outcomes.^{8,11}

Currently there is no reliable method for predicting scar dehiscence. Clinically, scar tenderness is reported to be an important tool for predicting scar integrity.² It has been observed that the frequency of scar dehiscence in patients with one previous cesarean section who develop scar tenderness during a trial of labor ranges from 8.3% to 17.5%.¹² According to other studies, scar tenderness was present in all women with preoperative scar dehiscence. Earlier reports have indicated that scar tenderness can serve as a strong predictor of scar dehiscence, with sensitivity and specificity reaching up to 86.3% and 86.0%, respectively.^{13,14}

Overall literature has shown that the presence of scar tenderness in women with a history of one previous cesarean section can be an important indicator of scar dehiscence, allowing for early intervention to prevent fetal and maternal morbidity. However, there is no local study found that could help us to understand the extent of problem of scar dehiscence in relation to fetal and maternal outcomes in our local population. Therefore, the purpose of this study was to determine the frequency of intra-operative scar dehiscence in women with a previous cesarean section presenting with abdominal pain and scar tenderness, which may helpful to improve the clinical practice and support the implementation of early screening and preventive strategies to reduce adverse pregnancy outcomes associated with scar dehiscence.

Methodology

This descriptive case series study was conducted at department of Obstetrics and Gynecology, Amna Inayat Medical College (AIMC). Study was done during six months from December 2024 to May 2025. The sample size of 115 cases was calculated with 7% margin of

error, 5% confidence level taking expected percentage of scar dehiscence i.e., 17.5% in patients undergoing repeat LSCS having scar tenderness. Consecutive Non-probability sampling technique was used. All the women aged 20 to 40 years, gestational age ≥ 37 years, patients presenting with pain, itching, tightness, swelling on scar site and undergoing repeat LSCS due to scar tenderness were included. The patients with unknown uterine scar site, patients with elective repeat LSCS, and those who refused to participate in study were included.

Study was done after obtaining ethical approval and informed consent following proper counselling and explanation purpose of the study. The demographic data was noted including age, BMI, parity, and gestational age. All the patients underwent C-cesareans and continuous monitoring was done according to hospital protocol. Intraoperative scar condition was evaluated to rule out scar dehiscence. Furthermore, patients were divided into two groups based on the intraoperative presence or absence of scar dehiscence, and were further evaluated for maternal outcomes, including pulmonary and urinary complications and blood transfusion requirements, as well as fetal outcomes, such as meconium-stained liquor and Apgar scores. All the data was noted on specially designed Performa attached. All the collected data was entered and analyzed using SPSS 22.0. Quantitative variables like age, gestational age and BMI were presented by mean and standard deviation, while categorical variables like scar dehiscence, maternal outcomes (pulmonary complications, urinary complications, blood transfusions) and fetal outcomes (low Apgar score, meconium-stained liquor) were presented by frequency and percentages. Post stratification Chi square test was applied to compare occurrence of scar dehiscence in these groups. Maternal outcomes and fetal outcomes were compared between groups using Chi square test. P value ≤ 0.05 was considered as statistically significant.

Results

This study included 115 women with almost similar mean age between those with and without scar dehiscence (29.45 ± 6.57 years and 30.24 ± 6.13 years) $p = 0.597$. Average BMI also showed no significant difference between the two groups (26.50 ± 2.76 kg/m² versus 26.41 ± 2.52 kg/m²) $p = 0.881$. Women with scar dehiscence showing a slightly lower mean gestational age 38.41 ± 1.18 weeks compared to those without dehiscence 39.11 ± 1.28 weeks ($p = 0.021$), while parity

>3, was more frequent among women with scar dehiscence as shown in table I.

Table I: Demographic information of the patients. (n=115)

Variables	Scar Dehiscence		p-value
	Yes	No	
Age (years)	29.45 ± 6.566	30.24 ± .133	0.597
BMI (kg/m ²)	26.50 ± 2.756	26.41 ± 2.516	0.881
Gestational age (weeks)	38.41 ± 1.182	39.11 ± 1.281	0.021
Parity	≤ 3	14.1%	85.9%
	> 3	18.9%	81.1%

The uterine scar dehiscence was found in 22(19.1%) of the patients, while 93(80.9%) of the patients had no evidence of dehiscence, indicating that nearly one-fifth of women undergoing repeated cesarean section. Figure 1

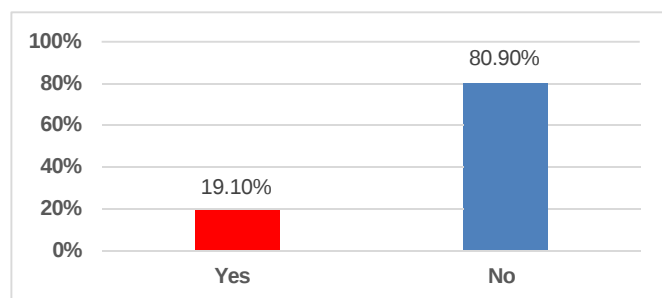


Figure 1. Frequency of scar dehiscence. (n=115)

Overall pulmonary complications were observed in 14 cases (12.2%), urinary complications 16.5%, and blood transfusion in 15.7% of the patients, followed by meconium-stained liquor was in 9.6% women, and low Apgar scores were noted in 8.7% of the women. Figure 2.

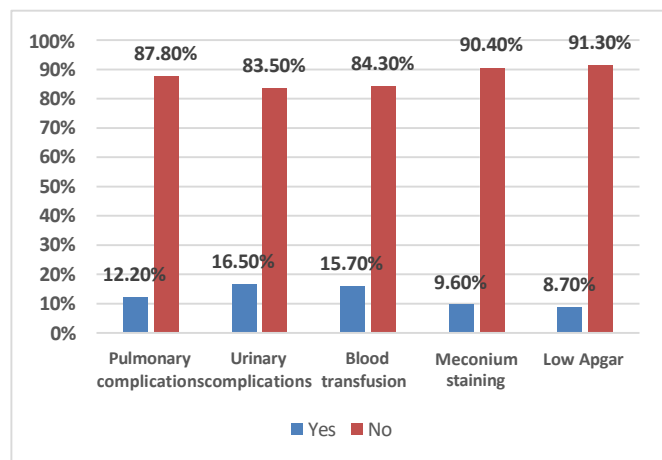


Figure 2. Frequency of scar dehiscence. (n=115)

Furthermore, the pulmonary complications were reported in 31.8% of women with scar dehiscence versus 7.5% without ($p = 0.002$), similarly the urinary

complications occurred in 40.9% of the dehiscence group compared to 10.8% of the non-dehiscence group ($p = 0.001$). Additionally, the blood transfusion rate and Meconium-stained liquor were significantly more in women with scar dehiscence $p > 0.05$. However low Apgar scores were more common in the scar dehiscence group (18.2% vs. 6.5%), while findings were statistically insignificant $p = 0.079$. Table II

Table II. Complications association with frequency of scar dehiscence. (n=115)

Variable		SCAR DEHISCENCE		Total	P value
		Yes	No		
Pulmonary complications	Yes	7	7	14	0.002
		31.8%	7.5%	12.2%	
	No	15	86	101	
Urinary complications	Yes	9	10	19	0.001
		40.9%	10.8%	16.5%	
	No	13	83	96	
Blood transfusion	Yes	10	8	18	0.0001
		45.5%	8.6%	15.7%	
	No	12	85	97	
Meconium staining	Yes	5	6	11	0.020
		22.7%	6.5%	9.6%	
	No	17	87	104	
Low Apgar	Yes	4	6	10	0.079
		18.2%	6.5%	8.7%	
	No	18	87	105	

Overall average of estimated blood loss was slightly higher in women with scar dehiscence (658.23 ml) compared to those without (618.70 ml), mean Apgar scores at 1 and 5 minutes were slightly lower in the dehiscence group (7.36 and 8.55, respectively) than in those without dehiscence (7.56 and 8.99) and mean hospital stay was longer in women with scar dehiscence (4.73 days) compared to those without, however the findings were statically insignificant as shown in table III.

Table III. Overall mean blood loss, Apgar score and Hospital stay according to scar dehiscence. (n=115)

Variables	Scar Dehiscence	Mean	SD	p-value
Estimated blood loss (ml)	Yes	658.23	136.92	29.19
	No	618.70	162.84	18.32
Apgar score at 1 minute	Yes	7.36	1.04	0.22
	No	7.56	1.09	0.12
Apgar score at 5 minutes	Yes	8.55	0.91	0.19
	No	8.99	1.03	0.11
Hospital stay (days)	Yes	4.73	1.07	0.23
	No	4.47	1.08	0.12

Discussion

Risk of uterine rupture is very high in patient with trial of labour with previous caesarean section. It is very necessary to predict antenatal risk factors before giving trial of labour.^{9,15,16} The need for augmentation of labour in patients with previous uterine scar increases the risk of scar dehiscence and scar rupture.^{16,17} Scar dehiscence can be diagnosed and predicted using ultrasonography,¹⁸ and various studies in the literature have shown its presence in cases presenting with scar tenderness.¹⁹ The present study was conducted to assess the frequency of intraoperative scar dehiscence and its association with foeto-maternal outcomes among patients undergoing repeat cesarean section, where intraoperative scar dehiscence was found in 19.1% of women with scar tenderness, which was almost similar to the study by Gupta N et al²⁰ where scar dehiscence was noted in 17.5% patients with previous one caesarean section who presented with scar tenderness.

Consistently, Khan FK et al²¹ reported that scar dehiscence was observed in 14.9% of pregnant women with history of one previous lower segment cesarean section and singleton pregnancy, presented with scar tenderness. According to another study by Zeb L et al²², the scar dehiscence was identified slightly higher in 23.75% of women who presented with scar tenderness and history of one prior cesarean section. Comparatively, Tyagi N et al¹² documented a lower occurrence of scar dehiscence, about 8.3%, in women undergoing repeat cesarean delivery; however, their study did not specifically include patients with scar tenderness, suggesting that the presence of scar tenderness may be associated with a greater risk of scar dehiscence. On the other hand Ashraf, M et al conducted a study to determine the frequency of uterine scar dehiscence in women with one previous cesarean section who developed scar tenderness during a trial of labor, where they reported that 7.6% of patients developed scar tenderness during labor, and the incidence of scar dehiscence among these patients was 10.53%.²³ In the present study, scar tenderness was included in the inclusion criteria, while in most previous studies, including those mentioned above, it was regarded as a predictor of uterine scar dehiscence and rupture.

Furthermore, in the present study, women with scar dehiscence had significantly higher rates of pulmonary complications (31.8% vs. 7.5%, $p=0.002$), urinary complications (40.9% vs. 10.8%, $p=0.001$), and

increased blood transfusion requirements and meconium-stained liquor ($p<0.05$). Additionally, low Apgar scores and prolonged hospital stay were more frequent in the dehiscence group, while the findings were statistically insignificant ($p\geq 0.05$). However, there was no fetal and maternal mortality found. In aligns to this study Gupta N et al²⁰ reported that there was no maternal mortality, while mean duration of hospital stay was 6 days, and 11.67% women required blood transfusion, NICU admission was 11.67%, still birth was 1.6% and one neonatal death. According to another study by Baron J et al²⁴ among women with scar dehiscence, preterm delivery occurred in 47.8%, low birth weight infants were reported in 26.1%, and 2.8% required peripartum hysterectomy, while among women without scar dehiscence, the rates were significantly lower 24.7% for preterm delivery, 15.8% for low birth weight, and only 0.4% required peripartum hysterectomy ($p=0.001$). Consistently Kandregula MS et al²⁵ found a significant association between scar dehiscence and adverse foeto-maternal outcomes, including preterm birth 25%, low birth weight 33.3%, low APGAR score <7 at 5 minutes 16.6%, NICU admission 16.6% and maternal tachycardia (86.66%), while no cases of blood transfusion, cesarean hysterectomy, or ICU admission were noted. Some difference in findings regarding foeto-maternal outcomes across different studies may be due to differences in sample selection criteria, severity of disease, gestational age and purpose of the studies.

Though, there is still a need for large-scale and longitudinal studies, as the present study has certain limitations. Such research is required to validate these findings with more comprehensive evidence and to develop effective diagnostic and management strategies to reduce related complications.

Conclusion

The Scar dehiscence was observed to be 19.1% among patients with scar tenderness and history of previous cesarean delivery. Scar dehiscence was linked to the adverse foeto-maternal outcomes. However based findings and study limitations there is need for multicenter longitudinal studies to prove the results and guide preventive and management strategies in clinical practice.

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