Original Article

Frequency of Uterine Scar Dehiscence during Repeat Cesarean Section with Short Inter Pregnancy Interval

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Abstract

Objective: To determine the frequency of uterine scar dehiscence during repeat cesarean section with short inter pregnancy interval (IPI).
Methodology: This descriptive (cross-sectional) study was performed at the Department of Gynecology & Obstetrics, Rawal Institute of Health Sciences (RIHS), Islamabad from December 2023 to June 2024. Patients presenting with singleton pregnancy, gestational age >37 weeks, normal amount of liquor, normal placenta, having one or more previous cesarean sections, vertex presentation and inter pregnancy interval <18months were included. The scar dehiscence was observed during C-Section in Operation Theater. The data was analyzed using SPSS software version 23.0.
Results: Mean age of total 150 women was 29 ± 2.30 years. Out of all 95(63.3%) patients were multi gravida and 55(36.7%) were grand multi gravida. 93(62%) patients had IPI ≤1 year, while and 57(38%) patients had IPI >1 year. Overall the scar dehiscence was observed among 17 patients (11.3%). Additionally, there was no significant association was found with demographic and obstetric factors (p=>0.05).
Conclusion: The uterine scar dehiscence was observed to be highly frequent (11%), indicating that it remains a notable intraoperative finding in subsequent cesarean section among women with short IP.
Keywords: Uterine scar dehiscence, repeat c-section, short IPI.

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Introduction

Globally, the rates of cesarean section have risen frequently, and one of the most life-threatening associated complications is cesarean scar dehiscence,[1] which raises the likelihood of uterine rupture.[2] The rupture of uterus involves a completely separation of all three layers of uterus, while uterine dehiscence represents an incomplete separation in which the fetus might be visible through an intact perimetrium.[2] Uterine dehiscence is usually asymptomatic;[2] but, it can be related with serious fetal and maternal complications. Subsequently the short inter pregnancy interval (IPI) enhance the complication and raise the risk of uterine scar dehiscence or even rupture. The short (IPI) is defined as the time from delivery of a previous infant to conception of the subsequent pregnancy that is ≤18 months.[3,4] The World Health Organization (WHO) recommended (IPI) at least 24 months before attempting a subsequent pregnancy and hearty three months before the next birth to enhance the most favorable maternal and child health outcomes.[3] The short IPI may compromise adequate scar healing, thereby increasing the risk of uterine rupture at the previous scar of C-section, as myometrial recovery occurs slowly due to delayed fibroblast activity and replacement of tissue of myometrium with connective tissue.[5] The prolonged duration of interval after a previous caesarean section gives more quality characteristics to the scar,[6] it also reduce the prevalence of low birth weight which strongly associated with short IPI.[7] After improving the clinical experience, the criteria for choosing patients for a trial of labor have become less restrictive as clinical practice

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and consideration of VBAC have extended.8 By the growing evidence and awareness, it has become clear that VBAC is the safe option and does not resulting in greater pregnancy associated mortality and morbidity in contrast to elective repeat C-section.[8] VBAC is a controversial topic in terms of scar dehiscence, where one study states that it has a protective effect and can reduce the occurrence of uterine scar dehiscence in the subsequent delivery while another concluded that it increases the incidence of scar dehiscence.[7]

During the past 35 years, the C-section rate has raised from 5% to nearly 30%, whereas the maternal mortality ratio has dropped significantly during the same time.[9] The raised prevalence of short IPI is not a just demographic statistic; it associated practical clinical consequences. The short IPI has been associated with maternal anemia, obstetric complications, and adverse perinatal outcomes as well as preterm birth and low birth weight.[10] Though the accurate prevalence of short IPI differs widely between populations and regions, recent studies highlighted that the it remains a common phenomenon throughout the world. According to a cross-sectional study carried out among mothers attending primary health care centers in Saudi Arabia, about 36% of women had a short IPI (less than 18 months),[11] demonstrating that more than one in three women conceive again within a short period of their previous delivery, a factor that can negatively influence perinatal outcomes. The rate of dense adhesions increases with the number of previous c-sections. According to a study the scar dehiscence among observed in 13.1% of the women.[12] Another study conducted at Government General Hospital, Eluru reported the 47% Uterine scar dehiscence and significantly linked to short IPI (<18 months).[13] Such variations reflect differences in cultural patterns, access to family planning, usage of contraceptive use, education levels, and socioeconomic status across region.

As the rate of c-section increasing globally, leading to a higher occurrence of uterine scar complications like as dehiscence. Regardless of their clinical importance, data on the frequency of this complication among women with prior c-section remain limited, particularly in low- and middle-income countries including Pakistan. Hence present study was aimed to observed the incidence of uterine scar dehiscence, providing important information for understanding how common this complication is in our population.

Methodology

This descriptive (cross-sectional) study was carried out at the Department of Gynecology & Obstetrics, Rawal Institute of Health Sciences (RIHS), Islamabad from the period of six months (20/12/2023 to 20/6/2024). All the patients presenting with singleton pregnancy, gestational age >37 weeks, normal amount of liquor, normal placental site, having one or more previous cesarean sections, vertex presentation and inter pregnancy interval <18 months were included while multiple gestation, polyhydramnios or oligohydramnios, low lying placenta, malpresentation, uterine surgery other than cesarean section and midline vertical uterine scar were excluded. The consecutive (non-probability) sampling technique was used. The sample size was calculated by using WHO sample calculator with the statistical assumptions as following: Confidence level 95%, Alpha error 4.75%, Anticipated POP proportion 9.5% Sample size 150. Study was conducted after taking prior permission from Institutional Review Board (IRB) and Ethical Review Committee (ERC) Ref no RIHS/IRB/06/2023. All women fulfilling the inclusion criteria were enrolled through OPD and labour room admissions of Gynae & Obs Department, Rawal Institute of Health Sciences, Islamabad. Written informed consent was obtained. Demographic data including name, age, gestational age, gravidity and BMI were documented. The scar dehiscence was outlined as a partial separation or thinning of the uterine wall at the site of previous c-section, with the overlying serosa remaining intact, and was assessed during c-section by surgeon in the operating room**.** All the information was recorded on the predesigned Performa. The data was analyzed using SPSS software version 23.0 Quantitative variables were presented as mean and standard deviation, while categorical variables in terms of frequency and percentage like scar tenderness, C-Section in emergency or elective, scar dehiscence. Effect modifiers were stratified by using post stratified Chi-square test, taking p-value ≤0.05 as statistically significant.

Results

The population of this study consisted predominantly of multigravida women (63.3%), while 36.7% being grand multigravida. Most of the women delivered between 37 and 39 weeks of gestation (71.3%). According to IPI, 62% of women conceived within one year of their previous delivery, and 38% had an IPI more than one year. Most of the women had one or two previous c-

sections (69.3%), while 30.7% had >2 c-sections. Mostly women underwent emergency cesarean sections (56.7%). Out of all 24% of women of women had scar tenderness, as shown in table I.

Table I: Demographic and clinical variables analysis. (n=150)

Demographic data		N	%
Gravidity	Multi	95	63.3%
	Grand Multi	55	36.7%
Period of gestation	37-39 weeks	107	71.3%
	40-42 weeks	43	28.7%
Inter pregnancy interval	≤ 1 year	93	62%
	> 1 year	57	38%
Previous C section	≤ 2	104	69.3%
	> 2	46	30.7%
Type of C section	Elective	65	43.3%
	Emergency	85	56.7%
Scar tenderness	No	114	76%
	Yes	36	24%

Furthermore, the scar dehiscence was observed among 17 patients (11.3%), while the majority of the study population 88.7%, presented without evidence of scar dehiscence. Figure 1.

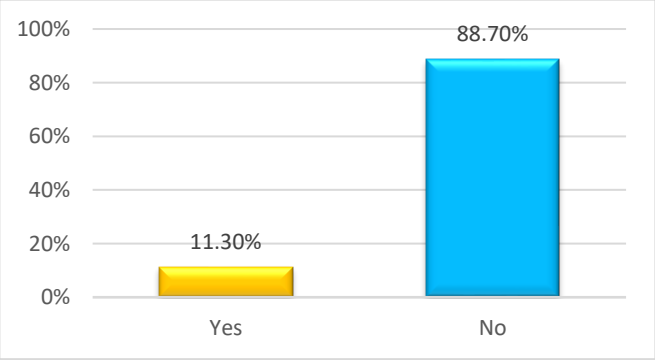

Figure 1. Frequency of uterine scar dehiscence. (n=150)

The scar dehiscence was mostly observed among women aged 18–30 years (13.5%), grand multigravid women (18.2%), with gestational age of 37 to 39 weeks, and patients with the IPI of ≤1 year (12.9%). Additionally, frequency of it was some greater among women with two or fewer previous cesarean deliveries (11.5%) and in those who were undergone elective c-sections (12.3%). Overall there was no significant association was found of demographic and obstetric factors with frequency of uterine scar dehiscence (p= >0.05), as shown in table II.

Discussion

The cesarean delivery is the most frequently performed surgical intervention on the uterus in the women of childbearing age. The uterine scar dehiscence is a relatively serious complication following the c-section and is differentiated by a partial separation of the layers of uterine wall, where the fetus may be visible through the intact perimetrium, thereby raising the risk of rupture uterus. This study was conducted to observed incidence of uterine scar dehiscence during repeat cesarean section among women with short IPI and it was observed among 17 patients (11.3%). In the comparison of these findings Mazhar T et al[5] found uterine scar dehiscence 14.28% among women with a short IPI in contrast to only 2.4% in those with a normal IPI. In another study conducted by Hussain S et al[14] the prevalence of scar dehiscence was (n=21, 12%) females in short IPI.

Furthermore, study carried out by Ramadana MK et al[15] had reported some lower rate of uterine scar dehiscence around 4.6%. According to other regional studies have also reported some higher frequencies of scar dehiscence in patients presenting with scar tenderness. On the other hand, study from Pakistan, scar dehiscence was observed among 23.8% of patients with repeated c-sections and clinical scar tenderness, underscoring that cohort selection and diagnostic method influence detected frequency. In aligns to this study a cross-sectional study conducted at Peshawar reported dehiscence around 14.9% of the women with history of prior cesareans and scar tenderness. In the study by Lewis P et al[16] demonstrated that a uterine scar dehiscence rate was occurred in 19(15.2%) patients,

Table II: Demographics date of frequency of uterine scar dehiscence.

Demographic data		Uterine scar dehiscence		P value
		Yes (n=17)	No (n=133)	
Age	18-30 years	12(13.5%)	77(86.5%)	0.459
	31-40 years	5(8.2%)	56(91.8%)	
Gravidity	Multi	7(7.4%)	88(92.6%)	0.081
	Grand multi	10(18.2%)	45(81.8%)	
Period of gestation	37-39 weeks	15(14%)	92(86%)	0.176
	40-42 weeks	2(4.7%)	41(95.3%)	
Inter pregnancy interval	≤ 1 year	12(12.9%)	81(87.1%)	0.610
	> 1 year	5(8.8%)	52(91.2%)	
Number of previous c section	≤ 2	12(11.5%)	92(88.5%)	0.905
	> 2	5(10.9%)	41(89.1%)	
Type of c section	Elective	8(12.3%)	57(87.7%)	0.945
	Emergency	9(10.6%)	76(89.4%)	

representing with short pregnancy interval, indicating around one in seven patients with a short IPI faced disruption of the uterine scar from a previous C-section. Consistently Zhu Z et al[2] observed that the out of 23 cases of uterine scar dehiscence, only six were identified preoperatively through ultrasonography, whereas the remaining 17 cases were not detected before the c-sections. According to the study by Stamilio DM et al[17] reported that the pregnancy interval < 6 months was linked to the higher risk of uterine rupture with aOD as (2.66, CI 95%). On the other hand, Bibi H et al[18] reported that the scar dehiscence was noted among 5.12% of the patients with IPI of <18 months in contrast to 1.21% in women having IPI > 18 months (p > 0.05). The difference in reported prevalence of scar dehiscence following c-section across different studies may be due to differences in study design, characteristics of study populations, and the surgical practice, as well as the fact that many studies did not specifically evaluate the impact of short IPI, that may play an essential role in scar healing and dehiscence development.

The short IPI is linked to the adverse obstetric outcomes through the multiple mechanisms. Females who conceive soon after a previous c-sections may have inadequate time to restore nutritional resources, leading to compromised the health of the mothers in the subsequent pregnancy. Additionally, the high prevalence of cesarean sections in our sour country many of which are performed in small private facilities with limited resources and adjustable surgical expertise may further contribute to suboptimal healing of the scar.

Subsequently, such factors together may rise the likelihood of uterine scar dehiscence in the following pregnancies. According to the studies the different operative approaches used during cesarean sections may influence the development of dehiscence postoperatively, specifically whether the peritoneum is closed or left open after the birth of child. The rates of the dehiscence may also fluctuate basis on the type of uterine incision done and the method used for the hysterotomy closing.[19,20] The evidence in this part remains unpredictable, as studies have reported conflicting outcomes. Although many reports suggest that peritoneal closure remains linked to the reduced occurrence of the dehiscence, the lack of optimal surgical techniques and the occurrence of related confounding factors make it challenging to draw decisive conclusions.[19-22] The obstetricians must remain extremely attentive during caring for women during pregnancy with a prior history of emergency c-section to prevent life-threatening complications like rupture of the uterus that may occur from not well-known, asymptomatic uterine dehiscence.[9] Overall studies underscore the clinical importance of counseling the women with prior cesarean delivery regarding proper birth spacing. The suitable IPI allow sufficient time for uterine scar remodeling and may decrease the chance of intraoperative complications in the subsequent pregnancies. Generally, the findings contribute valuable local data regarding frequency of uterine scar dehiscence and supports existing international recommendations encouraging optimal pregnancy spacing to improve maternal outcomes following the c-sections. However, this this study has numerous limitations, like relatively small sample size, the lack of the well-defined control group with prolonged IPI, and the absence of follow-up to evaluate the detailed feto-maternal. Thus, further studies with suitable comparison groups and complete outcome estimation are suggested to validate these observations and provide more strong evidence.

Conclusion

According to the study conclusion, the uterine scar dehiscence was observed to be highly frequent 11%, indicating that it remains a notable intraoperative finding in subsequent cesarean section among women with short IPI. The strategies should be developed to prevent this life-threatening morbidity by concentrating to contributing factors, specifically by proposing an IPI of more than 18 months to minimize the risk of it. Women should be counselled about regular antenatal care, polite contraception for spacing between two pregnancies.

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