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Frequency of Uterine Scar Dehiscence and Its Associated Risk Factors in Patients with Previous Lower Segment Cesarean Section at Jinnah Post Graduate Medical Center, Karachi

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ABSTRACT

Introduction: Uterine scar dehiscence is a dangerous occurrence in women with previous cesarean sections, as it has the potential to lead to a uterine rupture with poor maternal and fetal outcomes. This is a cross-sectional study to ascertain the prevalence of scar dehiscence and its associated risk factors among women who had previous lower-segment cesarean sections in Jinnah Postgraduate Medical Centre, Karachi. **Study setting:** The study was conducted at the Department of Obstetrics and Gynecology, Jinnah Postgraduate Medical Centre (JPMC), Karachi between January, 2024 and June, 2024, hence covering a six months period in a test and control group. **Objectives**: The objective of this study was to review scar dehiscence of the uterus and to suggest possible risk factors in patients undergoing one or more of the lower segment cesarean sections at JPMC, Karachi. **Materials and Methods:** The study was a cross-sectional study of 277 post operatively cesarean section patients. Data was obtained from chart review, intraoperative note and findings. Data analysis was done using Statistical Package for Social Sciences (SPSS). **Results**: The prevalence of uterine scar dehiscence was determined to be 6.9%. The important risk factors included trial of labour after cesarean, short inter-pregnancy interval, wound infection. **Conclusion**: Uterine scar dehiscence is an adverse outcome that depends on a number of causes. Risk management measures and preventive measures play a significant role in management.

INTRODUCTION

Uterine Scar dehiscence is defined as separation of uterine musculature at a scar site, with the uterine serosa still intact or a subperitoneal separation of the previous uterine scar in the lower uterine segment, with the chorioamniotic membranes visible through the peritoneum intraoperatively. There is an increasing trend of cesarean section deliveries, and this is a cause of concern in both the developed and developing world, including Pakistan. These indicate that there has been a gradual increase in LSCS from 2.7% in 1990- 91 to 15.8 % in 2012-13 and is favoured among women in urban areas, women with education and those from affluent backgrounds. These are the patient's preference for LSCS, low VBAC and a patient's perception of the risks of vaginal birth after having LSCS. There are some complications which are likely to affect women who have had one or more previous cesarean deliveries, for instance, uterine scar dehiscence (2). Uterine scar dehiscence, which is the separation of the layers of the uterine musculature through the cesarean scar, has recently raised concerns among clinicians when it seems to have the propensity to evolve into uterine rupture, which is perilous to the life of both the mother and her unborn child (7).

Scar dehiscence can occur postoperatively due to failure in the healing of the uterine incision. This factor is now acknowledged as a significant predictor of uterine dehiscence in future pregnancies, particularly when women attempt a TOLAC. The factors that put a woman at higher risk of developing uterine scar dehiscence are short intervals between pregnancies, infection, improper surgery and the stretching of the uterus (8). Poor working in labour and substandard stitching in uterine incisions increase the risk of scar dehiscence, especially where

single-layer closure is used (6, 9). A study that was conducted in Punjab showed that the majority of women who had a cesarean section in the past are likely to have an elective repeat cesarean section in future pregnancies to eliminate any risks that may be associated with VBAC (5).

The rationale for exploring risk factors for uterine scar dehiscence is to identify risk indicators to help determine the likelihood of the occurrence of the condition. Several investigations revealed that two-layer closure of the uterine incision decreases the risks of scar dehiscence remarkably (7). Moreover, factors such as prolonged labour, infection and poor handling of the suture line of the Cesarean section raise the chances of dehiscence and subsequent dehiscence (10, 12). However, in situations where a scar dehiscence is present, there are often vague complaints such as scar pain or fetal compromise (13). However, early intervention is very important to avert such complications as peripartum hysterectomy or fetal loss.

Although the prevalence of uterine scar dehiscence, as documented in the current literature, varies from 0.2% to 4%, the prediction of the outcomes is still imprecise due to the absence of standard screening procedures. Recent advances in ultrasound technique enable a better pre-operative evaluation of the lower section of the uterus, and some recent research points to the fact that the thickness of a scar might be a prognostic sign of uterine dehiscence (4). Nevertheless, research progress has not led to the identification of a definitive procedure for predicting uterine scar dehiscence with a high degree of effectiveness. As a result, caution, which can be referred to as a high index of suspicion, and close monitoring throughout the process of labour and delivery remain the best strategies for managing this risk.

Lastly, the increasing rate of cesarean sections and the associated risk of uterine scar dehiscence pose significant challenges for obstetric care. Although there has been progress in coming up with surgical techniques for preventing uterine scar dehiscence together with antenatal care, there is a problem that surfaces due to the unavailability of reliable diagnostic tools. Therefore, the aim of this study is to determine the prevalence rate of uterine scar dehiscence and other factors among clients who had one or more previous LSCS at JPMC, Karachi. This study aims to implement the framework of this sizable problem and identify the main risk factors that would eventually improve the medical treatment of this condition and reduce the impact of uterine scar dehiscence (15).

Objective

The objective of this study is to determine the incidence of uterine scar dehiscence in women who have had at least one or more lower segment cesarean section, and to identify the associated risk factors prevailing at JPMC Karachi.

MATERIALS AND METHODS

Study Design

A cross-sectional study.

Study setting

The study was conducted at the Department of Obstetrics and Gynecology, Jinnah Postgraduate Medical Centre (JPMC), Karachi.

Duration of the study

This study was conducted between January, 2024 and June, 2024, hence covering a six months period in a test and control group.

Inclusion Criteria

The study was carried out on women receiving antenatal care attendants who have had at least one prior cesarean section delivery or women who are booked for either elective/anticipated or emergency LSCS. As for the eligibility criteria, patients have LSCS of not less than 34 weeks based on the last menstrual period and dating. The inclusion criteria was rural women within the age bracket of 20 to 45 years of age group.

Exclusion Criteria

Patients with prior vaginal births or other prior uterine procedures like myomectomy, uterine dehiscence or excision of septum were eligible for exclusion. Further, patients with twin pregnancies, polyhydramnios, or morbidly adherent placenta were excluded from the study. Patients who didn't agree to participate in the study also excluded.

Methods

This study was conducted on pregnant women who have had one or more lower-segment cesarean sections at a time and at Jinnah Postgraduate Medical Centre, Karachi, using the method of convenience sampling either for elective or emergency LSCS. The data retrieved from the patient history form, which contains the patient's demographic characteristics, parity, history of previous cesarean section, inter-delivery interval, and other obstetric history. It was pointed to see whether there is a dehiscence of the uterine scar during the surgeries. Factors related to uterine scar dehiscence, which include TOLAC, infection, wound issues, single-layer suture closure, and endometritis, based on operational definitions. Scar dehiscence was diagnosed by identifying the uterine scar during surgery and by discernment of the split in the uterine musculature while the serosal layer remains unbroken. The data collected in this study was entered into a structured proforma for analysis. Qualitative data analysis and Chi-square tests done using Statistical Package for the Social Sciences (SPSS) software.

RESULTS

In total, 277 patients participated in this study, and their mean age was 30.5 years with a standard deviation of 4.5

and ranged from 20 to 45 years of age. Among these patients, most of them had previous cesarean sections twice and above, accounting for 60%, while those who had the previous cesarean section once accounted for 40%. The study identified that in the case of the babies, the average gestational age at the time of delivery by cesarean was 38.2 weeks and further, the range was found to be from 34 to 41 weeks. This paper mainly aimed to define the incidence of uterine scar dehiscence and the possible risk factors among women who had prior CS.

Frequency of Uterine Scar Dehiscence

Among 277 patients, there were 19 cases of uterine scar dehiscence, meaning that it occurred in 6.9% of patients. The majority of patients who developed scar dehiscence had two or more cesarean sections in their obstetric history. This supports evidence from prior research indicating that the rate of scar dehiscence rises with the number of prior cesarean sections (6, 9).

Table 1

Frequency of Uterine Scar Dehiscence in Patients

Number of Cesarean Sections	Number of Patients	Frequency of Scar Dehiscence (%)
1	111	4.5%
2	166	7.8%
3+	0	0%

Risk Factors for Uterine Scar Dehiscence

The patients' characteristics and other related factors were deemed to have some correlation with uterine scar dehiscence. They were a trial of labour after cesarean (TOLAC), short inter-pregnancy intervals and wound infection. In the group of 19 patients with scar dehiscence, 68% of the patients tried TOLAC, 52% had an inter-pregnancy interval of less than 2 years, and 42% developed an infection at the scar site.

Table 2

Association of Risk Factors with Uterine Scar Dehiscence

Risk Factor	Number of Patients with Dehiscence	Percentage (%)
Trial of Labor (TOLAC)	13	68%
Short Inter-Pregnancy Interval (<2 years)	10	52%
Infection at Incision Site	8	42%

Other Findings

The study further showed that scar dehiscence occurred in 5.5% of the women who had elective procedures and in 8.4% of the women who had an emergency cesarean section. Nevertheless, the difference in this area was not found to be statistically significant.

Table 3

Frequency of Scar Dehiscence in Elective vs. Emergency Cesarean Sections

Type of Cesarean Section	Number of Patients	Frequency of Scar Dehiscence (%)
Elective	91	5.5%
Emergency	186	8.4%

Lastly, the results suggest that uterine scar dehiscence is an important issue in women who have had a previous cesarean section, which was found to be associated with TOLAC, short inter-pregnancy intervals, and infection. These observations emphasize the need for constant assessment of the risk of uterine scar dehiscence in these high-risk pregnant women.

DISCUSSION

Despite this, the incidence of uterine scar dehiscence noted in this study was 6.9 %, which is in consonant with other studies that have revealed a rate of 0.2% to 4% in women with a history of previous caesarean sections (9). However, this study found slightly higher frequency due to the nature of a sample taken from JPMC, Karachi, where both elective and emergency cesarean sections are frequently performed. This leads the way to target interventions aimed at decreasing the risk of scar dehiscence and subsequently enhancing the total optimistic results in maternity.

Uterine scar dehiscence is a serious complication that may result in a uterine rupture, being a major jeopardy to the mother and fetus. It is a condition in which the uterine musculature is divided at the area of the previous cesarean scar, but the serosa remains undivided (7). However, it can be asymptomatic in early labour and manifest only during labour with an impending or cesarean section, which makes its management more challenging. The observation of more prior cesarean sections in the women in the uterine dehiscence group is in concordance with previous reports that the chance of dehiscence rises with prior C-sections (6, 9). Several cesarean sections cause muscle layer damage to the uterine wall, which compromises its strength and causes it to become prone to tearing or dehiscence.

Several factors for uterine scar dehiscence have been revealed in the present study, such as TOLAC, short intervals between pregnancies, infection of the incised site. These are in concordance with similar prior studies identifying these factors as key to the development of uterine scar dehiscence and uterine rupture (7, 9, 10). The study showed that 68% of the patient having scar dehiscence had attempted TOLAC, and this is in line with other studies finding that the rate of uterine dehiscence and dehiscence is much higher among patients who have attempted vaginal delivery after cesarean section. This factor is even more valid when labour is induced or augmented, which encourages

uterine contractions and applies pressure on the scar area (12). Although TOLAC is still being practiced, special consideration has to be given to factors such as the previous cesarean section scar and the time interval between the two C-sections for women who undergo TOLAC.

The other factor that was shown to be an independent risk factor for uterine scar was the short interval between pregnancy, including the occurrence of a cesarean section and the subsequent pregnancy, and 52 % of the women who participated in the present study had a pregnancy interval of less than 2 years. Shorter interval starters have also been associated with increased risks of complications such as endometrial scarring since the uterine tissues are not fully healed to support the justification of a new pregnancy (6, 9). This further supports the need to counsel women on dangers associated with short birth intervals, especially among women who have had cesarean sections in the past. According to international guidelines, obstetricians should advise women to wait at least 18 to 24 months before getting pregnant again to allow the uterine scar to heal adequately.

Infection at the cesarean scar also appeared as an independent risk factor, with an overall prevalence of infection at the cesarean incision site observed in 42% of the study participants. Bacterial infection can compromise the process of the complete healing of the uterine incision and might result in the dehiscence of the uterine scar complex that ought to be properly healed. Prior research has also shown that post-cesarean infections raise the rate of uterine scar dehiscence, especially in those cases when the wound infection affects deeper layers of the uterine tissues (10, 12). Cultures of receiving an aseptic manner with surgical procedures during Cesarean deliveries to control infections and using broad-spectrum antibiotics as prophylactic during and after the operation are not overrated in preventing infection and its consequent effect on scars in the abdominal wall.

The study also showed that there was a slightly lower incidence of scar dehiscence in elective cesarean section (5.5%) compared to emergency cesarean sections (8.4%). Despite not being statistically significant, this may imply that elective surgery, as is the case with most Caesarean deliveries, may have better outcomes since there is more control over the surgical conditions. The patients require emergency CS in more critical situations, which increases the possible factors of surgery difficulty, stress and poor methods of CS that all result in the increased chance of scar dehiscence. However, more studies are required to understand if this time period for cesarean delivery is a prognostic factor for scar dehiscence.

Endometritis, which is characterized by inflammation of the endometrium, was also shown to have an association with the uterine scar dehiscence in this research. It has been observed that this condition interferes with the normal healing of the uterine scar, and this greatly predisposes the woman to complications like scar dehiscence or dehiscence (6, 10). Therefore, endometritis should be viewed as a key sign, while patients diagnosed with this condition should pay close attention to future pregnancies. Finally, this study identifies the main risk factors for future occurrences of uterine scar dehiscence in women with prior CS. While TOLAC, short inter-pregnancy intervals, infection were the modifiable factors that were regarded as leading contributors to such complications, this study also underlines the importance of preventing factors such as inadequate surgical skill, infection control, and inadequate advice on inter-pregnancy intervals. More studies have to be conducted to identify the criteria and methods aiding in the detection of the condition during the early stages, as well as the methods for avoiding and managing the condition.

CONCLUSION

This study concludes with information about the frequency of uterine scar dehiscence and associated risk factors in women with a history of lower segment cesarean sections. The study concluded that women at an average of 6.9% had uterine scar dehiscence, and some predictors for the same were TOLAC, the median interval between pregnancies, wound infection. These results call for the right surgical procedures, especially in cases where there is a need to suture the uterine incision as well as minimize infection and the length of the subsequent pregnancy to reduce the likelihood of scar dehiscence. This analysis has also pointed out the issue of patient care, especially for those mothers who wish to undertake TOLAC but at the same time desire the best outcomes for both mother and child. However, more research is needed in this area to improve the early identification and prevention of this condition in candidates most at risk for uterine scar dehiscence.

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