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INTEGRITY OF UTERINE SCAR AMONG PATIENTS WITH POST-CESAREAN PREGNANCY AND SCAR TENDERNESS

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ABSTRACT

Background

The ever increasing caesarean delivery rates are at an all-time high and interestingly, the main indication for caesarean section is not a genuine maternal or fetal health issue but the risk of uterine scar rupture. Every primary cesarean leads to greater probability of future repetitions as is evident from the current statistic which dictate a primary caesarean section rate of 16% and a repeated caesarean rate of 67%. Whether the risk of rupture is real or unfounded is worth exploration.

Objective

To evaluate the integrity of uterine scar in post-cesarean pregnant women presenting for delivery with scar tenderness.

Methodology

This cross-sectional analysis comprised of a sample of 196 (chosen via non-probability, consecutive sampling) post-cesarean pregnant patients presenting for delivery (from November 05, 2015 to May 04, 2016) to the labor ward of the Dept. of Obstetrics & Gynecology at Liaquat University Hospital, Hyderabad. After taking written consent, information pertaining to basic biodata, socio demographic details, gynecologic and obstetric particulars such as parity, gestational age, booking status and presenting complaints from patients including pain in scar, vaginal bleeding, indication of previous caesarean and details of the trial of labor were recorded onto a pre-structured interview based questionnaire. Inferences obtained from general physical, obstetrical examination (especially sign of cesarean scar tenderness) and ultrasound evaluation of uterine scar integrity were also recorded (scar thickness of more than 5mm was labeled positive for integrity). The data obtained was analyzed through SPSS version 20.

RESULTS

The mean age of the sample stood at 32.5 (SD ± 6.9) years with a range of 25 to 35 years. The mean parity was 2.9 (SD ± 1.2 and mean gestational age was 38.93 (SD ± 1.66). 73% of the patients were booked cases and 27% were un-booked. Integrity of uterine scar in pregnant women with previous cesarean delivery and scar tenderness was found to be 77%.

CONCLUSION

Integrity of the uterine scar in pregnant women with previous cesarean delivery with scar tenderness was high. Thus excessive fear of rupture is unfounded and vaginal delivery trials may be commenced (under expert care) among patients with previous cesarean delivery with hope of positive outcome.

Keywords: Cesarean Scar, Uterine Integrity, Uterine Scare Tenderness, Vaginal Delivery, Delivery Trial, Serum Iron Level

INTRODUCTION

Caesarean delivery is a surgical procedure to deliver a baby through a uterine incision. The ever increasing caesarean delivery rates are at an all-time high and interestingly, the main indication for caesarean section is not a genuine maternal or fetal health issue but the risk of uterine scar rupture. Every primary cesarean leads to greater probability of future repetitions as is evident from the current statistic which dictate a primary caesarean section rate of 16% and a repeated caesarean rate of 67% **[1, 2]**.

Trends towards less trial of labor and early decision also contributes repeated caesarean section. Multiple caesarean sections have greater risk of complications during surgery and abnormal placentation while vaginal birth after caesarean section has success rate varies from 60-80% but trial of labor should be undertaken in selected patients in well-equipped hospitals where facilities to deal with emergencies are available **[3, 4]**.

The dehiscence rate of a lower uterine segment scar is 2-4%, the defect is filled by connective tissue not myometrium, with formation of scar of variable strength and thickness therefore inadequate scar thickness are common findings intra operatively even if caesarean is performed in absence of contractions **[5, 6]**.

Monitoring for the feature of scar rupture is prerequisites of vaginal birth after caesarean section which includes abnormal cardiotocograph, severe acute onset of scar tenderness, vaginal bleeding, maternal tachycardia or shock. Scar tenderness suggests disruption of integrity of scar as thinned out scar and it is easily electable and useful sign especial where continuous fetal monitoring is not available **[7, 8]**.

Scar tenderness is more sensitive (92%) about but less specific (3.8%) for scar complication. Clinical judgment of the scar integrity is highly unpredictable because scar dehiscence may also present without concomitant symptoms and signs. Any focused studies on integrity of scar have not been done and thus there is limited data available regarding scar integrity. Therefore the present study focuses on the magnitude of scar integrity so that the desire for vaginal birth after caesarean section can be taken in women with previous caesarean delivery. This ultimately would reduce bed occupancy and prevent women from surgical complications.

METHODOLOGY

This cross-sectional analysis comprised of a sample of 196 (chosen via non-probability, consecutive sampling) post-cesarean pregnant patients presenting for delivery (from November 05, 2015 to May 04, 2016) to the labor ward of the Dept. of Obstetrics & Gynecology at Liaquat University Hospital, Hyderabad. After taking written consent, information pertaining to basic biodata, sociodemographic details, gynecologic and obstetric particulars such as parity, gestational age, booking status and presenting complaints from patients including pain in scar, vaginal bleeding, indication of previous caesarean and details of the trial of labor were recorded onto a pre-structured interview based questionnaire.

Inferences obtained from general physical, obstetrical examination (especially sign of cesarean scar tenderness) and ultrasound evaluation of uterine scar integrity were also recorded (scar thickness of more than 5mm was labeled positive for integrity). The data obtained was analyzed through SPSS version 20.

RESULTS

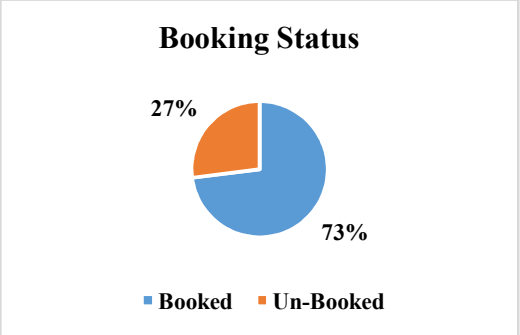
The mean age of the sample stood at 32.5 (SD ± 6.9) years with a range of 25 to 35 years. The mean parity was 2.9 (SD ± 1.2) and mean gestational age was 38.93 (SD ± 1.66) **(Table 1)**.

73% of the patients were booked cases and 27% were un-booked. Integrity of uterine scar in pregnant women with previous cesarean delivery and scar tenderness was found to be 77% **(Figure 1)**.

When outcome variable was stratified with respect to age and parity, significant difference was observed, when same was stratified with respect to gestational age and booking status, no significant difference was observed **(Table 2)**.

Table 1

Variable	Mean ± SD
Age (Years)	*32.5 ± 6.9*
Parity	*2.9 ± 1.2*
Gestational Age (Weeks)	*38.93 ± 1.66*



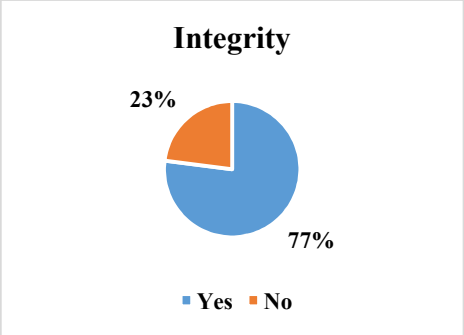


Figure 1

Table 2

Variable		Integrity of Scar		P value
		Yes	No	
Age (Years)	25 - 30	92	18	0.013
	30 – 35	59	27	
Gestational Age (Weeks)	<37	102	33	0.462
	≥37	49	12	
Parity	2	71	08	0.000
	3	57	15	
	4	14	15	
	5	09	07	
Booking Status	Booked	112	31	0.484
	Un-Booked	39	14	

DISCUSSION

The rising rate of caesarean section is posing a problem to the obstetrician and it can only be solved by reducing the primary caesarean section rate and thus as a result, reducing the repeat caesarean section incidence. The reluctance in the part of obstetrician in permitting a trial of labor is the risk of uterine rupture with threat of damage to mother and fetus and possible subsequent litigation.

Secondly many obstetricians consider caesarean section as a safe and convenient procedure as compared to vaginal delivery. In private sector economic incentive is also one of the important factor in increasing the caesarean section rate. Despite remarkable improvement in safety, caesarean section has eight fold higher mortality; times higher morbidity and higher incidence of complication than vaginal delivery **[9, 10]**.

The American College of Obstetricians and Gynecologists (ACOG) updated their guidelines concerning vaginal delivery after previous caesarean section. The ACOG Committee on Obstetrics: Maternal and Fetal Medicine stated; "the concept of routine repeat caesarean birth should be replaced by a specific indication for a subsequent abdominal delivery and in the absence of a contraindication, a woman with one previous caesarean delivery with a low transverse incision should be counseled and encouraged to attempt labor in her current pregnancy" **[11, 12]**.

Enthusiasm for vaginal birth after caesarean section has waned. As a result, the caesarean birth rate is again on the rise. There is now a large obstetric population with caesarean sections and most of these have been done for non-recurrent conditions. In developing countries such as Pakistan, the parity is high and restriction of family size is not generally accepted due to social, religious or psychological beliefs. Therefore, in Pakistan, the overall rate of caesarean section should be reduced by a sound indication for the first caesarean section and then encouragement for vaginal birth after a caesarean section to reduce operative morbidity and mortality.

The risk of major maternal complications has been reported to be almost twice as likely in women who underwent a trial of labor than in women who chose an elective repeat caesarean section. **[3]** disclosed an elevated risk of uterine rupture in patients who had a history of caesarean delivery and were undergoing a trial of labor versus elective repeat caesarean **[3]**. In the literature to date, the overall risk of uterine rupture for women undergoing a trial of labor after caesarean delivery has been reported to be between

0.2% and 0.1%. **[4]** retrospectively reviewed the delivery outcomes of 262 women with lower vertical uterine incisions over a 10-year period. Fifty-four percent experienced a trial of labor with 83% having a successful vaginal delivery rate. The uterine rupture rate was 1.1% (2/174) in the trial of labor group versus nil in the elective repeat caesarean group. No serious adverse sequelae were observed following uterine rupture **[4]**.

Although the rates of uterine rupture and neonatal asphyxia were slightly higher in women who attempted a VBAC than in women who underwent an elective caesarean section, obstetricians should offer the option of a trial of labor since more than one-half of the women with a previous caesarean delivery might have successful vaginal deliveries. In addition, the VBAC-related maternal mortality rate does not reportedly differ between women undergoing a trial of labor and women undergoing an elective repeat caesarean section **[11]**.

In stark contrast, a prospective observational analytical study conducted at the Medical University of South Carolina to determine the impact of labor induction for VBAC concluded that induction of labor in women attempting vaginal birth after cesarean is associated with a significantly reduced rate of successful vaginal delivery and in increased risk of serious maternal morbidity **[12]**.

A study was conducted by Hibbard et al that showed blood loss was lower and chorioamnionitis was higher in women who attempted vaginal births after caesarean. Patients who experience failed vaginal birth after caesarean have higher risks of uterine disruption and infectious morbidity compared with patients who have successful vaginal births after caesarean or elective repeat caesarean delivery **[13]**.

A study was conducted by Hibbard et al to determine the maternal risks associated with failed attempt at vaginal birth after caesarean compared with elective repeat caesarean delivery or successful vaginal birth after caesarean. It suggests that patients who experience failed vaginal birth after caesarean delivery have higher risks of uterine disruption and infectious morbidity compared with patients who have successful vaginal birth after caesarean or elective repeat caesarean delivery **[14]**.

There is an increased risk of uterine rupture in patients who have an excessive amount of oxytocin, who experience dysfunctional labor and who have a history of two or more caesarean deliveries. Hence, all patients with a history of caesarean delivery should be observed closely for progression of labor. If

an active phase arrest disorder is recognized despite adequate augmentation with oxytocin, operative delivery is required. The dehiscence rate of a lower segment transverse uterine scar is 2% to 4%, but a vertical scar is much higher. Therefore, the strongest predictor of the safety of labor after previous caesarean is the location of the previous uterine scar. Neonatal outcomes of elective caesarean delivery were at increased risk of developing respiratory problems **[15]**.

In our study, the age of the patients ranged from 25-35 years and the average age of the patients was 32.5 + 6.9. The age may be much lower than international means of such samples, but the unique socio-ethnic, cultural and religious scenario in Pakistan dictates this trend as the mean age of marriage as per the Pakistan Demographic Health Survey 2019 is 22 years.

Maternal age beyond 30 years is seen to be associated with a higher incidence of abnormal lower uterine segment. The trend of increasing rate of uterine rupture with increasing maternal age is noted by most of the previous researchers. Age-related decrease in myometrial strength and defective wound healing could be the contributing factors **[16]**.

The fact that it was conducted at a single tertiary medical center limited the strength and generalization of the study's results. Future systematic studies with larger sample size should be carried out to elucidate the overall nature of the integrity of uterine scar in pregnant women with previous one caesarean section presenting with scar tenderness, as well as its associated complications.

CONCLUSION

Integrity of the uterine scar in pregnant women with previous cesarean delivery with scar tenderness was high. Thus excessive fear of rupture is unfounded and vaginal delivery trials may be commenced (under expert care) among patients with previous cesarean delivery with hope of positive outcome.

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