

Association of Caesarean Uterine Scar Health in Women with Previous One Caesarean Section in Relation to Inter-Pregnancy Interval

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Abstract

Background: To find out safe inter pregnancy interval in patients with previous one caesarean section and promote trial of labour after caesarean (TOLAC).

Methods: In this descriptive study one hundred and fifty patients with singleton pregnancy and previous one caesarean section, who were planned for elective caesarean section, between 37-40 weeks, were included. Patients with multiple pregnancies, ruptured uterus, failure of TOLAC, multiple caesarean sections and preterm pregnancies were excluded. Visual uterine scar health was assessed per operatively in relation to different inter pregnancy intervals. Scar health was categorized as healthy or thick, thin, transparent and partial dehiscence.

Result: Patients, with inter-pregnancy interval of 12-18 months, had a high (69.6%) healthy scar. In patients with inter-pregnancy interval of 19-24 months, 76.9% scars were healthy. The group of patients whose inter pregnancy interval was more than 24 months, 71.8% scar were healthy

Conclusion: When intra operative visual scar health was assessed in relation with inter pregnancy interval. No significant difference was found in uterine scar health in different inter pregnancy intervals.

Key words: Uterine scar thickness, Inter pregnancy interval, Intra operative uterine scar health,

Introduction

Lower segment Caesarean section becoming a popular obstetric procedure nowadays. Among all, repeat caesarean in patients with previous one caesarean section accounts about 35%. The Centers for Disease Control and Prevention's (CDC's) latest figures report that 32.2% of all US births are by

caesarean section.¹ One of the dilemmas is the inability to differentiate between the low risk and high risk patients as candidates of TOLAC.² Low risk patients are those, who have high probability of VBAC, and high risk group has high risk of morbidity with TOLAC. Although rate of maternal morbidity upsurges progressively with the number of emergency repeat caesarean delivery, maternal morbidity of TOLAC drops with the number of successful preceding TOLAC.³ In this consideration the risk to benefit ratio of short and long term complications is mostly in favour of TOLAC. Mode of delivery should be finalized by 8th month of pregnancy by taking in account of patient's preferences and decision of physician, after careful evaluation of individual risk factors for TOLAC failure and uterine rupture (professional consensus). If the woman remains in favour of repeat caesarean after adequate information and sufficient time to think about it, her predilection should be honoured (professional consensus). Decision of mode of delivery in patients with previous one caesarean section is on individual basis as there are no standard set protocols for patients of previous one caesarean section to attempt VBAC. It was shown in one study, complete uterine rupture in patients with previous caesarean delivery (21.1 per 10,000). The leading risk factor was labour induction with prostaglandins and oxytocin, compared with natural labor.^{4,5} Short inter-pregnancy interval is considered as risk for uterine rupture and adverse perinatal outcome, when TOLAC is attempted.⁶⁻⁹ According to the World Health Organization (WHO) reference, Caesarean section should be performed only when medically required. Unfortunately, this recommendation fails, and increasing trend of CS cannot be stopped. Considering different indications of caesarean deliveries, repeat CS due to prior ones account for a significant ratio.¹⁰ Vaginal birth after caesarean section (VBAC) is an alternative to repeated CSs.¹¹ It is considered safe and leads to reduced

caesarean delivery rate.¹²⁻¹⁵ Among several advantages of VBAC, most important is to avoid major complications of anaesthesia and abdominal surgery like haemorrhage, and wound infection. It also abridges the hospital stay, and expenses with added benefits of rapid recovery of patient. It also reduces women's risk of painful experiences of prolonged morbidity during delivery in future pregnancies as a result of repeated caesarean deliveries. It also helps in developing early bonding between child and mother. Factors which affect the outcome of VBAC are inter-pregnancy interval, previous successful vaginal deliveries, history of previous intra-partum and postoperative complications like wound sepsis, etc. Suturing technique is also a very important prognostic factor. Too much stretching of suture material, while closing uterine scar in fear of haemorrhage, results in ischemia of scar area. Scar becomes more vulnerable for dehiscence.

Most women with one previous caesarean delivery with a lower segment transverse incision are safe candidates for TOLAC. The guidelines address various previous surgical incisions and make recommendations regarding each. There is need to completely document the informed written consent process. Thinner scars are more prone to cause fetal bradycardia and meconium staining of liquor. In general inter-pregnancy interval of not more than 18 months is considered as short inter-pregnancy interval in full term pregnancy. Inter-delivery intervals of up to 18 months were associated with increased risk of symptomatic uterine rupture during a trial of labour in comparison to pregnancies with longer inter delivery intervals.^{16, 17} Factors predominantly associated with uterine rupture included lower maternal educational level, lack of proper antenatal care and counselling. Women with prior CS, especially in resource-limited settings, are facing higher risk of uterine rupture and subsequent adverse outcomes.¹⁸⁻²¹

Patients and Methods

This observational, prospective study was conducted in department of Obstetrics and Gynaecology, Izzat Ali Shah Maternal and Child Health Center, affiliated hospital of Wah Medical College, Wah Cantt. Duration of study was from Nov 2017-Oct 2018. Fifty patients with singleton pregnancy and previous one caesarean section, planned for elective caesarean section, were included. Duration of pregnancy was 37-40 weeks. Patients were counselled, written informed consent was obtained from each patient prior to participation in the study. Patients with multiple pregnancies,

ruptured uterus, failure of TOLAC and multiple caesarean sections and preterm pregnancies were excluded. The selected patients were subjected to detailed history of previous surgery, and current pregnancy. Scar health was noted during caesarean section. It was observed on visual inspection before giving incision on uterus. It was categorized as healthy or thick, thin, transparent, partial dehiscence, complete dehiscence. Scar health was compared according to inter pregnancy interval. Three inter-pregnancy intervals were selected, i.e, first 12-18 months, second 19-24 months, third was 24 months onwards. Considering scar health, sufficient myometrial tissue in lower segment was considered as healthy. Thin scar has less myometrial thickness. Scar site was also intended at the junction of upper and lower segment. Transparent scar was paper like thin and it was possible to visualize fetus and liquor moving beneath it. In dehiscence, separation of scar either at corners or in center, could be visualized. During labour with uterine contractions, lower segment become ballooned up. For this reason, labouring patients were not included in the study. It might had given a false impression of thinning of the lower segment.

Results

Minimum age was 18 and maximum 39 with mean age 27.7 years. Minimum BMI was 18, maximum 40 with mean value of 25.4 \pm 3.95. Minimum gestational age was 37, maximum 40, mean age found was 38.2 years (Table 1). More than 24 months inter-pregnancy interval was seen in 52%. Seventy two percent had healthy scar (Table 2). Out of 72% healthy scars, 69.6% (32) belonged to 12-18 months interval, 76.9% (20) fell in 19-24 interval group, and 71.8% (56) had 24 months and above interval. Partial dehiscence seen only in 2.0% of patients. Out of 2%, two patients belonged to 12-18 months group and 01 patient in 24 months above group. No significant difference was noted in each group

Table 1: Descriptive Statistics (age, BMI, Gestational Age)

	Number	Minimum	Maximum	Mean	Std Deviation
Age	150	18	39	27.79	4.007
BMI	150	18.000	40.900	25.402	3.950
Gestational age	150	37	40	38.31	0.852

Majority (96.7%) had no history of complications in previous surgeries. Forty four (29.3%) caesarean

sections were performed by consultants (Table 3). Majority (88.7 %) were performed in teaching/tertiary care hospitals (Table 4). Ninety three patients (62%) came in second pregnancy with no previous VBAC. Thirty six (24%) had one VBAC, 13(8.7%) had 2 VBACs. Eight (5.3%) patients were grand multipara (Table 5).

Table 2: Per Operative visual uterine scar health in relation to inter-pregnancy interval

		Months			Total
		12-18	19-24	24 or above	
Per op Visual scar health	Healthy	32 (69.6%)	20 (79.9%)	56 (71.8%)	108 (72.0%)
	Partial Dehiscence	2.0 (4.3%)	0 (0%)	1 (1.3%)	3 (2.0%)
	Thin	11 (23.9%)	6 (23.1%)	19 (24.4%)	36 (24.0%)
	Transparent	1(2.2%)	0(0%)	2(2.6%)	3(2.0%)
Total		46 (100.0%)	26 (100.0%)	78 (100.0%)	100 (100.0%)

Table 3: Frequency of previous surgeon

	Frequency	Percentage
Consultant	44	29.3
Medical officer	57	38.0
Postgraduate trainee	49	32.7
Total	150	100.0

Table 4: descriptive statistics regarding venue of previous surgery

	Frequency	Percentage
Periphery	17	11.3
Teaching/tertiary care hospitals	133	88.7
Total	150	100.0

Table 5: Frequency of patients regarding previous obstetric history

	Frequency	Percentage
G2P1	93	62.0
G3P2	36	24.0
G4P3	13	8.7
G5& above	8	5.3
Total	150	100.0

Discussion

An estimated 40% of total caesarean deliveries performed each year in the United States are due to repeat caesarean section.²² For successful VBAC, several factors have been identified. They influence the decision to either undergo a trial of labour or proceed with elective repeat caesarean. We had selected “scar health” as parameter in our hypothesis, as a predictor. Can it influence our decision? With increasing maternal age, chances of successful VBAC reduce. It has been shown in one meta-analysis, that women

above 40 years had 50% less chance of successful VBAC.(OR 0.53; 95% CI 0.32–0.86).²³ Probability of VBAC decreases as gestational age increases, particularly when the pregnancy progresses beyond 41 weeks’ gestation. Mean gestational age in our study was 38.2.²³

Maximum patients in study period fell in inter-pregnancy interval of 24 months onwards. In one study, inter pregnancy interval of less than 06 months was mentioned as short interval, 6-18 months as intermediate, and more than 24 months as long. It was shown in one study that, morbidities increase 50-75% in VBAC candidates with short interpregnancy interval.²⁴⁻²⁶ After caesarean section, complete healing of uterine smooth muscle takes several months. Uterine incisions heal primarily from a proliferation of fibroblasts and subsequent replacement of myometrium with connective tissue.²⁷⁻²⁹

Previous history of wound infection is significant risk factors observed in our study, while making decision of TOLAC. High maternal body mass index (BMI) at booking visit or at delivery decreases the likelihood of VBAC. Patients with high BMI at delivery, have much lower odds of VBAC (OR 0.55; 95% CI 0.51–60).²³ In present study, total 36 patients had thin scar on visual inspection. Out of which, 19 had BMI 18-25, 11 had BMI of 25-30 and 06 patients were morbidly obese having BMI more than 30. Three patients with partial dehiscence had BMI between 18-25. Two patients out of 3 in transparent group had BMI of more than 25. There was no significant impact of BMI found in our study on scar health. BMI was also found to have no significant effect on the mode of delivery and scar health in one study.^{24, 26}

Conclusion

1. There is no significance of visual scar health in relation with inter-pregnancy interval in patients with previous one caesarean section. It may be response of individual uterine scar and how it behaves during labour.

2. A trial of normal labour can be given safely in patients, whose inter-pregnancy interval is more than one year. Couple should be thoroughly counselled and informed written consent should be taken. Labour should be monitored strictly with one to one care for best foeto-maternal outcome.

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