

Retrospective Study of Incidence and Risk Factors of Uterine Scar Dehiscence Identified at Repeat Caesarean Section

Anitha N.¹, Kaligotla Deepika², Prathibha S.D.³

¹Department of Obstetrics and Gynaecology, Dr. B.R. Ambedkar Medical College, Bangalore, Karnataka, India.

²Department of Obstetrics and Gynaecology, Dr. B.R. Ambedkar Medical College, Bangalore, Karnataka, India.

³Department of Obstetrics and Gynaecology, Dr. B.R. Ambedkar Medical College, Bangalore, Karnataka, India.

ABSTRACT

BACKGROUND

Women with previous caesarean section are at increased risk of associated morbidities such as uterine scar dehiscence, scar rupture, maternal and perinatal morbidity and mortality. This study was designed to explore the incidence of uterine scar dehiscence among women undergoing repeat caesarean section and to investigate the risk factors associated with this condition in our obstetric population.

METHODS

A record based retrospective study of 5 years (June 2014 to May 2019) was conducted in the Department of Obstetrics and Gynaecology, Dr. B.R. Ambedkar Medical College and Hospital. All women with previous lower segment Caesarean section undergoing repeat Caesarean section were included in the study. Operative data was collected from OT Register and parturition book using a structured questionnaire containing general details, comorbidities, current pregnancy details or complications, risk factors and neonatal outcomes. Data was entered into Microsoft Excel data sheet and was analysed using SPSS 22 version software. Categorical data was represented in the form of frequencies and proportions. Chi - square test and Independent t test were the tests of significance.

RESULTS

In this study incidence of scar dehiscence was 8.1 %. Among those with preterm delivery < 37 weeks, 76.5 % had scar dehiscence, among those with tertiary caesarean delivery 70 % had scar dehiscence and among those with inter delivery interval < 24 months, 84.6 % had scar dehiscence. Among those with Apgar < 7 at 5 min, 100 % had scar dehiscence, among those with NICU admission, 18.1 % had scar dehiscence. There was no significant difference between single or double layer closure of uterine incision.

CONCLUSIONS

Study concludes that preterm delivery, tertiary caesarean delivery and inter delivery interval < 24 months were significantly associated with uterine scar dehiscence.

KEYWORDS

Uterine Scar Dehiscence, Repeat Caesarean Section, Risk Factors, Preterm Delivery, Tertiary Caesarean Delivery

Corresponding Author:

*Dr. Prathibha S.D.,
No – 22, AECS Layout,
2nd Main, 2nd Stage,
Ashwath Nagar, Bangalore - 566094,
Karnataka, India.
E-mail: prathibhasd67@gmail.com*

DOI: 10.18410/jebmh/2020/411

How to Cite This Article:

*Anitha N, Deepika K, Prathibha SD.
Retrospective study of incidence and risk
factors of uterine scar dehiscence
identified at repeat Caesarean section. J
Evid Based Med Healthc 2020; 7(36),
1976-1979. DOI:
10.18410/jebmh/2020/411*

*Submission 12-06-2020,
Peer Review 18-06-2020,
Acceptance 17-07-2020,
Published 07-09-2020.*

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BACKGROUND

Lower Segment Caesarean Section (LSCS) is one of the most frequent surgical procedures done in the department of obstetrics and is certainly one of the oldest operations.¹ Ours being a referral institute, Lower Segment Caesarean Section constitutes to 35-38% of all deliveries. All women with Previous Caesarean Section undergo Repeat Caesarean Section at our institute.

The leading maternal indication for Caesarean delivery was previous caesarean section (34 %).¹ Eighty to ninety percent of women with previous CD are delivered by Elective Repeat Caesarean Delivery (ERCD) in subsequent pregnancy.²

Women with Previous Caesarean Section are at increased risk of associated morbidities such as uterine scar dehiscence, scar rupture, increased maternal and perinatal morbidity and mortality.²

Uterine rupture is classified as Complete when all the layers of the uterine wall are separated, or Incomplete when the uterine muscle is separated but the visceral peritoneum is intact. Incomplete uterine rupture is referred to as.

Uterine Scar Dehiscence (USD). The greatest risk factor for either form of rupture is prior caesarean delivery³. Scar dehiscence means asymptomatic separation of the scar without involving the peritoneal coat and without symptoms. Uterine scar dehiscence refers to an incomplete uterine scar disruption where the serosa remains intact and the foetus, placenta and umbilical cord remain contained within the uterine cavity. Uterine scar rupture refers to complete giving away of the Uterine scar and the foetus and placenta lying in the abdominal cavity.

The precise definition of uterine scar dehiscence considered in the study was muscular disruption of any size with intact serosa. Thinning of the lower uterine segment of any degree was not considered as dehiscence. This study was designed to explore the incidence of uterine scar dehiscence among women undergoing repeat caesarean section and to investigate the risk factors associated with this condition in our obstetric population.

We wanted to determine the incidence of uterine scar dehiscence and assess the risk factors associated with uterine scar dehiscence among women undergoing repeat Caesarean section.

METHODS

This is a record based retrospective study conducted in the Department of Obstetrics and Gynaecology, Dr. B.R. Ambedkar Medical College and Hospital over a period of 5 years from June 2014 to May 2019. All women with previous lower segment Caesarean section undergoing repeat Caesarean section were included in the study. Sampling was done by universal sampling method during the study period. Patients who had undergone classical caesarean section, patients with placenta previa, abnormally invasive placenta and patients whose complete data was not available were

excluded from the study.

After obtaining Internal Ethical Committee approval, Operative data collected from OT Register and Parturition book in the Department of Obstetrics and Gynaecology at Dr. B R Ambedkar Medical College and Hospital for a period of 5 years [June 2014 to May 2019]. Data was collected using a structured questionnaire consisting general details, Co-morbidities, Current pregnancy details or complications, risk factors and neonatal outcomes were collected from the records.

Statistical Methods

Data was entered into Microsoft Excel data sheet and was analysed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square test or Fischer's exact test (for 2 x 2 tables only) was used as test of significance for qualitative data. Continuous data was represented as mean and standard deviation. Independent t test was used as test of significance to identify the mean difference between two quantitative variables. p value <0.05 was considered as statistically significant after assuming all the rules of statistical tests.

RESULTS

A record based retrospective study was conducted on all patients undergoing Repeat Caesarean Section fulfilling the inclusion criteria during the study period from June 2014 to May 2019. In the study period, 764 women underwent Repeat Caesarean section at our institute. In the present study, 62 women had scar dehiscence accounting for incidence of 8.1 %. There was no statistically significant difference in maternal age and birth weight between those with and without scar dehiscence. In the study among those with Scar dehiscence, 4.8 % had Gestational Diabetes Mellitus (GDM), 1.6 % had Hypertensive Disorders of Pregnancy (HDP) and 0 % had preterm birth in previous pregnancy. There was no significant association between Comorbidity and Scar Dehiscence which was not statistically significant.

In the present study there was no statistically significant association between factors such as Breech presentation at the time of delivery, Twin gestation or patient in labour at the time of delivery with Scar dehiscence. Pain at caesarean scar site at the time of delivery was associated with scar dehiscence in 32.2 % of cases which was statistically significant. In the present study, risk factors like preterm delivery < 37 weeks, Tertiary Caesarean Delivery, inter delivery interval < 24 months were significantly associated with Scar dehiscence. Preterm delivery had 76.5 % association with Scar dehiscence which is statistically significant. Higher incidence of Scar dehiscence was observed among women undergoing Tertiary. Caesarean Delivery (70 %). Inter delivery interval <24 months had 84.6 % association with Scar Dehiscence.

		Scar Dehiscence				P Value
		Yes		No		
		Count	%	Count	%	
GDM	No	59	95.2 %	678	96.6 %	0.562
	Yes	3	4.8 %	24	3.4 %	
HDP	No	61	98.4 %	675	96.2 %	0.370
	Yes	1	1.6 %	27	3.8 %	
Previous preterm birth	No	62	100.0 %	701	99.9 %	0.766
	Yes	0	0.0 %	1	0.1 %	
Breech	No	61	8.1 %	690	91.9 %	0.955
	Yes	1	7.7 %	12	92.3 %	
Twin gestation	No	62	8.1 %	700	91.9 %	0.674
	Yes	0	0.0 %	2	100.0 %	
Labour	No	11	5.8 %	178	94.2 %	0.183
	Yes	51	8.9 %	524	91.1 %	
Pain at caesarean scar site	No	13	2.1 %	599	97.9 %	<0.001*
	Yes	49	32.2 %	103	67.8 %	
Preterm delivery <37 weeks	No	49	6.6 %	698	93.4 %	<0.001*
	Yes	13	76.5 %	4	23.5 %	
Tertiary caesarean delivery	No	48	6.5 %	696	93.5 %	<0.001*
	Yes	14	70.0 %	6	30.0 %	
Inter delivery interval <24 months	No	29	4.0 %	696	96.0 %	<0.001*
	Yes	33	84.6 %	6	15.4 %	

Table 3. Association between Antenatal Risk Factors in the Present Pregnancy and Scar Dehiscence

		Count	%
Scar Dehiscence	Yes	62	8.1 %
	No	702	91.9 %

Table 1. Incidence of Scar Dehiscence

	Scar Dehiscence				P Value
	Yes (n = 62)		No (n = 702)		
	Mean	SD	Mean	SD	
Mean Maternal age	25.47	3.74	26.75	10.99	0.362
Birth weight (Kg)	2.77	0.366	2.73	0.43	0.545

Table 2. Comparison of Mean Age and Birth Weight with Regard to Scar Dehiscence

		Scar Dehiscence				P Value
		Yes		No		
		Count	%	Count	%	
Double layer closure	No	46	7.8 %	547	92.2 %	0.500
	Yes	16	9.4 %	155	90.6 %	

Table 4. Previous Caesarean Scar Closure and Scar Dehiscence

In the present study among those with double layer closure of uterine incision, 9.4 % had scar dehiscence and single layer closure of uterine incision, 7.8 % had scar dehiscence. There was no statistically significant association between Single layer or double layer closure of uterine incision and scar dehiscence in next pregnancy.

		Scar Dehiscence				P Value
		Yes		No		
		Count	%	Count	%	
Apgar <7 at 5 min	No	61	8.0%	702	92.0%	0.001*
	Yes	1	100.0 %	0	0.0%	
Asphyxia neonatorum	No	62	8.1%	702	91.9%	-
	Yes	0	0.0%	0	0.0%	
NICU admission	No	35	5.7%	580	94.3%	<0.001*
	Yes	27	18.1%	122	81.9%	
LBW	<2.5 Kg	15	6.1%	231	93.9%	0.159
	>2.5 Kg	47	9.1%	471	90.9%	

Table 5. Neonatal Outcome and Its Association with Scar Dehiscence

In the present study among the neonates with Apgar < 7 at 5 min, 100 % had Scar dehiscence. NICU admission was seen in 18.1 % of neonates who had Scar Dehiscence and among those with LBW, 6.1 % had Scar Dehiscence. There was significant association between Apgar < 7 at 5 minutes and NICU admission with Scar Dehiscence.

DISCUSSION

Women with previous caesarean section are at an increased risk of associated morbidities such as uterine scar dehiscence, scar rupture, maternal and perinatal morbidity and mortality. This study was designed to explore the incidence of uterine scar dehiscence among women undergoing repeat caesarean section and to investigate the risk factors associated with this condition in our obstetric population.

In the present study incidence of Uterine Scar dehiscence (USD) was 8.1 %. Incidence of USD reported in the literature, ranges from 0.3 % to 19.4 %.⁴ The variations in the incidence can be attributed to lack of definition for USD.^{5,6,7,8,9,10,11}

In the present study among those with Preterm delivery <37 weeks [OR: 46.3, 95 % CI: 14.55, 147.3], Tertiary caesarean delivery [OR: 33.83, 95 % CI: 12.45, 91.97] and Inter delivery interval < 24 months [OR: 132, 95 % CI: 51.26, 339.9], were significantly associated with Scar dehiscence. Bashiri et al observed that preterm delivery was an independent risk factor for uterine Scar dehiscence (OR: 1.79, 95 % CI: 1.01 - 3.21, p = 0.048).⁵ The significant association between preterm delivery and uterine Scar dehiscence may be due to uterine infection/inflammation that may have caused weakness of the uterine scar.

Bashiri et al reported similar finding of significant association between increased number of Caesarean section and scar dehiscence. Wang et al observed larger scar defect among women having more than one previous CD compared to those with only one previous CD.⁴ This was attributed to having thinner scars in those with higher number of CD.⁵

Bujold et al observed that 10.5 % of Scar dehiscence among patients with inter-delivery interval of < 24 months compared to 3 % after 24 months.¹² The present study also showed statistically significant association between Inter delivery period < 24 months and Scar dehiscence. This can be attributed to the time needed for proper scar healing.¹³ Dicle et al, using magnetic resonance imaging, showed that uterine scars needed 6 months at least to reach a normal appearance post-delivery.¹⁴

In the present study there was no significant association between Twin gestation and Scar dehiscence. In the present study, there was no significant association between Single layer or double layer closure of uterine incision and scar dehiscence. Roberge et al in their study observed that the operative technique used for closure of the uterine scar, whether single or double layer, had no significant effect on the risk of scar dehiscence.¹⁵

In the present study, there was significant association between Pain at caesarean scar and Scar dehiscence. However Suzuki et al observed that there was no association between scar dehiscence and Pain at caesarean scar.¹⁶ Scar dehiscence was significantly associated with NICU admissions and Apgar <7 at 5 min. Similar findings were reported by Bashiri et al and this could be attributed to the fact that more premature infants were found to belong to Scar dehiscence group.⁵

CONCLUSIONS

Women with previous caesarean section are at an increased risk for uterine scar dehiscence and rupture. This increases maternal and perinatal morbidity and mortality. In the present study, factors significantly associated with uterine scar dehiscence was preterm delivery < 37 weeks, tertiary caesarean delivery and inter delivery interval < 24 months. Single layer or double layer closure of uterine incision in previous pregnancy was not associated with uterine scar dehiscence. The present study also had increased association between patients with pain at scar site and scar dehiscence. This symptom at the time of admission should be viewed seriously. Increased NICU admission and neonatal Apgar < 7 at 5 min. was associated with scar dehiscence. These factors can be viewed as independent risk factors for scar dehiscence and if not treated in time, can progress to scar rupture.

Financial or Other Competing Interests: None.

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