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Original Research Article

Retrospective study to find predictive factors of scar dehiscence in previous caesarean section to prevent maternal and perinatal morbidity and mortality

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ABSTRACT

Background: Uterine scar dehiscence is a complication in which scar tissue remaining from previous C-section is disrupted and separated. Its incidence ranges between 0.2%-4.3% of all pregnancies with previous caesarean. It is asymptomatic in 48% of patients and thus is a serious complication because if not predicted it can lead to uterine rupture.
Methods: Patients included in the study were of previous caesarean who were taken for repeat caesarean and scar dehiscence was not predicted preoperatively but seen intra-operatively. History, symptoms, signs and radiological investigations were interpreted to find out single or multiple factors responsible for scar dehiscence.
Results: Incidence of scar dehiscence was found to be 8.3% .Scar dehiscence was detected in 55% of cases who were gravida 3 and above, all patients with intraoperative scar tenderness, 35% of patients with scar thickness <2mm, 70% cases with POG 37-40 weeks, 65% of patients with interpregnancy interval<18 months,86.6% of patients with scar dehiscence had baby birth weight >3kg.
Conclusions: Authors concluded that a single factor which has maximum predictive value for scar dehiscence is scar tenderness.

Keywords: Previous caesarean, Scar dehiscence, Scar tenderness

INTRODUCTION

Uterine scar dehiscence is a complication of caesarean section in which scar tissue remaining from previous C-section is disrupted and separated. The incidence of this condition ranges between 0.2% and 4.3% of all pregnancies with previous caesarean.[1] It is important to note that scar dehiscence is asymptomatic in 48% of women and if not taken for LSCS then it will lead to uterine rupture.[2-4] Thus, scar dehiscence in patients of previous caesarean section is a serious complication because if not predicted it can lead to uterine rupture with serious maternal and perinatal morbidity and mortality. But it is very difficult to predict scar dehiscence with either individual or a combination of clinical factors.[5] This study was conducted because we currently lack a method which can reliably predict scar dehiscence. Mostly LSCS is done for some other indication and on opening the abdomen the obstetrician is surprised to see scar dehiscence.

METHODS

It is a retrospective observational study done in Muzaffarnagar Medical College, Obstetrics and Gynecology department in 2017-2018. In this study 60

patients were included. These patients were those who were previous one caesarean section and were taken for repeat LSCS either for elective or emergency indication and intraoperative scar dehiscence was detected. These 60 patients were divided into following 3 groups:

Group 1

20 patients were those who were booked cases with previous one caesarean and were offered elective caesarean section due to some absolute indication like breech, twin pregnancy or short interpregnancy interval.

Group 2

25 patients were those who were unbooked cases with previous one caesarean section and came to our hospital in labour. At the time of admission these patients were planned for caesarean because of indications like CPD, foetal distress etc.

Group 3

Rest of the 15 patients were offered VBAC after checking pelvis adequacy:

- 10 went into spontaneous labour
- 5 were induced.

These also had to be taken up for caesarean due to indications like protracted labour, failure of descent, meconium stained liquor or failed induction.

Table 1: Patients included in the study.

Group	No.		Details
Group 1	20		Booked patients offered elective LS
Group 2	25		Unbooked patients who came in labour and were taken for emergency LSCS
Group 3	15	5	Patients offered VBAC and went into spontaneous labour
		10	Patients offered VBAC and had to be induced

In all these 60 patients scar dehiscence was detected intraoperatively. Authors tried to evaluate the factors responsible for scar dehiscence using detailed history, symptoms, signs and radiological investigations.

The various factors which were studied in relation to scar dehiscence were parity, period of gestation at the time of caesarean, interpregnancy interval, scar tenderness, scar thickness and weight of the baby.

Inclusion criteria

- Previous one caesarean section
- Any number of previous normal deliveries.

Exclusion criteria

- Patients with previous 2 or more than 2 caesarean section
- Rupture uterus diagnosed either pre or intraoperatively.

Statistical analysis

It is a retrospective observational study. Out of 60 patients in whom intraoperative scar dehiscence was detected, data was grouped into those with gravida 2 and above, scar tenderness present or absent, scar thickness <2mm, 2.1-2.5mm, 2.6-3mm, 3.1-3.5mm, >3.5mm, POG<37 and >37 weeks, interpregnancy interval <18 months, 18-24 months, >24 months and birthweight <3kg and >3kg. Afterwards percentages were calculated of these various categories.

RESULTS

Incidence of asymptomatic scar dehiscence was 8.3% in present study in patients with previous one caesarean section. In this study scar dehiscence was detected in 55% of cases who were gravida 3 and above.

Table 2: Relation of scar dehiscence and gravidity.

Gravida	No. of patients	%
2	27	45
3 and above	33	55
Total	60	

This shows a close correlation between no. of previous deliveries and scar dehiscence i.e. more the number of previous deliveries, more are the chances of scar dehiscence.

Table 3: Relation of scar dehiscence and scar tenderness.

Scar tenderness	No. of patients	Percentage
Present	60	100
Absent	0	0
Total	60	

Table 4: Relation of scar dehiscence and scar thickness.

Scar thickness (mm)	No. of patients	Percentage
<2	21	35
2.1-2.5	19	31.66
2.6-3.0	13	21.66
3.1-3.5	4	6.66
>3.5	3	5

In present study scar tenderness was present in all the patients who had intraoperative scar dehiscence. This proves that scar tenderness is a very strong predictive

factor of scar dehiscence and should be taken very seriously.

In present study scar dehiscence was seen in 35% of patients when scar thickness is less than 2mm and only 5% of patients had scar dehiscence when scar thickness was more than 3.5mm.

Table 5: Relation of scar dehiscence and period of gestation.

POG	No. of patients	Percentage
Up to 36 weeks 6 days	18	30
37 weeks-40 weeks	42	70

This shows that lesser is the scar thickness detected on preoperative ultrasound more is the risk of scar dehiscence in the patient.

Table 6: Relation of scar dehiscence and interpregnancy interval.

Interpregnancy interval	No. of patients	Percentage
<18 months	39	65
18-24 months	17	28.33
>24 months	4	6.66
Total	60	

In this study scar dehiscence was present in 70% cases in the gestational age of 37-40 weeks and only in 30% cases with gestational age up to 36-week 6days. This shows that as the gestation approaches term and beyond, more are the chances of scar dehiscence.

Table 7: Relation of scar dehiscence and birth weight.

Birth weight	No. of patients	Percentage
<3kg	8	13.3
>3kg	52	86.6

In this study 86.6% of patients with scar dehiscence had baby birth weight more than 3kg and only 13.3% patients had baby birth weight less than 3 kg. If the weight of the baby is more, more are the chances of scar dehiscence.

DISCUSSION

Incidence of scar dehiscence was 8.3% in present study. Baron J et al, in their study done in 2014 predicted incidence of scar dehiscence between 0.2% and 4.3%.[1] In this study the increased incidence of scar dehiscence could be ascertained to the fact that being a developing country, antenatal services have not yet reached out to rural areas due to poverty and illiteracy. So careful decision whether VBAC can be tried or not is not taken beforehand and patients report to the hospital when labour sets in and scar dehiscence has already taken place. Various factors which were studied to predict scar dehiscence include gravidity, period of gestation, interpregnancy interval, scar tenderness, scar thickness and weight of the baby.

Scar dehiscence was observed in 55% of patients who were gravida 3 and above (Table 2). This shows a close correlation between no. of previous deliveries and scar dehiscence. This can be explained by the thinning of myometrium due to successive pregnancies.

Also, it was seen that all patients in which scar tenderness was elicited at the time of taking decision for LSCS, had scar dehiscence intraoperatively (Table 3).

Thus, according to present study scar tenderness is the single most important predictor of scar dehiscence. If scar tenderness is present the patient should be taken for emergency caesarean section, especially if it is associated with other predictive factors.

In this study 35 % of patients with scar dehiscence had scar thickness less than 2mm and only 5% of patients with scar dehiscence had scar thickness more than 3.5mm (Table 4). This shows that lesser the scar thickness more the chances of scar dehiscence.

There have been various studies in which people have tried to find a value of scar thickness which is safe for VBAC. N Singh et al, in their study in 2015 found that scar thickness less than 2mm in third trimester was associated with scar dehiscence.[6] Ejub Basic et al, in their study in 2012 found the cut off thickness of previous caesarean scar to be 3.5mm for allowing a successful vaginal delivery.[7] Sen S et al, found the critical cut off value for safe lower segment thickness to be 2.5mm.[8]

In present study scar dehiscence was present in 70% cases in the gestational age of 37-40 weeks and 30% in the gestational age below 37 weeks (Table 5). Hence it can be safely concluded that more the gestational age after 37 weeks, more the chance of scar dehiscence.

This is in accordance with Fukuda M et al, who in their study done in 2015 found out that lower uterine segment thickness decreases with gestational age and correlates strongly with intraoperative lower uterine segment thickness in women with previous caesarean section.[9] Although Ram M et al, in 2018 found in their study that gestational age at delivery was not found to be an independent risk factor for the success of VBAC.[10]

In present study scar dehiscence was reported in 65% of patients with interpregnancy interval less than 18 months and in only 6.66% of patients with interpregnancy interval more than 24 months (Table 6). A longer time interval after a previous caesarean section gives more quality attributes to the scar.[7] This is in close correlation to the study by Valentin L in 2013.[11] They studied predictive factors of scar dehiscence and reported statistically significant association of uterine rupture with

various variables-underdeliver interval (higher risk with short interval),birth weight (higher risk if 4000gm or more) and previous vaginal delivery(lower risk).

Authors also found out in present study that scar dehiscence was present in 86.6% of patients with birth weight more than 3 kg and only in 13.3% of patients with birth weight less than 3 kg (Table 7). This strongly indicates that more the weight of the baby more the chances of scar thinning and hence scar dehiscence. Jastrow N et al, in their study in 2010 found out that birth weight of 4 kg or more is associated with uterine rupture, failed trial of labor, shoulder dystocia and third- and fourth-degree perineal laceration.[12]

Also, authors devised a scar dehiscence score using all the six parameters studied i.e. gravidity index, scar tenderness, period of gestation, interpregnancy interval, scar thickness and birth weight. Score was calculated as follows:

Table 8: Scar dehiscence score.

Predictive factors of scar dehiscence	Score
Scar tenderness	4
3rd gravida and above	2
Scar thickness ≤2.5mm	2
POG 37-40 weeks	2
Interpregnancy interval <18 months	2
Birth weight >3kg	2

It was seen that scar tenderness was present in 100% cases of scar dehiscence, 55% cases of 3rd gravida and above, 66.66% of cases with scar thickness ≤2.5mm, 70% in 37 to 40 weeks, 65% in ≤18 months of interpregnancy interval, 86.6% in birth weight of 3kg and more.

Authors concluded that a single factor which has maximum predictive value for scar dehiscence is scar tenderness. Regarding the score it is safe to assume that if score is 6 or more, then the patient should be taken for caesarean section to prevent scar dehiscence. This means that if along with scar tenderness, one more factor is present then the patient should be taken up for caesarean section.

CONCLUSION

This study was done to find out the predictive factors of scar dehiscence in cases of previous caesarean and the aim of this research is early diagnosis of scar dehiscence to prevent scar rupture, thus decreasing maternal and foetal morbidity.

Factors which should be considered regarding prevention of scar dehiscence and preventing maternal and foetal morbidity are social, clinical and diagnostic.

Regarding social factors, patient should be counselled about regular antenatal care, proper contraception for interval between two pregnancies and ultrasound evaluation for scar thickness, especially in third trimester.

Regarding clinical factors, labour monitoring in such high-risk patients should be done intensively under the guidance of a senior obstetrician to detect early signs of scar dehiscence.

Regarding diagnostic factors, more research should be done in the field of ultrasound and MRI evaluation of the scar so that impending dehiscence can be picked up beforehand and patient is not allowed VBAC to prevent maternal and foetal morbidity.

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