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ORIGINAL RESEARCH

Intra-operative difficulties in repeat cesarean sections with special reference to complications at a tertiary care hospital

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ABSTRACT

Background: As with all types of abdominal surgeries, a Caesarean section is associated with risk of anesthesia, intra operative risks like blood loss requiring blood transfusion due to various causes like adhesions, extension of uterine incision, adherent placenta. Present study was aimed to study intra-operative difficulties in repeat cesarean sections with special reference to complications at a tertiary care hospital. **Material and Methods:** Present study was descriptive study, conducted in women undergoing who undergone-section during this pregnancy who had one / more cesarean section in her previous deliveries irrespective of age and parity. **Results:** Mean age was 27.65± 2.78 years. Most of them have complains of Severe abdominal pain (68.97%) followed by PV leaking or PV bleeding (25.86%) and Postdated pregnancy (24.14%). Scar tenderness (41.38%) is the leading cause of repeat C-section followed by Oligohydramnios (18.10%). Also, leaking PV and bleeding PV (3.45%) are contributing factors for repeat C-section. Most difficult among the procedure is approach to lower segment (44%) followed by opening of abdomen in layers (37%) and uterine closure (24.16%) in such patients. Majority of the patients do not have any complication (55.17%). Maximum no. of complications encountered were Hemorrhage (34%), followed by Thinned out lower segment (13%) and Adhesions (18%). Presence of adhesion does not increase need of extension of uterine incision ($p = 0.952$). Approach to lower segment is associated with the adhesion, a complication of previous LSCS ($p = 0.0010$). Adhesion makes it difficult to approach to lower uterine segment. Exteriorization of uterus is very strongly associated with the adhesion due to previous C-section ($p < 0.001$). **Conclusion:** Abdominal pain along with Scar tenderness can be used as guiding tool to anticipate presence of Adhesion. Intra-abdominal adhesions occur more frequently after C-sections

Keywords: repeat cesarean sections, Abdominal pain, Scar tenderness, intra-abdominal adhesions.

INTRODUCTION

Cesarean section (CS) is the most common obstetric surgical procedure around the world with a steadily increasing incidence over the last few decades, giving women the obstetric status of having repeated caesarean section. While the important life -saving role of cesarean section (CS) in modern obstetrics is clear, the potential negative impact of high CS levels is poorly demonstrated.[1]

Approximately 50% of cesarean sections are elective, and the majority of these operations have the underlying reason of previous cesarean section.[2] This is to reduce the intra-partum and post-partum complications of emergency CS or trial of Labour in Previous LSCS. The rate of placenta previa at second pregnancy in women with CS at first birth was twice as compared to vaginal births during 1st delivery.[3]

As with all types of abdominal surgeries, a Caesarean section is associated with risks of postoperative adhesions, incisional hernias (which may require surgical correction) and wound infections. Along with risk of anesthesia, intra operative risks like blood loss requiring blood transfusion due to various causes like adhesions, extension of uterine incision, adherent placenta.[4,5] Present study was aimed to study intra-operative difficulties in repeat cesarean sections with special reference to complications at a tertiary care hospital.

MATERIAL AND METHODS

Present study was descriptive study, conducted in Department Of Obstetrics And Gynaecology Government Medical College, Jalgaon., India. Study duration was of 1 year (July 2020 to June 2021).

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Study was approved by institutional ethical committee.

Inclusion criteria

- All Women undergoing who undergone-section during this pregnancy who had one / more cesarean section in her previous deliveries irrespective of age and parity, willing to participate in present study

Exclusion criteria

- All women who have undergone other abdominal surgeries

Study was explained to participants in local language & written informed consent was taken. Case histories of repeat cesarean deliveries were studied and the data was recorded. The decision for cesarean section was taken based on clinical evaluation of progression of labor, fetal condition, station and its position (in pelvis), maternal condition and patients not willing for VBAC (vaginal birth after cesarean section). The nature of anesthesia was left to the decision of anesthetist.

All the intraoperative details will be noted and complications were managed promptly. Complications that were encountered while operating a repeat cesarean section were meticulously noted and analyzed for type and incidence of the intraoperative problems. The post-operative period was monitored and all complications were managed promptly. Patients with uneventful post-operative period were discharged after the 6th post-operative day on discharge a summary card was given and post-operative checkup, after 6 weeks is advised. All cases were advised a mandatory hospital delivery in successive pregnancy.

Data is entered in Excel and analyzed in SPSS software. Proportion and percentage of intra operative complications in one or more than one repeat cesarean section in association with age, gravida, parity, gestational age, and previous medical condition was be calculated**.**

RESULTS

Majority participants were in range of 25 – 30 years age group (42.24 %) followed by 37.07 % in range of < 25 years age group. Mean age was 27.65± 2.78 years.

Table 1: General characteristics

Characteristics	No. of subjects	Percentage
Age group (in years)		
< 25	43	37.07
25 - 30	49	42.24
30 - 35	24	20.69
> 35	1	0.86

Most of them have complains of Severe abdominal pain (68.97%) followed by PV leaking or PV bleeding (25.86%) and Postdated pregnancy (24.14%). Most of the patients shows clinical pallor (78.45%). Followed by scar tenderness (53.45%). A significant number of patients also shows pedal edema (38.79%).

Gestational age at the time of delivery is more towards the lesser gestational age. Most of the participant belongs to 33 to 37 completed week category (38.79%) followed by normal gestational age category that is 38 to 42 weeks (34.48%). 98 (84.48%) of these women are anemic out of which 10 (8.62%) are severely anemic. Only 18 (15.52%) women are normal. CPD (32.76%) is the leading cause of C-section followed by fetal distress (18.10%). Some patients (5.17%) were unable to recollect the indication of previous C-section.

Scar tenderness (41.38%) is the leading cause of repeat C-section followed by Oligohydramnios (18.10%). Also, leaking PV and bleeding PV (3.45%) are contributing factors for repeat C-section.

Table 2: Obstetric characteristics

Characteristics	No. of subjects	Percentage
Chief Complains		
Abdominal Pain	80	68.97
PV leaking/bleeding	30	25.86
Post dated	28	24.14
Decrease fetal moments	10	8.62
Episode of Convulsion	2	1.72
Clinical findings		
Pallor/ Anemia	91	78.45
Scar Tenderness	48	53.45
In Labour	45	38.79
Pedal Oedema	45	38.79
Jaundice	3	2.59

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Gestational Age (wks.)		
<28	2	1.72
28-32	8	7.36
32-34	23	19.83
34-36	38	32.76
36-38	23	19.83
38-40	12	10.34
40-42	9	7.76
42-44	1	0.86
Hb (mg/dl)		
< 7 (Sever Anemia)	10	8.62
7 - 9 (Moderate Anemia)	32	27.59
9 - 11 (Mild Anemia)	56	48.28
>11 (Normal)	18	15.52
Indication of Previous CS		
CPD	38	32.76
Fetal Distress	21	18.10
PV leaking	20	17.24
Meconium Stained liquor	17	14.66
Oligohydramnios	13	11.21
Unknown	6	5.17
Indication of present CS		
Scar tenderness	48	41.38
Oligohydramnios	21	18.10
Leaking PV	17	14.66
Meconium Stained liquor	15	12.93
PV bleeding	4	3.45
Other	11	9.48

High level of WBC count is found in most of the patients (47.41%). High blood pressure is found in 38 Patients (32.76%)

Table 3: Distribution of Participants according to various findings:

Findings	Less than Normal	Normal	More than normal
WBC count	4 (3.45 %)	57 (49.14 %)	55 (47.41 %)
Platelet count	13 (11.21 %)	75 (64.66 %)	28 (24.14 %)
Random BSL	8 (6.90 %)	104 (89.66 %)	4 (3.45 %)
Blood Pressure	9 (7.76 %)	70 (60.34 %)	38 (32.76 %)

Most difficult among the procedure is approach to lower segment (44%) followed by opening of abdomen in layers (37%) and uterine closure (24.16%) in such patients.

Table 4: Difficulties encountered during C-section for present delivery:

Procedure	Easy	Difficult
Abdomen opened in layers	73 (62.93 %)	43 (37.07 %)
Approach to lower segment	65 (56.03 %)	51 (43.97 %)
Delivery of Baby	97 (83.62 %)	19 (16.38 %)
Exteriorization of uterus	100 (86.21 %)	16 (13.79 %)
Uterine Closer	88 (75.86 %)	28 (24.14 %)
Closure of Abdomen	98 (84.48 %)	18 (15.52 %)

Majority of the patients do not have any complication (55.17%). Maximum no. of complications encountered were Hemorrhage (34%), followed by Thinned out lower segment (13%) and Adhesions (18%). Other complications included Eclampsia (one Patient) and death (2 patients).

Table 5: Distribution of Participants according to Complications in present delivery:

Complications	No. of Patients	In %
No Complication	64	55.17

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Hemorrhage	44	37.93
Thinned out lower segment	15	12.93
Adhesion	21	18.10
Scar Dehiscence	5	4.31
Other	2	1.72

Most common additional procedure is manual removal of placenta (38.79%), followed by Extension of uterine incision (18.10%) and General Anesthesia (8.62%).

Table 6: Additional procedures needed during C-section for present delivery:

Additional Procedure	No. of Patient	in %
General Anesthesia	10	8.62
Extension of uterine incision	21	18.10
MRP for Placental delivery	45	38.79

Most common organ (along with uterus) involved in adhesion is Parietal Peritoneum (12%) along with other organs, usually with uterus & bladder. This is followed by Omentum (6.9%) and bladder (4.31%)

Table 7: Other Organ Involved due to Adhesion as a complication in present delivery:

Other Organ Involved due to due to previous CS	No. of Patients	In % out of all cases	In % out of adhesion cases
Parietal peritoneum	14	12.07	66.67
Omentum	8	6.90	38.1
Bladder	5	4.31	23.8

Most of the patients do not need any special management for Adhesion (38.1%). 7 (33.33%) patients needed Adhesionolysis and 6 (28.57%) of patients were managed with only manual separation.

Table 8: Distribution of Patient with adhesion according to management

Main management done for Adhesion	No. of Patients	In %
No additional Management	8	38.10
Adhesionolysis	7	33.33
Manual Separation	6	28.57

Formation of Adhesion is not associated with indication of C-section due to which the adhesion must have formed.

Table 9: Relationship between indication of C-section and occurrence of adhesion :

Indication of Previous CS	No Adhesion	In %	Adhesion present	In %	No. of Patients	In %
CPD	32	33.684	6	28.571	38	32.76
Fetal Distress	17	17.895	4	19.048	21	18.1
PV leaking	15	15.789	5	23.81	20	17.24
Meconium Stained liquor	14	14.737	3	14.286	17	14.66
Oligohydramnios	11	11.579	2	9.5238	13	11.21
Unknown	5	5.2632	1	4.7619	6	5.17

(Chi Square test is applied, $p = 0.9323$)

Thus, the indication of C-section is strongly associated with presence of adhesion due to previous C-section. Formation of Adhesion causes Scar tenderness which in turn increases the requirement of repeat C-section, this is proportionately very high (33.3%) followed by PV bleeding (25%)

Table 10: Relationship between indication of present C-section and presence of adhesion

Main indication of present CS	No Adhesion	In %	Adhesion present	In %	No. of Patients	In %
Scar tenderness	32	66.67	16	33.33	48	41.38
oligohydramnios	20	95.24	1	4.76	21	18.10
Leaking PV	17	100.00	0	0.00	17	14.66
Meconium Stained liquor	14	93.33	1	6.67	15	12.93

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PV bleeding	3	75.00	1	25.00	4	3.45
Other	9	81.82	2	18.18	11	9.48
Total	95	81.90	21	18.10	116	100.00

(Chi Square test is applied, p =0.0042)

Pallor is not associated with Adhesion due to C-section (p- 0.7368). Presence of Abdominal pain is very strongly associated with the presence of Adhesion in such patients (p – 0,004). Pedal edema is not associated with Adhesion due to C-section (p-0.6728).

Thus, Presence of Scar tenderness is very strongly associated with the presence of Adhesion in such patients (p= 0.0052). Considering 30% prevalence of C-sections sensitivity and specificity of checking for Scar Tenderness is 47.37%and 19.05%respectively. Which means if scar tenderness Is present in previous LSCS patient there is 47.37% of chance of presence of Adhesion formed due to previous C-section.

Table 11: Relationship between clinical features & adhesions

	No Adhesion	In %	Adhesion present	In %	No. of Patients	In %
Abdominal Pain	60	75.00	20	25.00	80	68.97
Pallor/ Anemia	72	79.12	19	20.88	91	78.45
Pedal Oedema	36	80.00	9	20.00	45	38.79
Scar Tenderness	45	72.58	17	27.42	62	53.45

Need of general anesthesia during the C-section and presence of adhesion are statistically significant. Thus, Adhesion increases the need of general anesthesia which usually not required for C-section ($p < 0.001$).

Table 12: Need of general anesthesia during C-section for present pregnancy

Anesthesia used	No Adhesion	In %	Adhesion present	In %	No. of Patients	In %
Spinal Anesthesia	94	88.68	12	11.32	106	91.38
General Anesthesia	1	10.00	9	90.00	10	8.62

Presence of adhesion does not increase need of extension of uterine incision ($p = 0.952$). Difficulty in abdominal opening is not associated with adhesion due to previous C-section ($p = 0. 373$). Approach to lower segment is associated with the adhesion, a complication of previous LSCS ($p = 0.0010$). Adhesion makes it difficult to approach to lower uterine segment.

Delivery of the baby is not associated with the presence of adhesion due to previous LSCS ($p = 0.0953$). Exteriorization of uterus is very strongly associated with the adhesion due to previous C-section ($p < 0.001$). Thus, the adhesion makes it difficult to do exteriorization of uterus. Difficulty of abdominal closure is not associated with Adhesion ($p = 0.1325$). Thus, the closure of abdomen is not aggravated by adhesion.

Table 13: Relationship between surgical difficulties & adhesions

	No Adhesion	In %	Adhesion present	In %	No. of Patients	In %
Need of Extension of uterine incision	17	80.95	4	19.05	21	18.10
Difficulty in Abdomen opened in layers	37	86.05	6	13.95	43	37.07
Difficult Approach to lower segment	35	68.63	16	31.37	51	43.97
Difficult Delivery of Baby	13	68.42	6	31.58	19	16.38
Difficult Exteriorization of uterus	4	25.00	12	75.00	16	13.79
Difficult Closure of Abdomen	17	94.44	1	5.56	18	15.52

DISCUSSION

Even though C-section is safest mode of delivery in previous LSCS patient, there are certain complications which cannot be prevented and also C-section itself has certain complication which increases with the number of C-section done in women. In this study we tried our level best to evaluate the complications encountered and find other factors causing / affecting the same during and after 2nd or subsequent delivery using C-section as a mode of delivery.

The most common specific complication of C-section (Overall hemorrhage) is Adhesion. In our study we found 21 (18.1%) women with adhesions. In one of the prevalence study by Nuamah MA *et al.*,[6] the prevalence of Adhesion found to be 51% with one previous CS, 62% with >1 CS. Since, Adhesion is most common complication after hemorrhage and also its management have taught us various things as far as C-section is concerned, we have studied this

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complication in detail and tried to find of associated factors of it.

Second most important specific complication we encountered was thinned out lower segment (12.93%). This complication is significantly important because it had increased the frequency and severity of hemorrhage during C-section.

In a study done by Janine Hoffmann*et al.*,[7] they found LUS thinning up to 1 mm was observed in 23% of women without a previous CS and in 34% of women with normal intraoperative findings. In our study we found 13% of patients having thinned out lower segment. In another study by Abdel Baset Fakhry Mohammed[8] it was found At LUS thickness ⩽2.5 mm, there was a higher risk for dehiscence than those with a thickness of more than 2.5 mm.(35)

In our study we found 5 patients (4.31%) showing significant Scar dehiscence which also, caused major blood loss. As far as this study is concerned, we found Age is associated with overall complication and also, increase the specific complications due to C-section. Probability of formation of adhesion in such patient is directly proportion to age of the patient. However, this is not specific for C-section any intra-abdominal or pelvic surgery chances of having adhesion is linked to age of the patient.[9]

We found abdominal pain and Scar tenderness is very strongly associated with the presence of Adhesion. Thus, we can conclude abdominal pain and Scar tenderness are most common factor for anticipation of Adhesion due to previous C-section. In our study we found indication of previous LSCS is not associated with presence of complication such as Adhesion which encountered in present C-section. However, indication of present C-section that is Scar tenderness and abdominal pain in non-progressing labour is strongly associated with presence of Adhesion. There are limited references found on exploring this aspect of C-section.

In our study we found formation of postoperative adhesion is not associated with the age of mother at which the C-section is done. However, in most of the studies including one which is done by Awonuga*et al.*,[10] ,age of mother at the time of C-section was linked to the formation of Adhesion this might be due to various reasons. In our study we found formation of postoperative adhesion is not associated indication of C-section is done. Various studies show similar findings.[11]

Indication of present C-section such as Scar tenderness, Scare dehiscence is strongly influenced by presence of Adhesion. Similar finding noted in study by Nuamah MA *et al.*,[6]& Duan G *et al.*,[11] Abdominal pain is the most common finding and influencing the management and need for emergency C-section as in report by Nuamah MA *et al.*,[6]& Duan G *et al.*,[11] showed similar findings

In our study we found Scar tenderness is strongly associated with presence of Adhesion. These findings are in line with studies done by Nuamah MA *et al.*,[6]& Duan G *et al.*,[11] Thus; Scar tenderness is the most important clinical finding to anticipate presence of Adhesion. This can be utilized as a tool for taking early decision and hence improving upon the outcome.

Due to the increasing rate of cesarean delivery and the relative decline in vaginal delivery, it is important for doctors and patients to re-understand the potential risks of a cesarean section, which can be detrimental in developing countries as the rate of prenatal care is low. And while last-minute reporting or transfer to tertiary units is too much, these high-risk cases are managed as an emergency department against the ideal, selective cesarean for them. However, C-section is a very good mode of delivery in patient previous C-section with a smaller number of complications but some complications cannot be prevented which are due to adhesion.

It is necessary to take action to prevent adhesion. It is important to maintain and preserve all records and details of previous cesarean deliveries, as they can play a very important role in determining and treating women with subsequent pregnancies and inter-operative complications.

Limitations of present study were small sample size & single center study. Abdominal pain accompanied by Scar tenderness can be used as guiding tool for understand internal condition (especially adhesion) of the patient.

CONCLUSION

Abdominal pain along with Scar tenderness can be used as guiding tool to anticipate presence of Adhesion. Intra-abdominal adhesions occur more frequently after C-sections. Risks of adhesions and associated complications should be considered in counseling patients for cesarean section.

Post-operative adhesions are very common in C-section. Its preventive measures should be taken as far as possible. Further studies with high number of sample size are needed for evaluation of specific causes of the adhesion.

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