

Study of Surgical Difficulties and Post-Operative Morbidities in Patients with Repeat Caesarean SectionsKancharla Venkata Srilakshmi Devi^{1*}, Konide Sai Anudeep²¹Associate Professor, Department of Obstetrics & Gynaecology, Katuri Medical College & Hospital, Chinnakondrupadu, Guntur, Andhra Pradesh, India.²Internee of Katuri Medical College, Chinnakondrupadu, Guntur, Andhra Pradesh, India

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Abstract:**Aim:** This study analyze the intraoperative complications in pregnant that were undergoing repeat caesarean section (CS), and also compared the complications with maternal characteristics and previous CS.**Method:** This observational study carried out in 100 cases of repeat CS. Maternal age, previous CS, parity, and intra-operative complications were noted.**Results:** 30% of cases with previous 2 CS and 2% cases with previous 3 CS were recorded. Preterm CS was performed in 14% of women with previous 2 CS and 1% in previous 3 CS. There were 86% of intra-operative complications observed. Among 86 cases with complications, 47.7% cases had single intraoperative complications and 52.3% cases had multiple intraoperative complications in combination of 2, or 3 or 4. Out of 52.3% cases that had multiple intraoperative complications, Adhesions, and Thinned Lower Uterine Segment were the highest combinations. Placenta Previa with combination of Haemorrhage was observed in one case. The incidence of scar dehiscence was reported in 10% of cases with Adhesion, Thinned Lower Uterine Segment, and extension of uterine incision. A total of 46.4% of the study group had thinned lower uterine segment in previous 1 and 2 CSs. Three cases of bladder injury due to in combination with Thinned Lower Uterine Segment, and advanced Bladder were noted. Six cases had haemorrhages on table due to adhesions, Thinned Lower Uterine Segment and extension of uterine incision.**Conclusion:** Risk reduction is possible by managing with the strict guidelines at the first CS, and having regular antenatal checkups. The best way to reduce the multiple complications of repeat CS is to minimize primary and repeat CS whenever possible.**Keywords:** Hysterectomy, repeat caesarean section, preterm caesarean section, adhesions.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Caesarean section (CS) is the birth of the fetus through incisions in the abdominal wall (laparotomy) and the uterine wall (Hysterectomy). This definition does not include the removal of the fetus from the abdominal cavity in the case of the rupture of the uterus or case of abdominal pregnancy. [1,2]

A CS delivery is a common obstetric procedure, and frequently helps in saving lives of both mother and baby. According to World Health Organization guidelines, which were updated in 1994, the Caesarean birth rate in any population group should be between 5% and 15%. [3] The trend analysis, based on data from 125 countries, revealed that between 1990 and 2014, the global average CS rates increased by 12.4 percent, with an annual rate of increase of 4.4%. Analysis of the National Family Health Survey data shows that the rate of CS rates in states like Andhra Pradesh, Telangana,

Kerala, Tamil Nadu, Jammu and Kashmir, and Goa is alarmingly high. [4]

According to the most recent data, CS accounts for 18.6% of all births, ranging from 6% to 27.2% in the least and most developing regions. Maternal mortality and morbidities associated with repeat C-section is a significant health problem worldwide. Incidence varies from 10% to 25% in developed countries. [5] The risk of major complications increase with number of Caesarean deliveries. Scarring and adhesion formation have been linked to an increase in major complication rates ranging from 4.3 to 12.5%, depending on the number of previous C-sections performed. [6,7] Scarring and adhesion formation is known to cause an increase in the major complication rates from 4.3 to 12.5% depending upon the number of previous C-section. The prevalence of intraperitoneal adhesions ranges from 5.5% to 42.5%. [7]

The present study aims to assess the types of intra operative surgical complications and to compare the magnitude of intraoperative complications in patients with previous one C-section and in patients with previous two or more C-sections.

Materials and Methods

Patients: All patients undergoing CS with history of one or two previous caesarean delivery.

Sample size: 100 pregnant women randomly selected those meeting the inclusion criteria and allocate into 2 groups of each 50.

Sample design: A prospective study on surgical difficulties encountered during surgery.

Study setting: Prospective observational study conducted for the period of 12 months in the Department of Obstetrics & Gynaecology, Katuri Medical College & Hospital, Chinnakondrupadu, Guntur.

Inclusion criteria: All CS cases with history of one or two previous caesarean delivery.

Exclusion criteria:

1. All the first time cesarean irrespective of parity.
2. History of other abdominal surgeries

Date collection & outcome measurement:

Detailed clinical assessment of patient performed in OPD including;

- History & Physical examination of patient.
- Routine investigations like ANC profile and Obstetric scan.
- The intra operative surgical complications will be compared in regard to adhesions [peritoneal, bladder, bowel, omental, etc.], blood loss, bladder injury, bowel injury, extension of uterine incision, uterine scar dehiscence, uterine scar rupture, need for caesarean hysterectomy, etc.,

In current study case histories of repeat CS deliveries were studied and data recorded. An informed consent was obtained from each patient included, and case histories of each patient with a repeat CS were studied; and intra operative findings were recorded.

Information such as maternal age, parity, number of previous CS, and intra-operative complications. Blood loss was appreciated by soaked sponges and

amount in suction jar. Recorded data was then analysed for intraoperative difficulties encountered.

The fetal outcome includes Birth weight, APGAR score at 5minutes, preterm birth <37 weeks, number of admission into neonatal intensive care unit, number of stillbirths.

Statistics:

Categorical variables were expressed by frequencies, and continuous variables expressed by mean. Association between quantitative explanatory and outcome variables was assessed by calculating person correlation coefficient. Chi square test used to test statistical significance. Statistical Package for the Social Sciences version 24 (SPSS, IBM Corp) was used to analyse the data. P value <0.05 was considered statistically significant.

Results

Study analysed 100 women undergoing a repeat CS. The age group of cases which underwent repeated C-section was between 18 - 38years with a mean age of 26.5 ± 4.5 years.

Parity: Majority of patients were in second gravid accounts 40%, followed by 38% of 3rd gravid, and 18% of third gravidity.

Preterm CSs were performed in 14% cases in women with previous 2 CSs and 1% in women with previous 3 CS.

Association between duration of surgery and CS: Mean Duration of surgery is 41.2 ± 3.5 minutes. Mean operative time for CS in third stage was 45.5 minutes as compared to Previous 3 CS (42.4 min) for 2nd stage CS and Previous 3CS (40.3minutes), owing to difficulties encountered in performing cesarean in 3rd stage.

Post-operative morbidities:

There was no blood loss as observed in current study population. While wound infection was observed in 1% of case.

Among 100 cases, 18% cases of repeat CSs did not show any complications, and remaining 86% cases showed a variety of intra-operative complications recorded.

Mean Length of hospital stay for CS in Previous 2 CS was 5.1 days when compared to 5 days for previous one CS owing to difficulties encountered in performing caesarean in second stage.

Table 1: Intraoperative complications and their varied combinations

Intraoperative-complications	Incidence (%)
Adhesion	16.3%
Bladder Injury	1.16%
Advanced Bladder	2.35%
Thinned Lower Uterine Segment	22.10%

Haemorrhage	1.16%
Adhesion+ Thinned Lower Uterine Segment	11.6%
Adhesion+Advanced Bladder	8.14%
Bladder Injury+ Thinned Lower Uterine Segment + Advanced Bladder	1.16%
Thinned Lower Uterine Segment + Advanced Bladder	3.5%
Scar dehiscence	4.66%
Adhesion+Haemorrhage	1.16%
Thinned Lower Uterine Segment + Haemorrhage	2.35%
Adhesion+Extension of uterine incision +Haemorrhage	1.16%
Placenta Previa+Haemorrhage	1.16%
Bladder Injury + Adhesion + Thinned Lower Uterine Segment	2.35%
Extension of Incision + Advanced Bladder	1.16%
Adhesion+ Scar dehiscence+ Thinned Lower Uterine Segment	1.16%
Adhesion+ Scar dehiscence	1.16%
Adhesion+ Thinned Lower Uterine Segment +Advanced Bladder	3.5%
Adhesion+ Scar dehiscence+ Thinned Lower Uterine Segment +Extension of uterine incision	1.16%
Adhesion+ Extension of uterine incision	2.35%
Adhesion+ Thinned Lower Uterine Segment +Extension of uterine incision	2.35%
Thinned Lower Uterine Segment +Extension of uterine incision	2.35%
Scar dehiscence + Thin Lower Uterine Segment	1.16%
Scar dehiscence+ Advanced Bladder	2.35%
Adhesion+ Scar dehiscence + Extension of uterine incision	1.16%

Table 2: Association of complications with number of C-sections

	Previous 1 CS, %	Previous 2 CS, %	Previous 3 CS, %	P value
Bladder Injury	1.79%	-	-	-
Adhesion	7.5%	33.34%	-	0.03
Thinned Lower Uterine Segment	33.34%	3.34%	-	0.05
Advanced Bladder	3.7%	-	-	-
Scar dehiscence	5.5%	3.34%	-	-
Haemorrhage	1.79%	-	-	-
Thinned Lower Uterine Segment +Extension of uterine incision	1.79%	3.34%	-	-
Adhesion+ Thinned Lower Uterine Segment	9.2%	13.34%	50%	0.10
Adhesion+Advanced Bladder	9.2%	6.6%	-	0.25
Thin Lower Uterine Segment + Advanced Bladder	5.5%	-	-	-
Bladder Injury+ Thinned Lower Uterine Segment +Advanced Bladder	1.79%	-	-	-
Bladder Injury+Adhesion+Thinned Lower Uterine Segment	1.79%	3.34%	-	-
Adhesion+Haemorrhage	-	3.34%	-	--
Thinned Lower Uterine Segment + Haemorrhage	3.7%	-	-	-
Adhesion+Extension of uterine incision +Haemorrhage	-	3.34%	-	-
Placenta Previa+Haemorrhage	1.79%	-	-	-
Adhesion+ Thinned Lower Uterine Segment +Advanced Bladder	1.79%	3.34%	50%	-
Extension of Incision+Advanced Bladder	1.79%	-	-	-
Adhesion+ Scar dehiscence+ Thinned Lower Uterine Segment	-	3.34%	-	-
Adhesion+ Scar dehiscence	1.79%	-	-	-
Scar dehiscence+ Thinned Lower Uterine Segment	1.79%	-	-	-
Adhesion+ Scar dehiscence+ Thinned Lower Uterine Segment +Extension of uterine incision	-	3.34%	-	-
Adhesion+ Extension of uterine incision	-	6.7%	-	-
Adhesion+ Thinned Lower Uterine Segment +Extension of uterine incision	-	6.7%	-	-
Adhesion+ Scar dehiscence + Extension of uterine incision	-	3.34%	-	-
Scar dehiscence+ Advanced Bladder	3.7%	-	-	-

Total Complications:

Adhesion: Adhesions were more in women with previous two or more CSs (33.4%) than in women with previous one CS (7.4%).

Thin Lower uterine segment (TLUS): The most common complication was the presence of Thinned Lower uterine segment. Thin Lower Uterine Segment complication was high in women with previous one CS (33.4%) and women with previous 2 CSs (3.33%).

Bladder Injury: The bladder Injury complication observed in one woman (1.79%) with previous one CS and no case noted in women with previous two CS. There was no Bladder Injury complication was observed in woman with previous 2 or more CS.

Dense adhesions: Dense adhesions complication was more in women with previous two CSs than in women with previous one CS (13.7%).

Advanced Bladder: The Advanced Bladder complication observed in one woman (3.7%) with previous one CS and no case noted in women with previous 2 or 3 CS.

Scar Dehiscence: Scar Dehiscence complication was high in women with previous one CSs (5.56%) than in women with previous 2 CSs (3.34%).

Haemorrhage: The Haemorrhage complication observed in one woman (1.8%) with previous one CS and no case observed in women with previous 2 CSs.

Thinned Lower Uterine Segment +Extension of uterine incision: There were TLUS complication with extension of uterine incision was observed in 3.34% cases with previous two CS and 1.8% observed in women with previous one CS.

Adhesion+ Thinned Lower Uterine Segment: There were Adhesion complication with Thinned Lower Uterine Segment was observed in 50% cases with previous three CS, 13.34% cases with previous 2 CS and 9.2% observed in women with previous one CS.

Adhesion + Advanced Bladder:

There were Adhesion complication with Advanced Bladder was observed in 13.34% cases with previous one CS and 6.6% observed in women with previous 2 CSs.

Thin Lower Uterine Segment + Advanced Bladder: There were Thin Lower Uterine Segment complication with advanced bladder was observed in 5.5% cases with previous one CS.

Bladder Injury+ Thinned Lower Uterine Segment +Advanced Bladder: There were Bladder Injury complication with Thinned Lower

Uterine Segment and Advanced Bladder was observed in 1.79% cases with previous one CS.

Bladder Injury + Adhesion + Thinned Lower Uterine Segment: There were Adhesion complication with Thinned Lower Uterine Segment and Bladder Injury was observed in 3.34% cases with previous 2 CSs and 1.79% case observed in women with previous one CS.

Adhesion + Haemorrhage: There were Adhesion complication with Haemorrhage was observed in 3.34% cases with previous 2 CS.

Thinned Lower Uterine Segment + Haemorrhage: There were Thinned Lower Uterine Segment complication with Haemorrhage was observed in 3.7% cases with previous one CS and no case observed in women with previous 2 CSs.

Adhesion + Extension of uterine incision + Haemorrhage: There were Adhesion complication with Extension of uterine incision and Haemorrhage was observed in 3.34% cases with previous 2 CSs.

Placenta Previa +Haemorrhage: There were Placenta Previa complication with Haemorrhage was observed in 1.8% cases with previous one CS.

Adhesion+ Thinned Lower Uterine Segment +Advanced Bladder: There were Adhesion complication with Thinned Lower Uterine Segment and Advanced Bladder was observed in 50% cases with previous 3 CSs, 3.34% cases with previous 2 CSs and 1.79% case observed in women with previous one CS.

Extension of Incision + Advanced Bladder: There was Extension of Incision complication with Advanced Bladder was observed in 1.79% cases with previous 1 CS.

Adhesion+ Scar dehiscence+ Thinned Lower Uterine Segment: There were Adhesion complication with Scar dehiscence and Thinned Lower Uterine Segment was observed in 3.34% cases with previous 2 CSs.

Adhesion+ Scar dehiscence: There were Adhesion complication with Scar dehiscence was observed in 1.8% cases with previous one CS.

Scar dehiscence+ Thinned Lower Uterine Segment: There was Scar dehiscence complication with Thinned Lower Uterine Segment was observed in 1.8% cases with previous one CS.

Adhesion+ Scar dehiscence+ Thinned Lower Uterine Segment + Extension of uterine incision: There were Scar dehiscence complication with Thinned Lower Uterine Segment was observed in 3.34% cases with previous 2 CS.

Adhesion+ Extension of uterine incision: There were Adhesion complication with Extension of

uterine incision was observed in 6.7% cases with previous 2 CS.

Adhesion+ Thinned Lower Uterine Segment +Extension of uterine incision: There were Adhesion complication with Thinned Lower Uterine Segment and Extension of uterine incision was observed in 6.7% cases with previous 2 CS.

Adhesion+ Scar dehiscence + Extension of uterine incision: There were Adhesion complication with Extension of uterine incision was observed in 3.34% cases with previous two CS and no case observed in women with previous one CS.

Scar dehiscence+ Advanced Bladder: There were Scar dehiscence complication with Advanced Bladder was observed in 3.7% cases with previous one CS.

Excessive Blood Loss: Excessive Blood Loss complication was not observed in either woman with previous one or 2 or 3 CSs.

The highest incidence of intra-operative complications were noted in the age group 21-30yrs (61%), followed by 20% in >30 yrs, and 4% in <20 yrs. age group. The highest common intraoperative complication was thinned lower uterine segment observed in 34 cases of women with previous one CS.

There were 27 cases of Adhesion observed in women with Previous 2 CSs. In women with previous one caesarian section, 17 cases of Adhesion were observed. 14 cases with Advanced Bladder complication was observed in women with Previous one CS. 12 cases with Thinned out LUS complication was observed in women with Previous 2 CSs. Seven cases with Extension of Incision complication was observed in women with Previous 2 CSs.

Discussion

In this study, no women had more than 3 previous CSs. The reason may be in our country where the small family size is the norm and where a large percentage of the population does not seek antenatal care, pregnant women with previous two or more CSs are counseled and encouraged for tubal ligation due to the risks associated with repeat CSs. Most of them undergo bilateral tubal ligation after having two or three live births mostly during their 2nd or 3rd or else during their 4th CS. Hence, it is unusual to find a woman with more than 3 previous CS. In countries like Saudi Arabia and Gulf countries having a large family is encouraged by social and cultural influences; it is not unusual to see women planning for their sixth or seventh CS. [8-10] In our study, majority of patients were second gravid was 40%, followed by 38% third gravid, 18% of third gravid. This is similar to a

study by Sheela WG et al reported second gravid was 58.4%, followed by 33.3 % primi gravid. [11]

In our study, out of 100 cases 68% had one, 30% had two and % cases had three prior CSs. Whereas, a study by Vasantha Lakshmi et al (2020) reported Out of 200 cases 88.5% had one, 11% had two and 0.5% case had three prior CSs. [12] In the present study, Out of 100 repeat CS cases, 18 repeat CSs did not show any intraoperative complications (18%), and 86 cases showed different of intra-operative complications. In a study by Vasantha Lakshmi et al reported intra –operative complications in 43%.

In our study, Out of 86 cases of total complications, 47.5% cases had single intraoperative complications and 52.3% cases had multiple intraoperative complications in combination of two, or three or four. The single intraoperative complications were 46.3% cases (had the Thinned Lower Uterine Segment, followed by 34.14% cases of Adhesion, 9.7% cases of Scar dehiscence, 4.7% cases of Advanced Bladder, 1 case (2.43%) had Bladder Injury, and one case had Haemorrhage respectively. A study conducted by Muntaz Rashid and Rabira S Rashid showed adhesion as the most common complication as 54% and placenta previa 4%, scar rupture 2%, placenta accreta 1%, bladder injury 1%, bowel injury 0.3%, and Hysterectomy 2%. In our study, there were no cases of scar rupture, bowel injury, and cesarean hysterectomy in the study population. Vasantha Lakshmi et al also reported the similar pattern.

In our study, among 86 cases of complications, 52.4% cases had multiple intraoperative complications in combination of two, or three or four. Out of cases with various combinations of adhesions, 10 cases had the most common combination of Thinned Lower Uterine Segment, 7 cases had combination of Advanced Bladder, 3 cases had combination of Thinned Lower Uterine Segment +Advanced Bladder, 2 cases had combination of Extension of uterine incision, 2 cases had combination of Thinned Lower Uterine Segment +Extension of uterine incision, 2 cases had combination of Bladder Injury+ Thinned Lower Uterine Segment, 1 case had combination of Scar dehiscence+Extension of uterine incision, 1 case had combination of Extension of uterine incision +Haemorrhage, one case had combination of Scar dehiscence+ Thinned Lower Uterine Segment, one case had combination of Scar dehiscence, one case had combination of Scar dehiscence+Thinned Lower Uterine Segment +Extension of uterine incision, and one case had combination of Haemorrhage were noted respectively. Out of cases with various combinations of thinned lower uterine segment, 10 cases had the most common combination of Adhesion, 2 cases had combination of Advanced

Bladder, 2 cases had combination of Haemorrhage, 2 cases had combination of Bladder Injury+ Adhesion, 2 cases had combination of Extension of uterine incision, one case had combination of Scar dehiscence, and 1 case had combination of Bladder Injury+Advanced Bladder were recorded respectively. Scar dehiscence with combination of Advanced Bladder observed in two cases. Extension of Incision with combination of Advanced Bladder was noted in 1 case.

Repeated CSs predispose to increased risk of severe dense adhesions, scar dehiscence, uterine rupture, abnormal placentation, significant hemorrhage, bladder injuries and cesarean hysterectomies. A study showed that incidence of complications were more in women with 2 previous Cs, were in the most common complications was dense adhesions (35.5%), followed by thinned out lower uterine segment (16.7%), ruptured uterus (1.2%) and bladder injury (1.1%). [13] The rate of excessive bleeding after CS delivery was generally low, but may appear to increase as the number of previous CS delivery increases. [14] The reasons for excessive blood loss after caesarean delivery include uterine atony, adhesions, placenta accreta and trauma.

In current study, 3 cases of bladder injury due to in combination with Thinned Lower Uterine Segment, and advanced Bladder were recorded. In current study, bladder injury may be due to severe adhesions between bladder and uterus associated with placenta accretes. A study by Nazneen S et al [15] observed excessive blood loss in 8% of patients with prior two or more CS, mostly because of atonic PPH and other causes: trauma, abnormal placentation. In a study by Puja Banik et al [16] bladder injury and subsequent repair were found in 1% patient, and studies have observed the occurrence of the same in 0.09% to 5.6% intraoperatively in 2 or more CSs. Repeat CSs also leads to increase in risk of placenta previa and placenta accrete. In current study, Intraoperative complication of Placenta Previa with combination of Haemorrhage was observed in only one case. A study shown that placenta accreta and cesarean hysterectomy as obstetric complications, and maternal ICU and NICU admissions were all significantly increased in the study group. Sinha P et al. also reported results which were in consensus to current study. [17,18] In our study, blood loss was not noted in women with previous 1 or 2 or 3 CSs. In a previous study, blood loss increased with the increasing number of CSs. [19]

Conclusion

Increasing the number of CSs results to increase in the risk of the intraoperative and post-operative complications. Risk reduction is possible by following strict indications in first CS, regular

antenatal check-ups and prior anticipation and preparedness for complications.

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