

## STUDY OF PERIOPERATIVE COMPLICATIONS OF REPEAT CAESAREAN SECTION STUDY

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Corresponding Author:

**Dr. Jasmeen Sultana, K,**

Email: jasmeensulthana99@gmail.com

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**Jasmeen Sultana. K<sup>1</sup>, A Sashikiran<sup>2</sup>**

<sup>1</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Santiram Medical College, Nandyal Andhra Pradesh, India.

<sup>2</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Santiram medical College, Nandyal Andhra Pradesh

### Abstract

**Background:** Caesarean section is currently the commonest procedure performed by the obstetricians. Caesarean delivery is defined as birth of the fetus through incision in the abdominal wall and uterine wall. Incidence of CS has climbed high in the present day obstetric practice. CS is often performed for the mother in the past, but now often performed for the well-being of the child. Due to liberalization of primary CS the post CS pregnancy has become common. **Aim:** To study the intra-operative and postoperative complications in a 200 cases of repeat caesarean sections and to analyze, categorize in relation to age, parity, BMI, medical disorders, number of C-sections, emergency / elective section and place of previous section. **Material & Methods:** It is a hospital based study conducted during the period of October 2012 to September 2013. The present study is to study the intra-operative complications and post-operative complications in repeat CS in 200 cases that were done in the Department of Obstetrics and Gynecology, Santhiram Medical College, Nandyal **Results:** Present study is performed in 200 cases of repeat CS from Santhiram Medical College, Nandyal to analyze, categorize the intraoperative and postoperative complications in relation to age, BMI, no. of CS, medical problems, place of previous CS, type of CS, indication of CS. In the present study out of 200 cases no. of cases with one previous section were 173 (86.5%), no. of cases with 2 previous sections were 25 (12.5%) and with three previous sections were 2 cases (1%). **Conclusion:** Our results clearly demonstrate that with appropriate prenatal care and adequate preoperative preparation, maintenance of meticulous surgical techniques and careful postoperative follow up can dramatically reduce the intraoperative and post-operative morbidity without any mortality.

## INTRODUCTION

Caesarean section is currently the commonest procedure performed by the obstetricians. Caesarean delivery is defined as birth of the fetus through incision in the abdominal wall and uterine wall. Incidence of CS has climbed high in the present day obstetric practice. CS is often performed for the mother in the past, but now often performed for the well-being of the child. Due to liberalization of primary CS the post CS pregnancy has become common. With the increasing safety following the introduction of modern anaesthesia and blood transfusion, the operation which was done as the last resort for severe contraction of pelvis was liberalized to other forms of dystocia, major degrees of placenta previa and severe eclampsia with a reduced maternal mortality.

## MATERIALS AND METHODS

It is a hospital based study conducted during the period of October 2012 to September 2013. The present study is to study the intra-operative complications and post-operative complications in repeat CS in 200 cases that were done in the Department of Obstetrics and Gynecology, Santhiram Medical College Nandyal.

Source of Data: Santhiram Medical College Nandyal.

### Inclusion Criteria

All women who have undergone one / more caesarean section irrespective of age and parity.

### Exclusion Criteria

All women who have undergone primary caesarean section.

### Method of Collection of Data

It is an observational prospective study of 200 cases with repeat caesarean section.

### Procedure of Study

Patients were selected according to the inclusion criteria. Informed and written consent was taken from all the cases enrolled in the study.

The routine investigations like Hb %, blood grouping and rhesus typing, RBS, urine for albumin, sugar and microscopy, viral screening, ultrasound were done. As and when required special investigations and ultrasound were done. Patients were immunized against tetanus as required. Case histories of repeat caesarean deliveries were studied and all the data needed were recorded in the case proformas. Her complaints, history of presenting illness, menstrual history, marital history and in past obstetric history, indication of previous CS, any significant ante partum and postpartum events, personal history, past medical and surgical history, family history are noted. General examination, vital signs and in systemic examination CVS, RS and CNS were examined.

Per abdominal examination was done.

- To know the gestational age by fundal height.
- For uterine activity.
- For signs of scar tenderness
- Presentation, lie, position of the fetus, if vertex presentation whether it is engaged or palpable per abdomen.

In per vaginal examination effacement dilatation of cervix, position and station of presenting part, presence or absence of caput and moulding, colour of the liquor, pelvic assessment were done. The decision for caesarean section was taken based on clinical evaluation of progression of labor, fetal condition, station and its position (in pelvis), maternal condition. Whenever necessary tubectomy was also done. The nature of anaesthesia was left to the decision of anaesthetist. All the intraoperative details were noted and complications were managed effectively. The new born data was noted and observed for any complications and NICU admissions. All cases were attended by paediatrician. The post-operative period was monitored and all complications were managed promptly. Patients are followed up to discharge. Patients with uneventful post-operative period were discharged after the 7th post-operative day. On discharge a summary card was given and post-operative check-up, after 4 weeks was advised.

The collected data was analyzed for type and incidence of the intraoperative and postoperative complications.

The observed intra-operative and postoperative complications, NICU admissions were analyzed and categorized in relation to age, parity, BMI, medical disorders, number of C-sections, emergency / elective C - section, place of previous section were studied.

All the data was analysed using SPSS software and P value was calculated using Chi-square test to know the statistical significance.

## RESULTS

Present study is performed in 200 cases of repeat CS from Santhiram Medical College Nandyal.

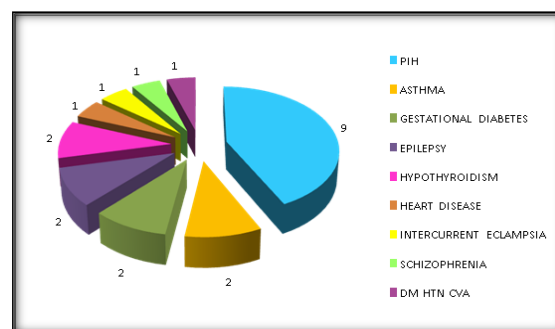
to analyze, categorize the intraoperative and postoperative complications in relation to age, BMI, no. of CS, medical problems, place of previous CS, type of CS, indication of CS.

In the present study out of 200 cases no. of cases with one previous section were 173 (86.5%), no. of cases with 2 previous sections were 25 (12.5%) and with three previous sections were 2 cases (1%).

The present study shows maximum no. of sections (136) were done in the age group of 20-24 yrs (68%) followed by 25-29 yrs (23%). No. of CS done in teenage pregnancies and elderly are less, accounting for < 6.5%. [Table 1]

Adhesions are highest (75%) in the age group of 30-34 yrs followed by >35 yrs (69%). No. of intra operative complications are seen highest (44%) in the age group of <19 yrs i.e., 4 out of 9 cases. Post-operative febrile morbidity is highest in age group 30-35 yrs. All intra operative and postoperative complications are more in the age group of >30yrs. [Table 2]

In the present study though patients belonging to normal BMI were more when compared to patients who are overweight and obese class I BMI, the complications seen in them were less. Post-operative hospital stay was also more i.e., up to 25% in obese class 1. The rate of wound infection and secondary suturing was more in these cases with overweight. [Table 3]



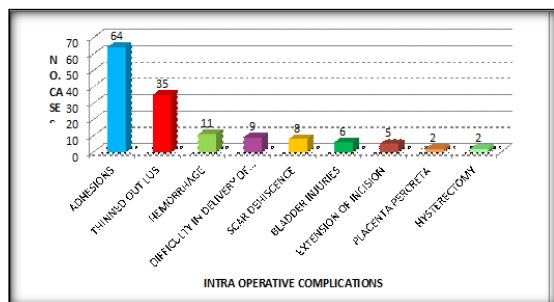
**Figure 1: Types of Medical Disorders and Their Incidence**

As per the above table, among 200 patients in the study only 21 patients presented with different medical disorders. Among the disorders 9 patients presented with PIH.

The present study shows prolonged hospital stay of more than 3 wks is seen in two patients among them one patient had DM, HTN with CVA and another had PIH. [Table 5]

Out of 21 cases with medical disorders 6 cases had prolonged hospital stay. [Table 6]

In the present study incidence of medical disorders were more in overweight & obese patients. [Table 7] In the present study the intraoperative complications and adhesions were less when previous c-section was done in Santhiram Medical College, Nandyal. compared to PVT hospitals. This is to study the differences between the incidence of intraoperative complications in patients who underwent previous CS in our institution and other private hospitals. In the present study the difference found may be due to care taken for aseptic precautions, technique of CS, skill of the operator. [Table 9] The intraoperative complications following emergency c-sections (30%) were more compared to elective c-section (26%). Intraoperative complications like scar dehiscence, extension of incision, hemorrhage and difficulty in delivery of fetus were more with emergency CS. [Table 11] In the present study out of 200 cases no. of cases with one previous section were 173 (86.5%), no. of cases with 2 previous sections were 25 (12.5%) and with three previous sections were 2 cases (1%). [Table 12]



**Figure 2: Relation Ship of Intraoperative Complications to no. of Previous CS**

In the present study, complications seen were more in cases with two previous sections like adhesions (52%) scar dehiscence (12%), thinned out LUS (32%), hemorrhage (20%) and bladder injuries (4%).

Scar dehiscence is more in emergency CS compared to elective CS. Bladder injuries - Among 6 cases, 3 had dense adhesions and bladder was opened, another 3 cases only had serosal injury of bladder. Repair of bladder injuries were done and postoperative period was uneventful.

Difficulty in delivery of head was seen in total of 9 cases, among them 3 cases were of malpresentations - 2 were transverse lie, 1 was breech, 1 case was big baby in GDM patient and others were due to deflexed head and floating head. Out of these, 3 cases led to extension of incision. Caesarean hysterectomy was done in two cases who had

placenta percreta leading to hysterectomy. [Table 13]

In the present study PPH, placenta previa, adhesions, placenta percreta are common causes of hemorrhage. All cases of hemorrhage were successfully managed. [Table 14]

In the present study adhesions between parietal peritoneum

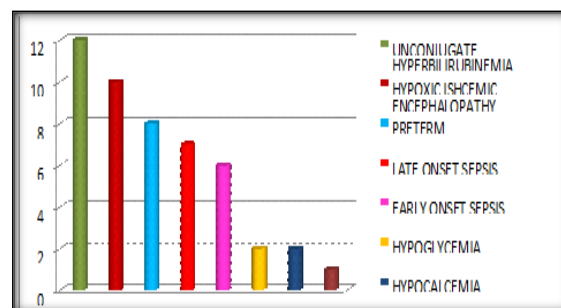
and anterior surface of uterus and omentum (58%) were most common followed by adhesions between rectus muscle and peritoneum (51.6%). These adhesions led to prolonged operative time, increased blood loss and bladder injuries and delay in delivery of fetus. [Table 15]

Most common intraoperative finding in cases with scar tenderness are thinned out LUS (36%), followed by adhesions (26%). Pain due to adhesions gave suspicion as scar tenderness. [Table 16]

Post-operative complications were more as the no. of previous CS increases because of intraoperative complications that require prolonged operative time and increase tissue handling. [Table 17]

In the present study clinical data suggests that febrile morbidity is increased as the number of repeat c-sections increases because of prolonged operative time due to adhesions and other intraoperative complications. [Table 18]

Postoperative hospital stay is increased in cases with increased number of c-sections, because of intraoperative complications like bladder injuries, hemorrhage, hysterectomy and blood transfusions. [Table 19]



**Figure 3: Causes of NICU Admissions**

Most common cause of NICU admissions in our study is unconjugated hyperbilirubinemia ((25%) followed by HIE (20.8%).

NICU admissions were relatively more for babies born to mothers with coexisting medical disorders (23.8%) like GDM, hypothyroidism as well as emergency CS (fetal distress, prematurity and neonatal sepsis). [Table 22]

**Table 1: Distribution of Cases According to Age Group**

AGE GROUP	NO OF CASES	PERCENTAGE
<19 YRS	9	4.5%
20- 24 YRS	136	68%
25-29 YRS	46	23%
30-34 YRS	5	3%

>35 YRS	4	2%
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**Table 2: Relationship of Age Group with intraoperative complications and postoperative febrile morbidity**

AGE GROUP	NO OF CASES	ADHESIONS	INTRA OPERATIVE COMPLICATIONS	POST OPERATIVE FEBRILE MORBIDITY
>19 YRS	9	3 (23.7%)	4(44.4%)	1(11.1%)
20- 24 YRS	136	41(21.1%)	37(27.2%)	19(14%)
25-29 YRS	46	14(40%)	14(30.4%)	5(10.9%)
30-34 YRS	5	3(75%)	---	3(60%)
>35 YRS	4	1(69%)	1(25%)	1(25%)

P value 0.004 (Significant) 0.000 (Significant)

**Table 3: Relationship of Complications with BMI**

BMI		WOUND INFECTION	SECONDARY SUTURING	POST OPERATIVE HOSPITAL STAY
18-24.9 NORMAL	151	4(12%)	1(0.6%)	23(15%)
25-29.9 OVERWEIGHT	33	3(9%)	2(6%)	6(18%)
30-34.9 OBESE CLAS1	16	1 (6%)	---	4(25%)

**Table 4: Types of Medical Disorders and Their Incidence**

MEDICAL DISORDERS	FREQUENCY	%
PIH	9	42.8%
ASTHMA	2	9.5%
DIABETES, HYPERTENSION AND CEREBROVASCULAR ACCIDENT	1	4.7%
EPILEPSY	2	9.5%
GESTATIONAL DIABETES MELLITUS	2	9.5%
HEART DISEASE	1	4.7%
HYPOTHYROIDISM	2	9.5%
INTERCURRENT ECLAMPSIA	1	4.7%
SCHIZOPHRENIA	1	4.7%

**Table 5: Relationship of Postoperative Hospital Stay (In Wks) and Medical Disorders**

	<1 WK	1-2 WK	2-3 WK	>3 WK
ASTHMA	10%	-	-	-
DIABETES, HYPERTENSION AND CEREBROVASCULAR ACCIDENT	-	-	-	4.7%
EPILEPSY	5%	-	-	-
GESTATIONAL DIABETES MELLITUS	-	5%	4.7%	-
HEART DISEASE	5%	-	-	-
HYPOTHYROIDISM	9.5%	-	-	-
INTERCURRENT ECLAMPSIA	5%	-	-	-
PIH	23%	9.5%	4.7%	4.7%
SCHIZOPHRENIA	5%	-	-	-

**Table 6: Relationship of Prolonged Hospital Stay (> 1 Wk) in Cases with Medical Disorders**

CASES WITH MEDICAL DISORDERS (21)	FREQUENCY	PERCENTAGE
	6	28%

P value is significant 0.000

Out of 21 cases with medical disorders 6 cases had prolonged hospital stay.

**Table 7: Relationship of Medical Disorders and BMI**

BMI	FREQUENCY	PERCENTAGE
18-24.9 NORMAL	13	8.60%
25-29.9 OVER WEIGHT	4	12%
30-34.9 OBESE CLASS1	4	25%

**Table 8: Distribution of Case According to Place of Previous CS**

PLACE OF PREVIOUS CS	FREQUENCY	PERCENTAGE
Santhiram Medical College Nandyal.	66	33%
PVT HOSPITALS	134	67%

**Table 9: Relation Ship of Place of Previous CS and intraoperative Complications**

PLACE OF PREVIOUS CS	ADHESIONS	OTHER INTRAOPERATIVE COMPLICATIONS
Santhiram Medical College Nandyal. (66)	18 %(12)	15.1%(10)
PVT HOSPITAL(134)	37.7%(50)	34.4%(46)

**Table 10: Incidence of Emergency and Elective CS**

EMERGENCY/ELECTIVE CS	FREQUENCY	PERCENTAGE
EMERGENCY	93	46.5%
ELECTIVE	107	53.5%

**Table 11: Relationship of Intraoperative Complications with Emergency / Elective of CS**

EM/EL CS	FREQUENCY	PERCENTGE
EMERGENCY	28	30.1%
ELECTIVE	28	26.1%

**Table 12: Distribution of Cases According to Number of Previous Sections**

NO. OF CS	FREQUENCY	PERCENTAGE
1	173	86.50%
2	25	12.50%
3	2	1%

**Table 13: Relationship of Intraoperative Complications with Number of Previous Sections**

INTRAOPERATIVE COMPLICATIONS	1(173)	2(25)	3(2)
ADHESIONS(64)	50(28.9%)	13(52%)	1(50%)
THINNED OUT LUS(35)	26(15%)	8(32%)	1(50%)
HEMORRHAGE(11)	6(3.4%)	5(20%)	1(50%)
DIFFICULTY IN DELIVERY OF FETUS (9)	6(3.4%)	2(8%)	1(50%)
SCAR DEHISCENCE(8)	5(2.8%)	3(12%)	—
BLADDER INJURIES(6)	5(2.8%)	1(4%)	—
EXTENSION OF INCISION (5)	4(2.3%)	1(4%)	—
PLACENTA PERCRETA(2)	1(0.5%)	1(4%)	—
HYSTERECTOMY(2)	1(0.5%)	1(4%)	—

P value is 0.000 significant

**Table 14: Causes of Hemorrhage**

CAUSES OF HEMORRHAGE	
PPH	2
PLACENTA PREVIA	2
PLACENTA PERCRETA	2
ADHESIONS	2
EXTENSION OF INCISION	1
TWINS+PLACENTA PREVIA+PPH	1
PIH WITH ABRUPTION	1

**Table 15: Types of Adhesions and their incidence**

Types Of Adhesions	No. Of Cases
Parietal Peritoneum And Anterior Surface Of Uterus	36
Parietal Peritoneum And Omentum	36
Rectus Muscle Adhered To Peritoneum	32
Parietal Peritoneum And Bladder	3
Omentum And Uterus	9
Bladder And Uterus (Dense)	4
Bladder And Uterus( Filmsy)	13

**Table 16: Intra Operative Findings in Cases with Scar tenderness**

INTRAOPERATIVE FINDINGS	FREQUENCY	PERCENTAGE
THINNED OUT LUS	5	25%
THINNED OUT LUS AND ADHESIONS	2	10%
SCAR DEHISCENCE	1	5%
ONLY ADHESIONS	1	5%

**Table 17: Relationship of Postoperative Complications with No. of Previous CS**

POSTOPERATIVE COMPLICATIONS	1	2	3
PARALYTIC ILEUS (20)	17(9.8%)	3(12%)	—
WOUND INFECTON (8)	4(2.3%)	4(16%)	—

SECONDARY SUTURING (3)	2(1.1%)	1(4.4%)	-
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**Table 18: Relationship of Febrile Morbidity and no. of CS**

NO. OF PREVCS	CASES WITH FEBRILE MORBIDITY
1	19(10.9%)
2	8(32%)
3	-

**Table 19: Post-Operative Hospital Stay with no. of Previous CS**

NO. OF PREVIOUS CS	NO. OF CASES	1-2 WKS	2-3 WKS	>3WKS
1	27 (15.6%)	22	3	2
2	6 (24%)	4	2	-
3	-	-	-	-

**Table 20: Causes of Postoperative Febrile Morbidity**

CAUSES OF FEBRILE MORBIDITY	FREQUENCY
UTI	12 (6%)
WOUND INFECTION	8 (4%)
ENDOMETRITIS	3 (1.5%)
URTI	3 (1.5%)
LRTI	1 (0.5%)
UNKNOWN	2(1%)

**Table 21: Causes of NICU Admissions**

CAUSE	FREQUENCY(48)	PERCENTAGE
UNCONJUGATE HYPERBILIRUBINEMIA	12	25%
HYPOXIC ISHCHEMIC ENCEPHALOPATHY	10	20.80%
PRETERM	8	16.60%
LATE ONSET SEPSIS	7	14.50%
EARLY ONSET SEPSIS	6	12.50%
HYPOGLYCEMIA	2	4.10%
HYPOCALCEMIA	2	4.10%
DANDY WALKER SYNDROME	1	2%

**Table 22: NICU Admissions in Relation to Type of CS and Medical Disorders**

	TYPE OF CS	MEDICAL DISORDERS
	ELECTIVE EMERGENCY	PRESENT
NO.OF CASES(48)	19(39.5%) 29(60.4%)	5(10.4%)
P VALUE	0.000 SIGNIFICANT	0.000 SIGNIFICANT

## DISCUSSION

The caesarean delivery rate has increased for nearly two decades, resulting in steady decrease in the proportion of women achieving spontaneous vaginal delivery in the industrialized and developing countries throughout the world.<sup>[95]</sup>

The relative safety of caesarean section deliveries and its perceived advantages relative to vaginal delivery has resulted in a change in the perceived risk benefit ratio, which has accelerated the acceptance for caesarean section. Though the operation is now safer than in the past, because of improvements in anaesthesia, antibiotics and blood transfusion services, a caesarean section still carries a significant risk to the mother compared to a normal vaginal delivery.<sup>[96]</sup>

### 1. RELATION BETWEEN AGE AND COMPLICATIONS ENCOUNTERED DURING REPEAT LSCS

Incidence of intra-operative complications in repeat C/S increases with increasing maternal age. Among the complications adhesions and abnormal placentation has been frequently observed, which has been justified in many studies. Frequency of

placenta previa was found to be higher in women aged 35 years and above (51.27%) in a study conducted by Jillani K, Shaikh F, Siddiqui SM, Siddiqui. In present study one case had placenta previa with age more with age 33 yrs.

### 2. RELATION BETWEEN BMI AND MEDICAL DISORDERS

In a study done by Weiss et al.<sup>[98]</sup> the incidence of medical disorders were found more in obese patients i.e., In the present study incidence of medical disorders in cases with BMI between 25 29.9 is 12%, 30 - 34.9 is 25%. The findings in the present study were almost correlating with the above study.

### 3. RELATION BETWEEN INTRA OPERATIVE COMPLICATIONS AND NUMBER OF PREVIOUS CAESAREAN SECTIONS

Multiple caesarean sections predispose to an increased risk of severe dense adhesions, scar dehiscence, uterine rupture, abnormal placentation, significant hemorrhage, bladder injuries and caesarean hysterectomies. In a study conducted by Farkundah<sup>99</sup>, showed that incidence of complications were more in women with 2 previous caesarean sections, the most common complications

were dense adhesions (35.5%), followed by thinned out lower uterine segment (16.6 %), ruptured uterus (1.1%) and bladder injury (1.1%). In a study by Mahaleet al,<sup>[100]</sup> incidence of abnormal placentation was more with 3 or more caesarean sections (2%) as compared with 2 previous caesarean sections.

In present study, higher incidence of complications were found in women who underwent 2 previous Caesarean sections with adhesions (52%), thinned out LUS (32%), hemorrhage (20%), scar dehiscence(12%), bladder injuries (4%), extension of incision (4%).

#### **4. CAESAREAN DELIVERY AND ADHESIONS**

In a study conducted by Lyell DJ,<sup>[101]</sup> showed that the incidence of adhesion development after primary caesarean section ranges from 46-65%. In addition to the size and location density of adhesions can vary greatly. Some adhesions are easily separable and filmy in density while others were thick and dense particularly after multiple caesarean sections.<sup>[102]</sup> In a retrospective study conducted by Morales etal,<sup>[103]</sup> in 542 women found that the incidence of adhesions was greater among women who underwent repeat caesarean delivery and the percentage of women with adhesions increased with each subsequent caesarean delivery.

#### **5. THINNED OUT LOWER UTERINE SEGMENT**

In a study conducted in 240 repeat caesarean sections by Khursheed F, Sirichand P, Jatoi N,<sup>[99]</sup> observed that there was a high incidence of extremely thinned out lower uterine segment (16.6%) in women with previous two sections as compared to women with previous one caesarean section 8.7% and 8.3% in previous 3 caesarean sections.

In our study thinned lower uterine segment was seen in 15% of cases with one previous section and 32 % in two previous sections and 50% in three previous sections.

#### **6. CAESAREAN SECTION AND SCAR DEHISCENCE**

In the review by Kirkinen<sup>105</sup>, 27% of patients with three or more previous caesarean sections had fenestration of the uterine scar, but recent studies have described rates ranging from 1% to 10% in women undergoing anywhere from a fifth to a ninth CS. Risk factors for scar dehiscence are multiple pregnancy, polyhydramnios, induction of labor, cases in early labour. Though other risk factors are not present, in our study among 8 cases of scar dehiscence 4 were in early labour.

In this study, scar dehiscence was found in 8 cases (4%). Out of these cases scar dehiscence was seen in 2.8% of women with one previous CS and 12% with two previous CS. In the present study scar dehiscence was found as incidental finding in 3 out of 8 cases (37.5%).

#### **7. CAESAREAN SECTION AND HEMORRHAGE**

The rates of excessive bleeding after caesarean delivery are generally low, but appear to increase as the number of previous caesarean delivery increases.<sup>[106]</sup> In some studies blood loss of more than 1000 ml,<sup>[107]</sup> is considered excessive, in other studies, blood transfusion is the defining criterion.<sup>[108]</sup> The reasons for excessive blood loss after caesarean delivery include uterine atony, adhesions, placenta accreta and trauma. In a study from Israel,<sup>[104,3]</sup> or more caesarean deliveries was associated with significantly greater rates of excessive blood loss (i.e. blood loss more than or equal to 1000ml or transfusion more than or equal to 2liters of blood) than second caesarean delivery.

#### **8. BLADDER INJURIES**

Injury to the bladder is significantly more frequent at repeat Caesarean delivery. The incidence of bladder injury that was assessed in a cohort study of 14,757 Caesarean deliveries performed at a larger academic center in Rhode Island,<sup>[110]</sup> over a 7-year period was found to be 0.28%.

In our study 3% of the cases had bladder injury, with 2% in second section, 1% in third section respectively. Only serosal injury was seen in 3 cases and complete bladder injury was seen in 3 cases. All of them had repair and complete healing took place and were discharged without any dribbling after 14 days of catheterisation.

#### **9. UTERINE RUPTURE**

A Norwegian study,<sup>[111]</sup> found that women with previous caesarean section had a risk of uterine rupture which was 8 times higher after a trial of labor than at a repeat elective caesarean section, they also showed that induction of labour using prostaglandins was associated with highest risk of uterine rupture. There were no cases of uterine rupture in our study.

#### **10. CAESAREAN SECTION AND ADHERENT PLACENTA**

The relationship between repeat CS and placenta accreta was studied in a large multicenter cohort of 30,132 women in MFMU Network,<sup>[105,109]</sup> study who underwent CS without labour. In the present study two cases of placenta percreta seen, one case in 2nd CS and one case in 3rdCS. Both were associated with placenta previa and led to peripartum hysterectomy.

#### **11. CAESAREAN SECTION AND HYSTERECTOMY**

Unplanned peripartum hysterectomy is carried out typically as a last resort to control life threatening hemorrhage, which often is caused by placenta previa placenta accreta, uterine atony and uterine rupture. Several studies have demonstrated a correlation between the number of CS's and the risk of hysterectomy. In a population based study that used 20 years of state wide (Washington),<sup>[112]</sup> data, the incidence of peripartum hysterectomy was seen in 0.56 per 1000 deliveries.

In the present study hysterectomy was done in two cases one was done in 1 previous CS (1 in 173) and other was done in two previous CS (1 in 25). Both

were done for placenta percreta and uncontrolled bleeding.

## 12. FEBRILE MORBIDITY

UTI: Lynch et al,<sup>[114]</sup> showed an increasing incidence of UTI with each additional CS 17.5%, 8.4% and 17.9% after the third fourth and fifth CS respectively. In a study done by Saadiya Z,<sup>[115]</sup> incidence of UTI increased with no. of CS, 3% in cases with 3 or less CS and 24 % in cases with 4 or more CS. In this study incidence of UTI was seen in 6% of cases with 4.6% in one previous CS and 1.6% in 2 previous CS.

**ENDOMETRITIS:** Silver et al,<sup>[109]</sup> found that among greater than 30,000 women who underwent prelabour CD, postpartum endometritis were seen more common in primary CS group than in repeat CS group. In a study done by Qublan<sup>[116]</sup>, incidence of endometritis was found in 2.5% in second section, 0.4% in third CS and 0.6% in fourth CS cases. In this present study endometritis was seen in 1% of cases. Both cases were second section.

**WOUND INFECTION:** In a study done by TA Jido and ID Garba,<sup>[117]</sup> CS was complicated by surgical site infection (SSI) in 44 (9.1%), while 441 (90.9%) had no infection. SSIs were identified in 81 (5.0%) of 1,605 women who underwent low transverse caesarean section in a study by Olsen et al<sup>[118]</sup>. Independent risk factors for SSI in their study were included development of subcutaneous hematoma after the procedure and a higher body mass index at admission. In the present study wound infections were seen in 4% (8 cases) and had similar risk factors, among them two cases had high BMI and one had GDM.

## 13. CAESAREAN SECTION AND HOSPITAL STAY

As perioperative complications are more with repeat CS, it is not surprising that numerous studies have also demonstrated an association between repeat CS and prolonged hospital stay. In the present study prolonged hospital stay was seen in 15.6% of cases with one previous section, 24% in cases with 2 previous sections.

## 14. CAESAREAN SECTION AND NEONATAL COMPLICATIONS

Morales et al,<sup>[103]</sup> demonstrated a progressively prolonged delivery time with each repeat CS compared with the first CS, 5.6 min for the second CS to 18.1 min for the 4th CS, which could lead to neonatal compromise under adverse circumstances. Dense adhesions have been associated with an increased risk of umbilical artery cord PH > 7.1 and lower 5min Apgar scores.

## CONCLUSION

CS is common and rates are increasing over time in all developed and many developing countries. Advanced maternal age at the time of first birth and maternal obesity require a more public health and societal approach to facilitate wide spread education

and health change. Prenatal counselling should stress on weight management because the abundance of adipose tissue makes it harder for the baby to be delivered vaginally and infection risks are also higher. The higher the weight, the higher are the chances for CS. With the increasing rate of the CS and relative decline in the rate of VBAC, it is important that clinician and the patient to understand the potential risks of repeat CS.

Perioperative complications increase with each subsequent repeat CS. Present study also showed increased risk of complications like adhesions, scar dehiscence, hemorrhage, bladder injuries, placental complications like placenta previa and adherent placenta and hysterectomy. Adequate adhesion prevention strategies like meticulous hemostasis and peritoneal closure should be encouraged. The present study also showed the increased risk of postoperative febrile morbidity.

To reduce these complications, cases of primary CS should be educated about need of good antenatal care and need of last few visits to a tertiary care center as it could play a very vital role in deciding and handling the women in subsequent pregnancy and intraoperative complications.

The best measure to reduce the multiple risks of repeat CS is to reduce the rates of primary and repeat CS whenever possible.

Strategies to reduce primary CS include

According to Obstetric Care Consensus on Safe Prevention of Primary Caesarean Delivery jointly issued by ACOG and Society for Maternal and Fetal Medicine (SMFM) 'Longer labors lead to fewer CS'. This guideline advice that allowing women with low risk pregnancy to remain in latent labour longer before elevating their delivery to surgical status.

The report appeared in March 2014 in ACOG (ObstetGynecol 123 711-716). Dr. Vincenzo Berghella, SMFM President says, "if everything is going well in labour, there is no rush". Dr. Vincenzo said to consider that active labour begins at 6 cm rather than 4 cm cervical dilatation and stresses on allowing more time for the progression of labour during active phase.

The decision to do CS should be taken only when a safe vaginal delivery is no longer possible. Elective primary CS performed indiscriminately, add not only to the the rising CS rates but also to unnecessary morbidity rates and affect the women's future reproductive outcome.

Lowering of CS rates is possible by reducing the primary CS rates, especially for dystocia.

Other strategies to reduce the primary and repeat CS include training of medical workers to undertake procedures like instrumental deliveries (forceps / vaccum) and to encourage for vaginal birth after CS (VBAC). Periodic institutional peer review of CS rates.

Our results clearly demonstrate that with appropriate prenatal care and adequate preoperative preparation, maintenance of meticulous surgical techniques and



careful postoperative follow up can dramatically reduce the intraoperative and post-operative morbidity without any mortality.

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