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## Maternal morbidity in caesarean section in a Tertiary care hospital

Pragati Meena<sup>1</sup>, Divyani Agrawal<sup>2\*</sup>

<sup>1</sup> Postgraduate, MS OBG, Department of Obstetrics & Gynecology, National institute of Medical sciences and Research Science, Shobha Nagar, Delhi- Jaipur highway, Jaipur, Rajasthan, India

<sup>2</sup> Assistant Professor, Department of Obstetrics & Gynecology, National institute of Medical sciences and Research Science, Shobha Nagar, Delhi- Jaipur highway, Jaipur, Rajasthan, India

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### Abstract

**Background:** Caesarean section is one among the most commonly performed surgical procedures across the world. Several studies demonstrated to have greater risk of maternal morbidity and mortality with c/s in comparison to vaginal delivery. Therefore, making it importance for assessing the morbidities associated with a c/s.

**Methods:** A hospital based, cross sectional study was conducted among 200 women during the period of December 2017 to December 2018. A semi-structured pre-formed questionnaire was used to evaluate the socio-demographic characteristics, obstetrical characteristics, indications and complications following c/s.

**Results:** A total of 200 (62.5%) respondents underwent emergency c/s whereas 90 (37.5%) were having elective c/s. The most common indication for caesarean delivery was a previous c/s observed in 70 (29.2%). No postpartum morbidity was observed in 152 (63.3%) of the respondents, whereas 88 (36.7%) had reported some or other kinds of morbidities. Among the various maternal morbidities, postpartum anaemia was the most commonly observed morbidity in 22 (9.2%) of the respondents, followed by postpartum haemorrhage by 10 (4.2%) and wound infection was observed in 15 (6.25%).

**Conclusions:** Good antenatal care, high-risk screening, comprehensive emergency obstetric services, hospital delivery and incorporation of obstetric drills decreases the post-surgical deaths. High maternal morbidity following c/s was observed in studied sample as more than one third of the women had shown some or other kinds of morbidities. Efforts should be made to evaluate the reasons for increasing c/s rate and to reduce the incidence of c/s by careful antenatal and intranatal management.

**Keywords:** caesarean delivery, antenatal, maternal morbidity

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### Introduction

Caesarean section (CS) is one of the most common obstetric operative procedure performed worldwide with a continuous increase in the incidence during the last couple of decades, labelling the women an obstetric status of “previous caesarean section”.<sup>1</sup> Though, the role of caesarean section (CS) in modern obstetrics is crucial in lifesaving but the potential adverse impact resulting from the high CS rates is less expressed and evaluated.<sup>2</sup> The increase in the Caesarean Section rates adds to more potential complications during a repeat caesarean Section.<sup>3</sup> In the recent years, the rate of Caesarean Section in many countries has risen to a record level of 46% in China and to the levels of 25% and above in Asian, European and Latin American countries.<sup>4</sup> The caesarean delivery rate in U.S in the year 2012 remained unchanged at 32.8%. The caesarean rate raised nearly 60% from 1996 to 2009 followed by slight decline from 2009 to 2010, and has been stable since then .<sup>5</sup> Across Europe, there are significant differences among the various countries like in Italy the Caesarean section rate is 40%, while in the Nordic countries it is only 14%.<sup>6</sup> The efforts for reducing such births include changes in hospital policy like not allowing elective delivery prior to 39 weeks of gestation. The caesarean

section rates for all U.S. births delivered at less than 39 weeks peaked in 2009 at 38.3% and had a decline every year since then, reaching 37.5% in year 2012.<sup>1</sup> The American College of Obstetrician and Gynaecologist has recommended for a decrease in the incidence of non-medically indicated caesarean delivery and promotion of induction of labour prior to 39 weeks.<sup>3</sup> A decline in the caesarean delivery rate among births at 38 weeks have driven a downward trend. From 2016 to 2018, the caesarean delivery rate at 38 weeks declined at least 2% each year (32.2% in 2012 from 34.7% in 2009).<sup>4</sup> In contrast, caesarean delivery among births at 39 weeks continued to increase by at least 2% each year during this time period.<sup>5</sup> Consistent increase has been observed in the rate of Caesarean section deliveries in most of the developed countries and in many developing countries, including India over the last few decades. The National Family Health Survey analysis data showed that the caesarean rates in states like Kerala, Goa, Andhra Pradesh, West Bengal and Tamil Nadu is alarmingly high. Even the states with marked demographic transition as well as with high-institutionalized births have an inflated rate of C-section deliveries. After any laparotomy, it is found to

commonly develop scar tissue, adhesions and bladder extension, C-section holds no exception to this. Multiple caesarean deliveries are associated with more difficult surgeries with increased blood loss compared with a planned second caesarean delivery. The risk of major complications increases with number of caesarean deliveries. Scarring and adhesion formation is known to account in the major complication rates from 4.3 to 12.5% depending upon the number of previous caesarean section.<sup>7</sup> Intra peritoneal adhesions have an incidence varying from 5.5% to 42.5%.<sup>3</sup> The present study aims to know the intra operative and post operative difficulties encountered in the repeat caesarean section patient in comparison with primary caesarean section patient.

**Aim and objective of the Study**

It's a comparative study of maternal morbidity in primary and repeat caesarean section patients. The aim and objectives is to study intra operative and postoperative maternal morbidity up to end of 1st week in primary and repeat caesarean section in singleton pregnancies. Also, to compare these incidences of morbidity in primary and repeat caesarean section in intra operative and immediate postoperative period.

**Materials and Methods**

This is a hospital based randomized prospective clinical study carried out with 100 primary and 100 repeat caesarean sections in the Department of Obstetrics and Gynecology at National Institute of Medical Sciences and Research hospital, Jaipur during 12months time period from January 2018 to December 2018.

Inclusion Criteria: All full term singleton pregnant women visiting at centre are considered for the study. Exclusion Criteria: Multiple pregnancies, Caesarean section done before 37 weeks gestation. Preeclampsia , Diabetes, Pregnancy with other associated medical disorders.

Statistical Analysis Descriptive statistics such as mean, SD and percentage was used. Comparison between three groups was

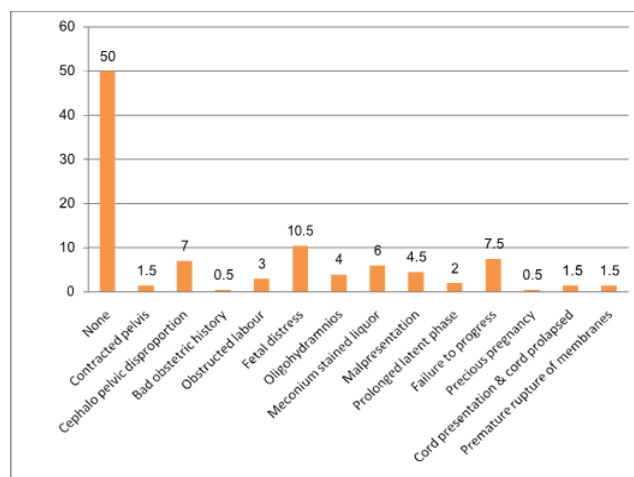
done by using ANOVA test followed by Dunnett multiple comparisons test for continuous data. A p-value less than 0.05 was considered as significant. Data analysis was done by using software SPSS v16.0. Ethical Clearance and Informed Consent before commencement of the study was taken from the patients considered in this study conducted.

**Ethical clearance and informed consent**

Before commencement of the study, informed consent was taken from the patients of the study sample. The purpose of the study was explained in patient's language and the subjects who were willing to participate, were included in the study and then a written consent was obtained. Ethical clearance was obtained from ethical committee of National Institute of Medical Sciences and Research hospital, Jaipur.

**Results and Discussion**

Present study was performed in randomly selected 200 cases of which 100 cases are primary and 100 cases are of repeat caesarean section from National Institute of Medical Sciences and Research hospital, Jaipur, to analyze and categorize intra-operative and post-operative complications in relation to age, parity, number of caesarean section and the management of these cases. 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. 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. Although, the operation is now safer than in comparison to the past because of improvements in anesthesia, antibiotics and blood transfusion services, a caesarean section still carries a significant risk to the mother compared to a normal vaginal delivery.



**Fig 1:** Indication at previous caesarean section

Indication at previous caesarean section i.e., out of 200 cases, 100 cases were primary caesarean(50%) and of the remaining 100 cases of repeat caesarean cases, 3 cases had Contracted pelvis (1.5%), 14 cases had Cephalo pelvic disproportion (7%),

1 case of Bad obstetric history (0.5%), 6 cases had Obstructed labor (3%), 21 cases had Fetal distress (10.5%), 8 cases had Oligohydramnios (4%), 12 cases had Meconium stained liquor (6%), 9 cases had Malpresentation (4.5%), 4 cases had

Prolonged latent phase (2%), 15 cases Failure to progress (7.5%), 1 case was Precious pregnancy (0.5%), 3 cases had

Cord presentation & cord prolapse (1.5%) and 3 cases had Premature rupture of membranes (1.5%).

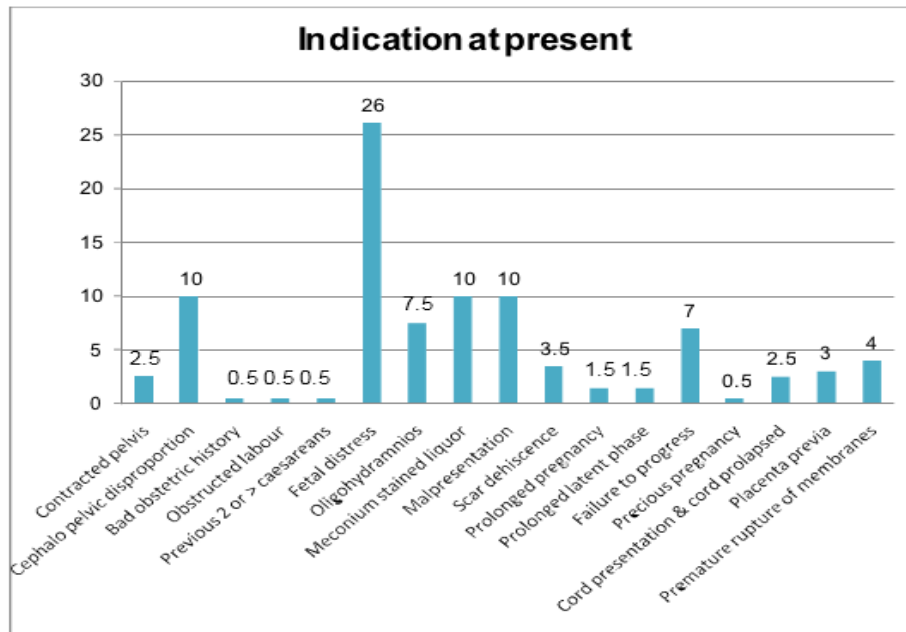


Fig 2: Indication at present

Indication at present caesarean section i.e., out of 200 cases, 5 cases had Contracted pelvis (2.5%), 20 cases had Cephalo pelvic disproportion (10%), 1 case of Bad obstetric history (0.5%), 1 case had Obstructed labor (0.5%), 19 cases of previous 2 or >caesareans (9.5%), 52 cases had Fetal distress (26%), 15 cases had Oligohydramnios (7.5%), 20 cases had Meconium stained liquor (10%), 20 cases had Malpresentation

(10%), 7 cases had Scar dehiscence (3.5%), 3 cases had prolonged pregnancy (1.5%), 3 cases had Prolonged latent phase (1.5%), 14 cases Failure to progress (7%), 1 case was Precious pregnancy (0.5%), 5 cases had Cord presentation & cord prolapse (2.5%), 6 cases had Placenta previa (3%) and 8 cases had Premature rupture of membranes (4%).

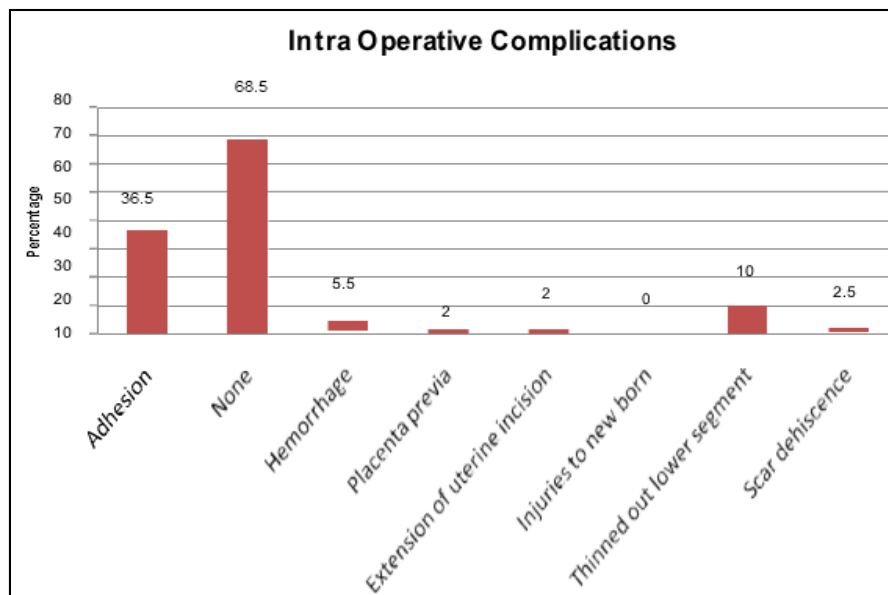
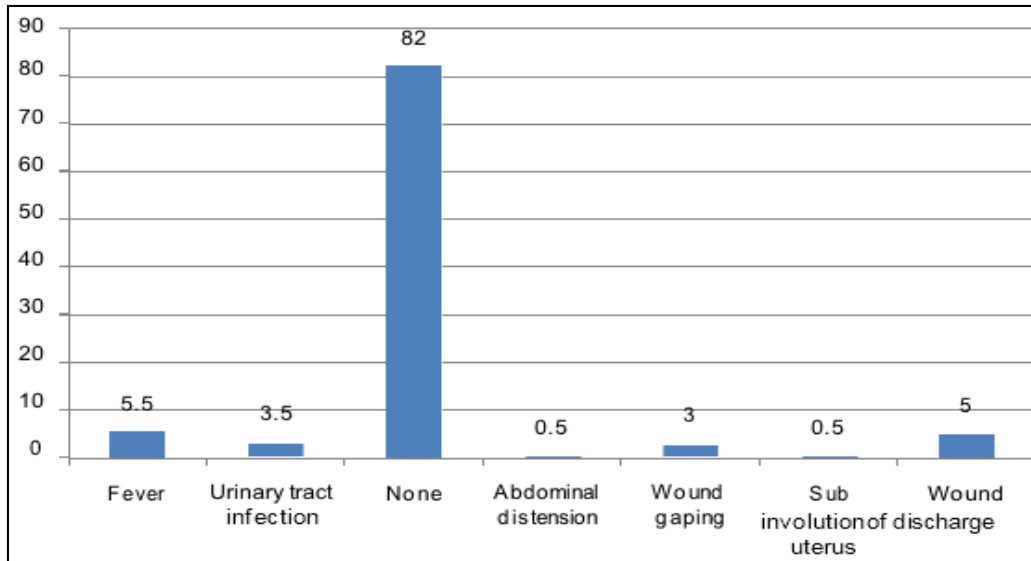


Fig 3: Intra Operative Complications

Incidence of Intra-operative complications i.e. out of 200 cases 137 cases did not have any intra operative complications (68.5%), the frequency of adhesions is 73 cases amounting to 36.5%, Hemorrhage is seen in 11 cases (5.5%), 4 cases had

Placenta previa (2%), 4 cases had extension of uterine incision (2%), 20 cases had thinned out lower segment (10%), 5 cases had scar dehiscence (2.5%).



**Fig 4:** Post-Operative Complication

Incidence of Post-operative complications i.e. out of 200 cases 164 cases did not have any post-operative complications (82%), 11 cases had Fever (5.5%), 7 cases had Urinary tract

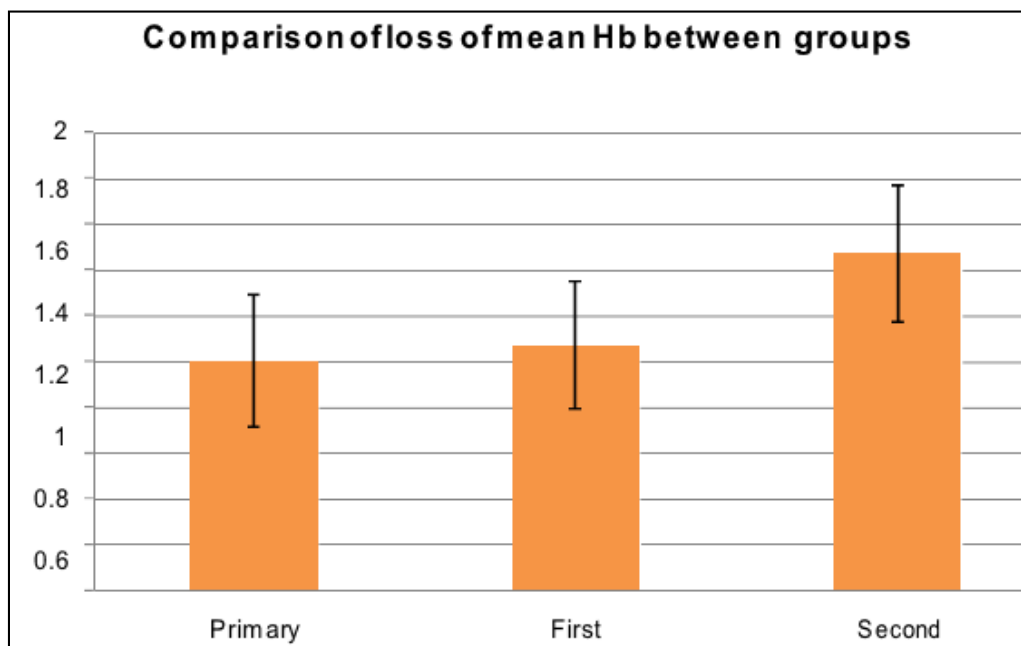
infection(3.5%), 1 case had Abdominal distension(0.5%), 6 cases had Wound gaping (3%), 1 case had Sub involution of uterus(0.5%) and 10 cases had Wound discharge(5%).

**Table 1:** Comparison of loss of Hemoglobin between groups

Group	Mean	SD	Min	Max	F-value	P-value	Remarks
Primary (n=100)	1.00	0.29	0.3	2.40	20.86	P<0.0001	Highly Significant
First (n=80)	1.07	0.28	0.7	2.20			
Second (20)	1.47	0.30	0.9	1.90			

The mean loss of Hemoglobin (Hb) between different groups, primary is 1.00, First repeat caesarean is 1.07, second repeat is

1.47, which accounts to P-value of <0.0001 (highly significant).

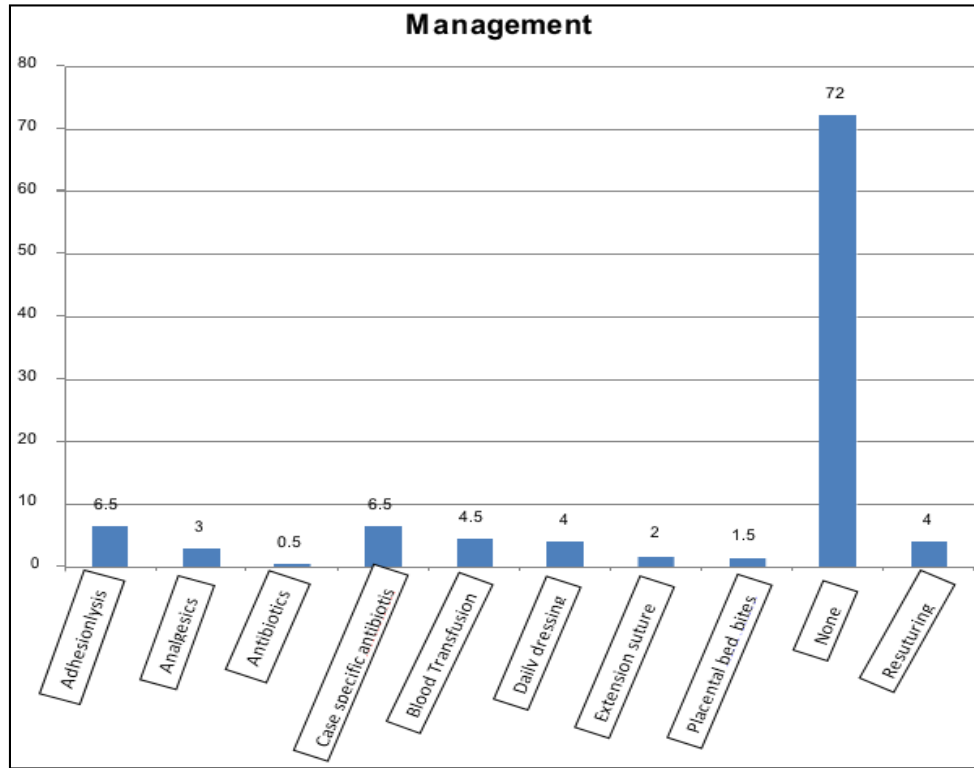


**Fig 5:** Comparison of loss of mean Hb between groups

**Table 2:** Multiple comparison using Dunnett Multiple comparisons test

(I) Group	(J) Group	Mean difference (I-J)	p-value	Remarks
Primary	First	0.07	P=0.25	Not significant
Primary	Second	0.46	P<0.0001	Highly Significant

The mean loss of Hb between different groups have been compared, the mean difference in loss of Hb between primary and first repeat caesarean is 0.07, P-value is 0.25(Not significant) and the mean difference between primary and second repeat caesarean is 0.46, P-value <0.0001 (Highly Significant)



**Fig 6:** Management

Out of 200 cases, 144 cases either did not have any complications or were managed conservatively. Out of remaining 56 cases with different varieties complications, each case was managed accordingly. In 13 cases only adhesionolysis was done (6.5%), in 6 cases analgesics were given(3%), in 14 cases were prescribed case specific antibiotics for treating the infection after culture and sensitivity report (7%), in 9 cases blood transfusion was done(4.5%), in 8 cases daily dressing was done (4%), in 4 cases Extensions were sutured(2%), in 3 cases extra bites over placental bed were taken to control bleeding (1.5%) and Resuturing done in 8 cases(4%).

**Conclusion**

The recommendations required to be implemented for the better maternal health are : a good health care system, health education, regular antenatal care, screening of high risk pregnancies, comprehensive emergency obstetric services, good blood banking and transfusion services, early and timely referral, pre-operative evaluation, intensive care units for critically ill patients, proper antibiotic prophylaxis, early ambulation of patient to prevent thromboembolism and proper maintenance of input output charts 1, 3.

Centres carrying out caesarean sections in peripheral hospitals should have blood transfusion facilities and experienced staff, proper antibiotic prophylaxis, screening of high risk pregnancies,

mandatory use of partographs to prevent prolonged and obstructed labor 4, 6, 7.

There is need for up gradation of health centres, proper antenatal care, improvement of quality of emergency obstetric care, training of health staff in life saving skills, and strengthening of referral system that patients can be identified timely and referred early to tertiary centre when premorbid signs and symptoms develops. There should be close relation between all three levels of health care system through smooth functioning referral system by which patients can arrive timely at higher level wherein more specialized medical professional as well as diagnostic and therapeutic tools are easily available. 2, 3.

The measures like encouraging operative vaginal deliveries, incorporation of obstetric drill in the medical curriculum, a check on the caesarean delivery, family planning advises and regular meetings to discuss surgical complications and perioperative mortality can lead to decrease in the post-surgical deaths. Thus, holistic approach including literacy, nutrition, social and economic empowerment alone can relieve the burden of maternal mortality rate from the National Health Statistics.1, 5, 7.

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