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Study on Post Cesarean Readmissions at a Tertiary Centre in Jodhpur

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Abstract: ***Introduction: Caesarean section is one of the most performed surgical procedures all over the world. Morbidity and mortality are seen to be more with emergency procedures than elective procedure[1].Postoperatively at times patients were readmitted due to certain conditions (fever, wound sepsis etc) which not only increased the morbidity but also had significant impact on financial burden of medical system. Hence, postcesarean readmissions were considered for study in order to improve measures as to reduce morbid factors leading to readmission. Aim: To study the causes ofmaternal morbidity in caesarean sections who required readmissions in a tertiary care teaching hospital. Methodology: It is a prospective observational study for a period of 6months from Jan 2018-July 2018 at Umaid Hospital, a Tertiary Centre in Jodhpur. Among 2265 surgeries conducted during the study period 1165 were cesarean sections. Study was conducted in 102 patients who underwent caesarean section and had readmissions. Conclusion: Readmissions was found to be more in Emergency caesarean section than in Elective caesarean section and the main contributor for this was found to be Wound Sepsis.***

Keywords: Caesarean Section (CS), Maternal morbidity, Gestational Diabetes Mellitus (GDM), Hypertensive Diseases of Pregnancy (HDP), Wound sepsis

1. Introduction

Caesarean delivery is a life saving commonly done surgical procedure defined as the birth of a fetus through incision given in the abdominal wall (laparotomy) and the uterine wall (hysterotomy). This definition does not include removal of the fetus from the abdominal cavity in the case of rupture of the uterus or an abdominal pregnancy. Though initially fraught with grave risk, the morbidity and mortality of this procedure has come down considerably with advances in obstetrical and anaesthetic agents.

Elective caesarean is a term used when the procedure is done at a pre-arranged time during pregnancy to ensure the best quality of obstetrics, anesthesia, neonatal resuscitation and nursing services. Emergency caesarean section is when it is performed due to unforeseen or acute obstetric emergencies[2] .It is seen that morbidity and mortality are associated more with emergency procedures than with elective procedures[3,10]. Patient is usually discharged on 5th day postoperatively, but at times patients were readmitted due to fever, secondary pph, wound sepsis etc which not only increased the morbidity but also significant impact on financial burden of medical system. With this background the study was conducted to know the contributors for postcesarean readmissions.

2. Methodology

This was a prospective observational study conducted on patients readmitted post cesarean in a tertiary care teaching hospital for a duration of 6 months.

Readmissions were 102 in number 30 patients who underwent elective CS and 72 patients who underwent an Emergency CS.

Inclusion Criteria:

All postcaesarean readmissions at the hospital during the study period were included. There were no exclusion criteria. Detailed history and examination was done regarding the indication for caesarean section, important intraoperative finding and complication noted in detail. Information regarding post-operative morbidity which led to readmission was collected which formed the basis of this study. Prior informed written consent was obtained from the subject. There are no exclusion criteria.

The outcomes studied were in two groups namely elective cesarean group and emergency cesarean group. The data collected were coded and fed into the computer using MS Excel and analyzed using SPSS V 19.

Observations:

Out of 1265 cesarean sections during the study period 552 (43.63%) cases were elective and the remaining 713 (56.36%) cases were emergency cesarean sections. The rate of CS was found to be 13.75%.

Table 1: Distribution of Study Participants according to Indications of Caesarean section

Indications	Elective CS	Percentage	Emergency CS	Percentage
Fetal distress	0	0	208	30
Dystocia	0	0	85	12
Malpresentation	70	12.6	56	7.8
Previous Cesarean	370	67	128	18
APH	0	0	30	4.2
HDP	20	3.6	43	6
Twin	18	3.2	38	5.3
IUGR	15	2.7	28	4
CPD	32	5.7	30	4.2
Placenta previa	13	2.3	19	2.6
Failed induction	14	2.5	48	6.7
Total	552	100	713	100

Major indications of CS under Elective group was patients with previous CS (67%), followed by malpresentation (12.5%) and those in Emergency group was Fetal Distress (30%), followed by dystocia (12%).

Table 2: Reason for postoperative readmissions among the study subjects

Etiology	Elective CS	Percentage	Emergency CS	Percentage
Wound sepsis	6	18.7	17	24.2
Pyrexia	5	15.6	10	14.2
Retention of urine	2	6.6	4	5.7
Bleeding PV	4	12.5	8	11.4
Wound gaping	5	15.6	8	11.4
Respiratory distress	2	6.2	3	4.2
Acute pain abdomen	4	12.5	5	7.1
Acute abdominal distention	0	0	4	5.7
Thromboembolism	0	0	2	2.8
VVF	0	0	1	1.4
Neonatal complications	2	6.2	8	11.4
Total	32	100	70	100

Postoperative complications were seen in 5.4% in Elective CS group and 10.09% of the patients undergoing Emergency CS. The major contributor to postoperative readmissions was Wound Sepsis in 18.7%, followed by 15.6% pyrexia in Elective CS group and 24.7% of wound sepsis, 14.2% pyrexiain Emergency CS group.

Duration of hospital stay of greater than 6 days was considered an indicator for post-operative morbidity. Extended hospital stay was found more in emergency caesarean section group than in elective caesarean section group; this was due to increased post-operative morbidity associated with emergency caesarean section. 64.1% in the elective CS group and 85.1% in the emergency CS group, had hospital stay of 6 days.

Table 3: Distribution of microbes in the pus culture sensitivity from wound abscess

Microbe	Elective CS	Percentage	Emergency CS	Percentage
Sterile (absent)	13	40.6	21	30
Staph aureus	9	28.1	17	24.2
Staph epidermidis	5	15.6	13	18.5
E.coli	3	9.3	9	12.8
Klebsiella	1	3.1	7	10
Candida	1	3.1	3	4.3
Total	32	100	70	100

Culture results from the purulent discharge obtained from wound site mainly were sterile 30% in Emergency group patients; followed by bacterial pathogens Staph aureus in 24.2%, while in the Elective CS group it was sterile culture in 40.6%, Staph aureus in 28.1%.

Table 4: Distribution of Study Participants according to Antenatal complication

Antenatal compications	Elective CS	Percentage	Emergency CS	Percentage
HDP	116	21	206	29
GDM	109	19.7	122	17.1
HELLP	62	11.2	73	10.2
DIC	0	0	32	4.4
APH	71	12.8	64	8.9
Malpresentation	64	11.6	53	7.4
IUGR	49	8.8	28	3.9
Obesity	58	10.5	65	9.1
Oligohydromnios	14	2.5	56	7.8
Cholestatic disease of pregnancy	9	1.6	14	1.9
Total	552	100	713	100

The major Antenatal complications which led to Cesarean section in Elective group were HDP (21% and 29%) followed by GDM (19.7% and 17.1%) in both Elective and Emergency CS subjects respectively.

Table 5: Distribution of interventions during the hospital stay

Interventions	Elective CS	Percentage	Emergency CS	Percentage
Antibiotics	19	59.4	37	52.8
Blood transfusions	2	6.2	7	10
Resuturing	7	21.8	18	25.7
Laparotomy for hematoma repair	1	3.1	3	4.2
B-lynch sutures	1	3.1	2	2.8
Postcesarean Hysterectomy	0	0	3	4.1
Ventilator support	0	0	2	2.8
Total	32	100	70	100

The interventions for the readmitted patients were mainly antibiotic coverage in 52.8% of Emergency CS group and 59.4% of Elective CS group.

Patients also required operative management in the form of laparotomy for hematoma repair, B-lynch sutures, hysterectomy.

3. Discussion

Caesarean sections are being long practiced as a lifesaving procedure for the mother and fetus. The incidence of caesarean section has risen considerably over the years and is done for many trivial indications. Though the advances in the field have reduced maternal mortality considerably, the problem of maternal and fetal morbidity after caesarean section is high. In the index study the rate of caesarean section was 13.75% out of which elective caesarean section was 43.63% and emergency caesarean

section was 56.36%. This is comparable tocaesarean section rate in tertiary hospitals in Raipur, India (26.2%)[3]

In elective caesarean section group, previous caesarean section was the main reason for caesarean section accounting for 67%, while the least being placenta previa 2.3%, failed induction 2.5%. This is comparable to other reported studies where repeat caesarean section was 30.7% and malpresentation 17.1% [4].The increased incidence of repeat caesarean section is due to less birth interval between pregnancies, absence of patients opting for vaginal birth after caesarean section.

In emergency caesarean section group fetal distress was the main reason for caesarean section, accounting for 30% and the least beingPlacenta Previa with APH accounting to 2.6%.In a previously reported study the major indication for emergency caesarean section was cephalopelvic disproportion (39.3%), while antepartum hemorrhage and fetal distress followed in that order [5].Fetal distress is by far the major indication for emergency caesarean section.

In our study postoperative complications were significantly more in emergency group (10.09%) when compared to elective group (5.4%). Similar conclusions were obtained in previous studies done (38.67% vs 22.28%)[6].

Reasons for readmissions among post cesarean cases were the following: Wound sepsis contributed to 24.2% in emergency as compared to 18.7% in elective caesarean section.In one study, postoperative complications were more in patients who had emergency CS compared with patients undergoing elective CS such as fever (6% and2.8%), wound infection (12.7% and 6.5%) and urinary tract infection (14.3% and 5.4%) [7].

In our study other reasons for readmissions in elective CS patients were wound gaping 15.6%, Bleeding PV 12.5% out of which 0.5% was for primary pph and 1.5% was secondary pph. Pyrexia accounted for 15.6%, retention of urine 6.6%, acute pain abdomen 12.5%, rest were for neonatal complications 6.2%.

In emergency CS group readmissions were due to Wound gaping and Bleeding PV 11.4% each, 6% out of which 2% was for primary pph and 4% was for secondary pph. Pyrexia accounted for 14.2%, retention of urine 5.7%, acute pain abdomen 7.1%, acute distension of abdomen 5.7%, thromboembolism 2.8%, VVF 1.4% and rest were for neonatal complications 11.4%.

The purulent discharge from wound site that was sent for culture sensitivity showed sterile culture in 40.6% among Elective CS group whereas 30% in Emergency CS group. Main bacterial agents contributing for wound sepsis were Staph aureus28.1% and 24.2% followed by Staph epidermidis 15.6% and 18.5%, E.coli 9.3% and 12.8% and Klebsiella3.1% and 10% in Elective and Emergency CS groups respectively. Fungal culture with Candida species was found in 3.1% in Elective CS subjects and 4.3% in Emergency CS subjects.

In elective caesarean section group had antenatal complications being 21% had HDP, 19.7% GDM while the least being 1.6% cholestatic disease of pregnancy.

In the emergency caesarean section group being29% Gestational Hypertension,17.1% GDM while the least being cholestatic disease of pregnancy 1.9%.

In a study conducted, hypertensive complications antenatally and smoking habits were strongest predilictors for postpartum readmissions[8,11] .

In the present study only 3.9% patients in elective caesarean section group required more days of hospital stay (>6days) whereas in emergency caesarean section group 7.9% required more days (>6days) of hospital stay. This was significant as duration of hospital stay was one of our study criteria to assess maternal morbidity causing readmissions. In a previous study also it was found that postoperative hospital stay was significantly prolonged in patients who had undergone emergency caesarean section when compared to elective caesarean section [9].

4. Conclusion

Maternal morbidity was found to be more in emergency caesarean sections than in elective caesarean sections. Emergency caesarean sections are unavoidable but it can definitely be brought down by proper selection of cases for induction of labor and by initiating active management of labor. This study is to highlight the fact that caesarean sections done as an emergency for any indication has its contribution of problems to the mother and hence caution must be exerted in proper planning of cases. Also the precautions to be taken during an emergency cesarean sections have to be systemized accordingly to reduce postoperative complications. Further audits are mandatory to study the indications for emergency caesarean sections and avoid any unplanned interventions and thus the forthcoming maternal morbidity.

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