Relaparotomy after Caesarean Section - An Obstetrician's Ordeal

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ABSTRACT

BACKGROUND

The term "Relaparotomy" (RL) refers to operations performed within 60 days in association with the initial surgery. The aim of current study was to investigate the indications, risk factors, procedures undertaken during relaparotomy after caesarean section (CS).

METHODS

We conducted a retrospective observational study in all patients undergoing relaparotomy after caesarean section, at a tertiary care centre in Odisha over a period of 2 years from January 2017 to December 2018.

RESULTS

The total incidence of relaparotomies was 0.7 % and the incidence among the sections conducted in our hospital alone was 0.2 %. Obstructed labour (20 %), oligohydramnios with fetal distress (20 %) are major indications of caesarean section. Most of the surgeries (60 %) took place within the first 24 hours of the primary surgery. Most common indication of relaparotomy in our study was postpartum haemorrhage (63.3 %). All women were in the age group of 20 - 35 years and most of them were multiparous (60 %). Pre-existing anaemia is the major (50 %) comorbid factor associated with atonic postpartum haemorrhage which leads to relaparotomy. Major indication of relaparotomy in the present study was haemorrhage (76.5 %).

CONCLUSIONS

Undertaking proper precautions to ensure proper haemostasis and asepsis, taking calculative decision before embarking a hasty decision is important in decreasing the incidence of relaparotomy.

KEYWORDS

Relaparotomy, Caesarean Section, Postpartum Haemorrhage, Asepsis

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BACKGROUND

Caesarean section is the most common operation carried out in daily obstetric practice. With the improvement of operative techniques, safe anaesthesia, safe and multiple transfusion facilities the rate of caesarean sections has increased considerably. Increasing age at first pregnancy and maternal requests are other factors for expanding rate of caesarean sections.[1] Complication rates associated with caesarean section are severalfold than that associated with a normal vaginal delivery. The low-risk uncomplicated caesarean section has an eight-fold higher mortality than vaginal delivery.[2] The term "Relaparotomy" (RL) refers to operations performed within 60 days in association with the initial surgery. RL is categorized as early or late; radical or palliative; urgent or elective; and, planned or unplanned depending on the performed period, its purpose, urgency, and whether or not it is scheduled, respectively.[3]

The causes for a reoperation can be varied, including abdominal haemorrhage, internal bleeding, postpartum haemorrhage, rectus sheath hematoma, sepsis, to name a few. Early recognition of these complications is necessary for proper treatment and successful outcome. The decision to operate and the surgery itself must be performed by senior and experienced surgeons.[4] With this background this study was planned. The aim of current study was to investigate the indications, risk factors, procedures undertaken during relaparotomy after caesarean section.

METHODS

We conducted a retrospective observational study in all patients undergoing relaparotomy after caesarean section, at a tertiary care centre in Odisha over a period of 2 years from January 2017 to December 2018. Both booked and referral cases were included. Both routine and emergency caesarean sections were considered. Gynaecological cases undergoing relaparotomy, normal deliveries, relaparotomy performed after 60 days with indications other than complications from primary surgery were excluded. A proforma having age, parity, indication for primary caesarean section, indication for relaparotomy, interval between caesarean section and relaparotomy, associated comorbidities were collected. Intraoperative procedure performed, necessary investigations blood transfusion, outcome details of relaparotomies were collected.

RESULTS

A total of 4321 caesarean sections were done in our hospital within the study period. On reviewing the records, 30 cases had undergone relaparotomies after caesarean section in the study period. Out of the 30 relaparotomies, 21 cases were referred from nearby hospital (PHC, CHC, DHH) and 9 patients had performed CS in our hospital. The total incidence of relaparotomies was 0.7 % and the incidence among the sections conducted in our hospital alone was 0.2 %. One maternal death was reported out of 30 relaparotomy cases.

Indications	Number of CS	Percentage of CS (%)
Obstructed labour	6	20
Oligohydramnios with fetal distress	6	20
Severe preeclampsia with fetal distress	5	16.6
Previous CS with scar tenderness	4	13.3
CPD	3	10
Placenta Praevia	3	10
Non progress of labour	1	3.3
GDM with failed induction	1	3.3
Primi with breech	1	3.3

Table 1. Indications of Caesarean Section

Obstructed labour (20 %), oligohydramnios with fetal distress (20 %), severe preeclampsia with fetal distress (16.6 %), previous caesarean with scar tenderness (13.3 %) are major indications of caesarean section.

Time Interval	Number of Relaparotomies	Percentage (%)
< 24 hours	18	60
24 - 72 hours	3	10
> 72 hours	9	30

Table 2. Time Interval between Primary Surgery and Relaparotomy

Most of the surgeries (60 %) took place within the first 24 hours of the primary surgery. 9 cases (30 %) had relaparotomies after 72 hours, with 3 cases (10 %) done within 24 - 72 hours.

Indications	Number of Relaparotomies	Percentage (%)
Postpartum Haemorrhage	19	63.3
Pyoperitoneum	6	20
Rectus sheath hematoma	2	6.66
Hemoperitoneum	2	6.66
Burst Abdomen	1	3.33

Table 3. Indications of Relaparotomy

Most common indication of relaparotomy in our study was postpartum haemorrhage (63.3 %). All women were in the age group of 20 - 35 years and most of them were multiparous (60 %). Out of total 30 cases 12 cases were primipara (40 %) in our study. Multiparous women had relaparotomies due to atonic postpartum haemorrhage (PPH), previous caesarean section with scar tenderness. Multiparous cases had undergone a greater number of relaparotomies after CS.

Comorbidities	Number of Relaparotomies	Percentage (%)
Severe Preeclampsia	5	16.66
Gestational Hypertension	6	20
Hypothyroidism	2	6.66
Anaemia	15	50
GDM	1	3.33
Asthma with anaemia	1	3.33
No comorbidity	1	3.33

Table 4. Distribution of Associated Comorbidities in Patients Who Had Undergone Relaparotomy

Pre-existing anaemia is the major (50 %) comorbid factor associated with atonic postpartum haemorrhage which leads to relaparotomy. Severe preeclampsia complicating disseminated intravascular coagulation presented as rectus sheath haematoma and haemoperitoneum after CS which landed in relaparotomy.

Indications of Relaparotomies	Procedure Performed	No. of Cases Undergoing the Procedure
Postpartum haemorrhage – primary (n = 18) – secondary (n = 1)	-bilateral uterine artery ligation with B-Lynch, modified B-Lynch Suturing-Hysterectomy-Hysterectomy with bladder injury repair	13 (43.3 %) 5 (16.6 %) 1 (3.33 %)
Rectus sheath Hematoma (n=2)	Exploration of hematoma / Ligation of bleeding vessels	2 (6.66 %)
Burst abdomen (n = 1)	Repair of abdominal wall with peritoneal lavage	1 (3.33 %)
Intraperitoneal Haemorrhage (n = 2)	Hemoperitoneum drainage followed by ligation of bleeding vessels	2 (6.66 %)
Pyoperitoneum (n = 6)	-Drainage of pus with peritoneal lavage - Pelvic abscess drainage, subtotal hysterectomy with bilateral salpingo-oophorectomy Pus drainage with bowel repair (colostomy)	4 (13.3 %) 1 (3.33 %) 1 (3.33 %)

Table 5. Analysis of Procedures Performed during Relaparotomy

Out of the 30 relaparotomies, 21 cases were referred from nearby hospital (PHC, CHC, DHH) and 9 CS were performed in our hospital. Obstructed labour and severe preeclampsia with fetal distress were major causes for CS that later on underwent relaparotomy among referred cases.

Though in general, most of the women elected to have caesarean section rather than vaginal delivery, 25 of the patients (83.3 %) on whom the relaparotomy was conducted had an emergency c-section. Routine CS (16.6 %) were done for placenta previa (2 patients), cephalopelvic disproportion (CPD), primi with breech presentation.

DISCUSSION

Caesarean section is a major abdominal operation with high chances of complications to the mother including haemorrhage, infection and injury to other organs. There is limited amount of data available with regard to relaparotomy studies after caesarean section. In this study, the indications and outcomes of relaparotomy procedures, risk factors for relaparotomy, procedures undertaken during relaparotomy and steps that could be taken to prevent it were analysed.

The total incidence of relaparotomies was 0.7 % and the incidence among the sections conducted in our hospital alone was 0.2 %, which was much less as compared to a study by Reddy MVN et al. where the total incidence of relaparotomy was 3.6 % with 1.4 % amongst the C section patients of their hospital alone. Most of the other studies showed an incidence of less than 1 %. In a study. By Levin et al. the rate of relaparotomy was 0.2 % while in another study by Shinar S et al. it was 0.4 %.[5,6]

In the present study, we tried to correlate the indication of primary surgery with the indication of relaparotomy. Obstructed labour in 6 (20 %) patients and fetal distress in 10 (33.3 %) patients were major indications for initial surgery in patients undergoing relaparotomy in this study. It was found that obstructed labour was the most common indication for initial surgery in patients undergoing relaparotomy for burst abdomen. Out of total 55 patients requiring relaparotomy after caesarean section in study by Biswas SP et al., 40 % patients had caesarean section for prolonged labour and fetal distress, 10.91 % patients hypertensive disorders of pregnancy, 10.9 % patients for previous one or more caesarean section, 9.09 % of patients each for obstructed labour and placenta previa.[7] Levin I et al. showed indication for caesarean section to be non-reassuring fetal rate in 25 %, pregnancy induced hypertension in 14.3 %, arrest of descent or dilatation or both in 28.6 % and placental abruption in 17.9 %.[6] Elkhateeb R et al. showed that the main indication for CS in there study population was repeated CS (37.5 %) followed by morbidly adherent placenta (15.6 %).[8] In a study by Ahmed Khan NB et al. indication of primary surgery undergoing relaparotomy was non-progress of labour in 29.63 %, fetal distress in 22.22 %, previous caesarean section in 22.22 %, placenta previa in 14.81 %, failed induction in 7.4 % and placenta abruption in 3.75 %.[9]

Post caesarean section follow up is very important in detection of postoperative complication. In our study, most of the surgeries (60 %) took place within the first 24 hours of the primary surgery and 9 cases (30 %) had relaparotomies after 72 hours. In a study by A. B. Fazari et al. most cases of relaparotomy (41.2 %) were done after 72 hours from the caesarean section.[10] Ahmed et al. studied that most of the cases complicated with haemorrhage were explored within 24 h (61.9 %), whereas most of the cases complicated with postoperative surgical site infections needed relaparotomy after 1 week (42 %).[11]

Major indication for relaparotomy in present study was haemorrhage (76.5 %) manifesting either as postpartum haemorrhage (63.3 %), rectus sheath hematoma (6.6 %), or as intraperitoneal haemorrhage (6.6 %). These findings demand attention to promptly manage primary PPH and secondary PPH. Atonic PPH is preventable by adopting active management of third stage of labour. Other indications of relaparotomy were burst abdomen, pyoperitoneum, bowel injury etc. Injury to other organs in abdomen can increase the mortality and morbidity. In present study, 1 patient had perforation of large bowel (sigmoid colon) further leading to sepsis and peritonitis. Therefore, surgeon should be careful not to damage other abdominal organs during surgery.

In study by Biswas SP et al. most common indication for relaparotomy was haemorrhage (83.64 %) and burst abdomen (7.27 %).[7] Study by Levin I et al. showed major cause of relaparotomy was intraabdominal bleeding (50 %) followed by uncontrolled postpartum haemorrhage (35.7 %), bowel injury or infection (10.7 %) and abdominal wall bleeding (3.6 %).[5] In a study by Salma Rouf et al. the commonest indication for repeated surgery was PPH in 19 cases (79.17 %), of which secondary PPH cases were 11 (45.8 %) and primary PPH due to uterine atony were in 8 cases (33 %).[12] Rectus sheath haematoma occurred in 2 cases (8.3 %). In a study by Seal SL et al. postpartum haemorrhage (42.4 %) and rectus sheath hematoma (27.3 %) were the leading causes of relaparotomy.[13] Study by Shyamal D et al. showed major cause of relaparotomy to be intraperitoneal haemorrhage (48.93 %), rectus sheath hematoma (21.28 %), sepsis (12.76 %), intestinal complications (6.39 %), and postpartum haemorrhage (4.25 %).[14]

In our study, most of the patients were between 20 - 35 years of age which is normal reproductive age which is similar to the study by Ahmed Khan et al. while in Biswas SP et al. the mean age of patients was 25 years with the range

being 15 - 35 years.[9,7] 60 % of the women were multiparous in our study which was in concordance to the study by Ahmed Khan NB et al. 66.67 % of women who underwent relaparotomy were multiparous.[9]

In the present study, pre-existing anaemia is the major (50 %) comorbid factor associated with atonic postpartum haemorrhage which leads to relaparotomy, followed by severe preeclampsia (20 %) and gestational hypertension (16.6 %). Only 1 patient had no comorbidity in our study. In a study by Ahmed et al. associated comorbidities were hypertensive disorders in 15 (58 %) cases, liver disorders in 5 (19 %), sepsis in 3 (0.8 %) and anaemia in 2 (0.5 %).[11]
In present study, 6 patients undergoing relaparotomy for PPH had hysterectomy. In a study by Sak et al. frequently performed procedures at relaparotomy were drainage of hematomas (37.1 %), hysterectomy (27.5 %), drainage of abscess (6.21 %), salpingo-oophorectomy (6.2 %) and excision of cervix (4.4 %).[15] In procedures undertaken during relaparotomy in study by Seal SL et al. were resuturing of uterine incision in 33.3 % cases, uterine artery ligation in 28.8 % cases and drainage of hematomas in 27.3 % cases. In a study by Ahmed Khan NB et al. 77.78 % of patients required hysterectomy.[13,9]

Emergency surgery (83.3 %) was a major risk factor in cases needing relaparotomy in present study as well in other studies. In a study by SP Biswas et al. 39 out of 55 patients had surgery for emergency indications. In a study by Ahmed Khan NB et al. 85.19 % patients were operated for emergency indications.[9] Seal et al. reported that out of 66 cases requiring relaparotomy, 63 (95.5 %) had emergency caesarean delivery.[13]

Mortality rate of patients undergoing relaparotomy in our study was 3.3 %, also shared by other studies. Mortality rate was 12. 12 % in study by Sak ME et al. 12.7 % in study by SP Biswas et al. 12.12 % in study by SL Seal et al. 12.76 % in study by Shyamal D et al. and 18.52 % by Ahmed Khan NB et al.[15,7,13,14,9]

Caesarean section rate has been increased due to early diagnosis of fetal distress, medicolegal implications, better anesthetic facilities and availability of blood and expert care and increased compliance of health care personnel to caesarean section on demand by patients.

CONCLUSIONS

Relaparotomy is a rare complication of surgery. Factors like general condition of the patient, availability of expertise and intensive care unit facility, indication of previous surgery, associated infections and severity and presence of other comorbid conditions are the decisive factors before taking up a patient for relaparotomy. Also, patient's relatives should be counselled about the condition and prognosis of the patient.

However, taking proper precautions to ensure proper haemostasis and asepsis, are important in decreasing the incidence of relaparotomy.

Limitations of the study are small sample size, short duration of study and primary surgeries in most of the cases was done outside the hospital. More prospective multicentric studies are required to formulate the protocol of management for relaparotomy.

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