European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 09, Issue 02, 2022

Re-laparotomy after caesarean section in tertiary heath care hospital

[1]Rekha R, [2]Ashwini MS, [3]Manjula B, [4]Prashanth Shivappa, [5]Lepakshi BG

[1,2]Assistant Professor, Department of Obstetrics & Gynecology, Shimoga Institute of Medical Sciences, Shivamogga, Karnataka, India
[3]Scientist B, Multidisciplinary Research Unit, Shivamogga Shimoga Institute of Medical Sciences, Shivamogga, Karnataka, India
[4]Associate Professor, Department of Obstetrics & Gynecology, Shimoga Institute of Medical Sciences, Shivamogga, Karnataka, India
[5]Professor & Head, Department of Obstetrics & Gynecology, Shimoga Institute of Medical Sciences, Shivamogga, Karnataka, India

Corresponding Author:
Prashanth Shivappa (drprashya@gmail.com)

Abstract

Background: Relaparotomy (RELAP) after caesarean section is a serious complication and is associated with maternal morbidity and mortality. The data of re-laparotomy after caesarean section is limited. So in the present study, we will evaluate the risk factors and outcome of relaparotomy after cesarean section in our study population.
Objective: To identify the risk factors and complications and outcomes associated with re-laparotomy after caesarean section.
Materials and Methods: It is a retrospective study, a total of 16 relaparotomy cases were included in this study. Data such as age, parity, period of gestation, comorbidities, indication for C-section and relaparotomy, a procedure during relaparotomy and the interval between two surgeries are recorded. Using SPSS software statistical analysis is done.
Results: Incidence of re-laparotomy is found to be 0.25% and the mean age was found to be 25.5±4.2 years with 37.5% primigravidae. The Major indication for C-section and Relaparotomy was Placenta previa (37.5%) and hemoperitoneum (37.5%). The mean time interval between C-section and relaparotomy was 6.8 ± 1.2 days and the major procedure done during relaparotomy is tension suture (31.25%). The rate of recovery and maternal death was found to be 93.8% and 6.3% respectively.
Conclusion: Caesarian section will be done due to clinical complications in delivery. After C-section, women are treated conservatively, but in some cases, there is a need for relaparotomy. It will be performed when the patient's condition is too critical. Relaparotomy is a life-saving procedure to save the life of patients. Proper care should be taken during primary and secondary surgery to prevent postoperative infection and other complications which will decrease the clinical complication and mortality rate.

Keywords: Caesarean section, relaparotomy, indications

Introduction

According to the World Health Organisation (WHO), a caesarean section (C-section) is a surgical procedure undertaken in complicated pregnancies, which will help to save the life of a mother and baby [1]. In India, the C-section incidence is increasing due to Maternal characteristics such as obesity, age and obstetric practices [2]. Improvement of anesthesia, surgical and aseptic techniques for blood transfusion. Better surgical facilities and improved fetal monitoring techniques [3].

Laparotomy is a surgical procedure where an incision will be done through the abdominal wall to access the abdominal cavity. The risk factors/indications for laparotomy after C-section were found to be previous C-Section, severe preeclampsia, placenta previa, uterine rupture, placental abruption, cervical tear and peripartum hysterectomy (PPH) [4]. The incidence rate of re-laparotomy varies from 0.2 to 1.04% [3, 5]. Procedure for relaparotomy includes drainage of blood clots and parietal hematoma, internal iliac artery ligation, uterine artery ligation, hysterectomy, securing angles of uterine incision, removal of a foreign body or drainage of pus, suturing abdominal wall and repair of bowel injuries or urinary bladder. Relaparotomy will be done for the purpose to manage the complications of the previous surgery, preventing sepsis and intra-abdominal infection and maintaining homeostasis. An experienced surgical team with good clinical judgment needs to conduct the surgery [6]. Due to limited studies and lack of information in literature, in the present study, we investigate the risk factors, treatment and outcome for relaparotomy after C-section in our study population.

Material and Methods

Study design

It is a retrospective study conducted in the department of gynecology and obstetrics, a tertiary health care hospital. The study was initiated after obtaining the institutional ethical committee approval and informed consent from the study population. Out of 2,998 C-section cases, 16 cases had relaparotomy during the period of 2 years from November 2019 to November 2021. Inclusion criteria for the study are cases who are subjected to relaparotomy that is done within 60 days of C-section from our hospital or referred from another center for the sake of complications after C-section. Cases with relaparotomy after 60 days of the C- section and indication for the primary surgery selected was related to obstetrics were excluded from the study.

Data such as age, parity, period of gestation, comorbidities, indication for C-section and relaparotomy, the procedure used during relaparotomy, the interval between C-section and relaparotomy, and outcome after second surgery were noted and filled in excel and calculated the frequency and percentage for continuous variables using SPSS software.

Results

During our study period, out of 16,901 deliveries, 62% (10,478) by normal and 38% (6,423) by the cesarean method. The Incidence of relaparotomy is found to be 0.25% (16/6,423). The mean age of the study group was found to be 25.5± 4.2 years and 37.5% of the patients were primigravida (Table 1). The majority of cases had more than 37 weeks and co-morbidities among the study population were found to be 43.7%.

The major indication for C-section was found to be Placenta previa (37.5%) followed by Dystocia, Antepartum hemorrhage, malpresentation. Fetal distress, altered biophysical profile and premature rupture of the membrane in our study population (Table 1).

Table 1: Clinical presentation of cases

	Frequency	Percent
Parity		
Primigravida	6	37.5
G2p1l1	5	31.3
P1l1	2	12.5
G3p2l2	1	6.3
P2l2	2	12.5
Period of gestation		
>37 weeks	7	43.8
<37 weeks	9	56.3
Comorbidities		
Without any comorbidities	9	56.3
Fibroid uterus	1	6.3
Severe pre-eclampsia	3	18.7
Anaemia	3	18.7
Indication for C-section		
Dystocia	3	18.75
Malpresentation	1	6.25
Fetal distress	1	6.25
Biophysical profile (BPP)↓	1	6.25
Antepartum haemorrhage (APH)	3	18.75
Premature rupture of membrane(PROM)	1	6.25
Placenta previa	6	37.5

Among the 16 cases, the major indication/intra-operative findings of the relaparotomy were found to be hemoperitoneum (37.5%) followed by burst abdomen, rectus sheath hematoma, pelvic/peritoneal abscess and intestinal obstruction in our study population (Table 2).
The mean time interval from C-section to relaparotomy was found to be 6.8 ± 1.2 days. In our study population tension suture (31.25%) was the major procedure done during relaparotomy, followed by Evacuation of rectus sheath hematoma (12.5%), Drainage of pus and peritoneal lavage, internal iliac artery ligation, Rent closure and bilateral uterine artery ligation, Hysterectomy, Omental tear (partial omentectomy) and Intestinal obstruction (Table 2). Out of 16 cases, maternal death occurred in one (6.3%) case and 15 (93.8%) cases were recovered and discharged from the hospital after treatment (Table 2).

Table 2: Indication, procedure and outcome of Relaparotomy

	Frequency	Percentage
Indications of relaparotomy		
Burst abdomen	5	31.25
Rectus sheath hematoma	2	12.5
Hemoperitoneum	6	37.5
Intestinal obstruction	1	6.25
Pelvic/peritoneal abscess	2	12.5
Procedure during relaparotomy		
Tension suture	5	31.25
Evacuation of rectus sheath hematoma	2	12.5
Drainage of pus and peritoneal lavage	2	12.5
Internal iliac artery ligation	2	12.5
Hysterectomy	1	6.25
Rent closure and bilateral uterine artery ligation	2	12.5
Omental tear (partial omentectomy)	1	6.25

Intestinal obstruction	1	6.25
Maternal output		
Recovered and discharged	15	93.8
Death	1	6.3

Discussion

In the present study, we evaluate the risk factors, indications, and outcomes of C-section patients requiring relaparotomy. During 2 years of study, there were a total number of 16,901 deliveries among 10,478 cases by normal vaginal and 6423 cases by C-section delivery. Among 6423 cases 16 cases required relaparotomy and the incidence was found to be 0.25% which is similar to the other studies [7, 8, 9]. The mean age of the study population was 25.5± 4.2 years as in Reena *et al.* [10]. And the major parity was primigravida whereas Ahmed *et al.* study reported that the risk of relaparotomy was found to be more with increasing parity [3]. The gestation period of cases undergoing relaparotomy was found to be more than 37 weeks (56.3%) as in Kumari *et al.* study [11].

Placenta previa, Antepartum hemorrhage (APH), Dystocia, Malpresentation, Fetal distress, altered biophysical profile (BPP), and Premature rupture of membrane (PROM) were major indications for C-section with comorbidities such as fibroid uterus, severe pre-eclampsia, and anemia were associated with our study population. The major indication for C-section in our study population was placenta previa indication (37.5) as in Raagab *et al.*, where the percentage of placenta previa was found to be 34.6 [12]. The percentage of emergency C-sections was found to be above 95% and 5% had elective C-sections [13, 12], whereas, in our study, all cases had emergency C-sections as in Debdulal *et al.* study [14].

In our study, hemoperitoneum (37.5%) was the major indication of relaparotomy followed by burst abdomen, rectus sheath hematoma, pelvic/peritoneal abscess, and intestinal obstruction. Many studies reported that hemorrhage was the leading indication for Relaparotomy after C-section. Hemoperitoneum was a major indication of relaparotomy in Raagab *et al*., Ahmed *et al.*, and Levin *et al.* studies [12, 3, 8]. Burst abdomen (31.25%) was the second most indication of relaparotomy in our study. whereas the studies reported that the percentage of Burst abdomen was observed in 4%, 10.7%, and 22.7% of C-section cases [7, 11, 6]. To reduce postoperative complications, proper care, and safe procedure should follow to minimize further complications. The standard procedure was not available for Relaparotomy due to various indications and complications of cases. Rectus sheath hematoma and pelvic /peritoneal abscess were found to be 12.5% in our study, whereas Debdulal *et al.* and Ahmed *et al.* reported that the percentage of rectus sheath hematoma was 29.72% and 7.4% in their studies [14, 3]. Abscess/sepsis was another major indication of relaparotomy, an abscess is a collection of pus due to bacterial infection and leads to sepsis condition. According to Debdulal *et al.* and Sak *et al.* studies reported that the abscess was 16.21% and 8.8% 14, 15. Intestinal/ bowel obstruction indication was noted in one case (6.25%), bowel ischemia was also reported by Debdulal *et al.* and Ahmed *et al.* in the range of 3-6% [14, 3].

Studies reported that the percentage of the time interval between C-sections to Relaparotomy was higher within 24 hrs followed by 1-7 days 3 6, in our study the mean time interval between primary and secondary surgery was found to be 6.8 ± 1.2 days in the study population. In our study, the percentage of tension suture procedure during relaparotomy was noted to be 31.5% and followed by evacuation of rectus sheath hematoma, drainage of pus and peritoneal lavage, internal iliac artery ligation, Rent closure, and bilateral uterine artery ligation, hysterectomy, omental tear (partial omentectomy) and intestinal obstruction.

The procedure during the relaparotomy will be various according to the cases and complications of primary surgery. In our study, in case of 6.25%, hysterectomy was required, whereas in Ahmed *et al.* and Lurie *et al.* studies they reported that the percentage of hysterectomy was 77.78% and 5.55% [3, 16].

The percentage of maternal recovery and death was found to be 93.8% and 6.3% (due to severe anemia and heart disease) in our study. Studies reported that maternal mortality is high in emergency C-section when compared to elective C-section, according to Ahmed *et al.*, Raagab *et al.*, and Shyamal *et al.* studies reported the fatality rate of 18.5%, 11.5%, and 15.38% after Relaparotomy [3, 12, 8].

Conclusion

Due to the age of motherhood, the lifestyle of women, and advanced medical facilities, the normal vaginal delivery rate is decreasing and the C-section delivery rate is increasing worldwide. After successful C-section obstetricians find different clinical complications after primary surgery then the relaparotomy procedure will be used by experts to save the maternal life. The risk of secondary surgery and rate of morbidity and mortality will be minimized by selecting proper procedure of Relaparotomy, diagnosis with efficient facilities in the center with a good efficient team.

Acknowledgment

Authors acknowledge the doctors of the Department of Gynecology and Obstetrics, Surgery, General Medicine, Anesthesiology, Medical record section, Multidisciplinary Research Unit and Administrators of Shimoga Institute of Medical Sciences, Shivamoga.

Conflicts of interest: The authors declare no conflict of interest.

Funding: Nil

Ethical approval: Obtained from Institutional Ethics Committee, Shimoga Institute of Medical Sciences, Shivamoga. Ref. No: SIMS/IEC/621/2021-22.

References

1. Betrán AP, Merialdi M, Lauer JA, Bing-Shun W, Thomas J, Van Look P, *et al.*, Rates of caesarean section: analysis of global, regional and national estimates. Paediatr Perinat Epidemiol. 2007;21(2):98-113.
2. Ronsmans C, Holtz S, Stanton C. Socioeconomic differentials in caesarean rates in developing countries: a retrospective analysis. Lancet. 2006;368(9546):1516-23.
3. Ahmed Khan NB, Kolasseri SS. Relaparotomy after caesarean section: an analysis of the risk factors, indications and outcome. Int. J Reprod. Contracept Obstet Gynecol. 2015;4:575-80.
4. Kessous R, Danor D, Weintraub YA, Wiznitzer A, Sergienko R, *et al.*, Risk factors for relaparotomy after cesarean section. J Matern Fetal Neonatal Med. 2012;25(11):2167-70.
5. Witteveen T, Kallianidis A, Zwart JJ, *et al.* Laparotomy in women with severe acute maternal morbidity: secondary analysis of a nationwide cohort study. BMC Pregnancy Childbirth. 2018;18(61):1-7.
6. Thombarapu U, Veeravalli S, Koneru GR, Kodey PD. Relaparatomies after obstetric surgeries at a tertiary care hospital, NRI General Hospital, Chinnakakani, Guntur. Indian J Obstet Gynecol Res. 2019;6(4):448-451.
7. Kundu G, Begum SA, Afroz H, Mamud T, Sultana Z, Faruq M. Relaparotomy Following Caesarean Section: A Cross Sectional Study. Mymensingh Med J. 2021;30(4):1023-1030.
8. Levin I, Rapaport AS, Salzer L, Maslovitz S, Lessing JB, Almog B. Risk factors for relaparotomy after cesarean delivery. Int J Gynaecol Obstet. 2012;119(2):163-165.
9. Pencole L, Peyronnet V, Mandelbrot L, Lepercq J. Risk factors of relaparotomy for intra-

abdominal hemorrhage after cesarean delivery. Eur J Obstet Gynecol Reprod Biol. 2021;260:118-123.
10. Shrestha R, Karki LR, Shrestha SD, Malla AP, Pradhan B, Singh A, Shah W, Gurung P, Lama S. Relaparotomy after caesarean section. J Patan Acad Health Sci [Internet]. 2016;3(2):28-31.
11. Kumari A, Vidyarthi A. An analysis of relaparotomy in operative obstetrics. Int J Reprod Contracept Obstet Gynecol. 2020;9:1813-1819.
12. Raagab AE, Mesbah YH, Brakat RI, Zayed AA, Alsaammani MA. Re-laparotomy after cesarean section: risk, indications and management options. Med Arch. 2014;68(1):41-43.
13. Akther R, Hossain T, Rashid M. Relaparotomy After Cesarean Delivery: A Prospective Study. J Dhaka Med Coll [Internet]. 2011;20(1):57-62.
14. Debdulal Mandal, Debjyoti Santra, Arijit Ganguly. Risk Factors, Indications and Outcome among Relaparotomy following Caesarean Section cases in BSMC & H, Bankura, WB. Int. J. Heal. Clin. Res. [Internet]. 2021;4(10):224-228.
15. Sak ME, Turgut A, Evsen MS, Soydinc HE, Ozler A, Sak S, Gul T. Relaparotomy after initial surgery in obstetric and gynecologic operations: analysis of 113 cases. Ginekol Pol. 2012;83(6):429-432.
16. Seffah JD. Re-laparotomy after Cesarean section. Int J Gynaecol Obstet. 2005;88(3):253-257.
17. Elati Sindoori Reddy, Annie Rajaratnam. Relaparotomy after caesarean section. Int J Clin Obstet Gynaecol 2020;4(2):68-70.
18. Shyamal D, Pratim SP, Aradhana K, Partha M, Kirti M, Subhankar D. Early re-operations after gynecological and obstetrical surgery-a five years. J Obstet Gynaecol India. 2010;60(6):507-510.