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Relaparotomy after caesarean section

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Abstract
Relaparotomy after cesarean section do happen and a study was done to critically evaluate the relaparotomy cases following the cesarean delivery at a tertiary medical centre. The study was conducted for a period of two years. The database of exploratory laparotomy following primary operation had been collected. Obstetric patients requiring re-laparotomy after primary surgery within 6 weeks of cesarean section were analyzed. A total of 10 cases underwent relaparotomy of which 8 had CS done at this institute and 2 had been referred from a peripheral health centre. The prevalence rate of relaparotomy was 0.77%. The most common complication requiring relaparotomy were sepsis and hemorrhage. During relaparotomy the most common intervention was resuturing of the uterine incision. Emergency relaparotomy is a lifesaving procedure and every obstetrician should be able to tackle effectively the different complications related to the surgery.

Keywords: Relaparotomy, cesarean section, hemorrhage, resuturing.

Introduction
Throughout recent decades, the incidence of cesarean (CS) delivery across the world has shown dramatic increase. Although the safety of CS has significantly increased, some risks and complications remains associated with this important operation [1]. In some cases complications, conservative measures fails and the patient needs to return to the operating theater for reopening the abdomen [2].
The word "re-laparotomy" (RL) indicates a laparotomy carried out inside 60 days after the first operation for the primary disorder [3]. Relaparotomy is intended to treat symptoms of the prior treatment, hold homeostasis, avoid intra-abdominal or sepsis and facilitate deferred healing.[4]
Now with a rising trend of caesarian section in peripheral hospitals in our country the postoperative complications are also gradually increasing. Most of the time, relaparotomy is performed when the patient is in shock and unable to withstand the risk of anesthesia and repeat surgery. Often it is a very difficult decision and requires good clinical judgment [5-6].
In this study the relaparotomy cases following the cesarean delivery were critically evaluated. This helps us identify risks when relaparotomy is needed and proper precautions can be taken to prevent such complications as much as reasonably practicable [1].

Materials and Methods
This study was done in the department of gynecology and obstetrics over a 2-year period from January 2018 to December 2019. The study was conducted after institutional ethical committee approval is obtained. During this time a total of 1036 cesarean deliveries were performed. A total of 10 cases had relaparotomy (8 cases were from the institute and 2 were referred).

Inclusion criteria
Obstetric patients requiring re-laparotomy after primary surgery. All cases requiring a repeat laparotomy within 6 weeks of CS were analyzed. Data will be collected and analyzed in Microsoft excel format and statistical analysis was done. The following parameters were identified: Indication of CS, time interval from the CS to relaparotomy, procedures undertaken during relaparotomy and the outcome following relaparotomy. Categorical data were compared where applicable using the chi square test. Statistical significance was $P<0.05$. Statistical analysis were performed using SPSS software [IBM® SPSS Statistics Chicago (Ill., USA)]

Results

A total of 1036 patients underwent CS procedure during the study period. A total of 10 cases underwent re-laparotomy of which 8 had CS done at this institute and 2 had been referred from peripheral health centers. Most common complication requiring relaparotomy was sepsis and hemorrhage. Post partum hemorrhage (PPH) was seen in 4 cases, sepsis in 4 cases, severe pre-eclampsia seen in 2 cases as shown in (Table 1).

During relaparotomy the most common treatment was resuturing of the uterine incision which was performed in 4 patients while hysterectomy was performed in 3 patients. The ensuring hemostasis by hemostatic sutures was performed in rest of the three patients as depicted in (Table 2).

Most of the complications appeared after 7th day of surgery. The relaparotomy was performed between day 7 and 15 in 50% patients while in 30% of the patients it was performed after 15 days of surgery. In one patient the relaparotomy was performed within 24 hour of surgery. (Fig: 1)

Table 1: Indications of relaparotomy.

Indications of Relaparotomy	No of cases	Percentage
Severe Pre eclampsia - Hematoma	1	20%
Hemorrhage	4	40%
Sepsis – (Prev 2 LSCS)	1	10%
Sepsis – (Prev 3 LSCS)	2	20%
Sepsis – (Post LSCS)	1	20%
Severe Pre eclampsia -Secondary PPH	1	10%
Total	10	100%

Table 2: Procedure undertaken during of repeat surgery

Procedure Performed	No of cases	Percentage
Ensuring hemostasis	3	30%
Hysterectomy	3	30%
Resuturing of uterine incision	4	40%

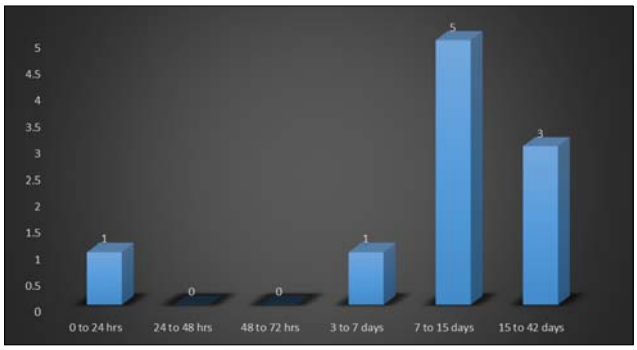

Fig 1: Distribution of time interval from cesarean delivery to relaparotomy

Discussion

In this study the incidence, indications, risk factors and outcome of cases requiring relaparotomy were analyzed. Relaparotomy occurrence rate in the present study was 0.77% which was similar to study of Sak Muhammet *et al* [4]. Which was 0.72%. One study from a teaching hospital in Ghana with a Caesarian section rate of 17% showed a relaparotomy rate of 0.7% [7]. A relaparotomy average of 0.33 percent was shown in another Indian analysis [1]. The incidence of relaparotomy after cesarean delivery was 0.33% and 1.56% after gynecologic surgeries as reported by different authors [1].

The most common indication of relaparotomy in our study was hemorrhage in 30%, followed by sepsis due to different causes, uncontrolled PPH in 10% and abdominal wall hematoma formation in 10%. The result is close to that of Akhter *et al* [8]. who found it to be 48.99%. Subtotal hysterectomy was done in secondary PPH in 1 case (10%) in our study. In another study increase bleeding and hematoma was the cause of relaparotomy in 70.8% [3]. Presence of foreign body in the abdomen and incorrect diagnosis constitute 26.6%. Sepsis was the cause in 30% which was higher than in a study done by Rouf S *et al* [4]. where it was 4.17%. Secondary PPH following CS is often difficult to control by vessel ligation (along with wound debridement and resuturing of the incision line). Hence during relaparotomy, eventually hysterectomy is required. Secondary PPH case was a referred case but the exact cause of PPH could not be detected, as ultrasonography failed to demonstrate any retained bits of placental tissue and culture swabs were negative.

Relaparotomy for haemorrhage and wound dehiscence brings about a lower rate of mortality compared to septic patients.[4] With the rising trend of caesarian section and disseminations of its practice everywhere the complications are also increasing. Before laparotomy the surgeon should asses the patient critically and justify the indication of repeat operation, inform the patient about its complications, morbidity and mortality.

Maternal mortality was quite high in patients who required relaparotomy following CS: 12.1% in the Kolkata series and 10% in our series [1]. Every attempt must be made to reduce its incidence. Maternal mortality is understandable in emergency cases, but in our series maternal mortality occurred in one of the elective CS case.

Hemorrhage and organ damage can be minimized by good surgical technique. Safety should not be sacrificed for speed. Obstetricians are faced with the possibility of death when returning to the theater. An experienced colleague's assistance is essential at this juncture [9]. Such patients should be monitored in the intensive care unit during the post-operative time and the blood and blood products should be administered when indicated [10].

Conclusion

Emergency relaparotomy is a lifesaving procedure. The interval between initial operation and relaparotomy is amongst the utmost important factors that influence results. Every obstetrician should be capable enough not only to perform a caesarian section but should be able to tackle effectively the different complication during and related to the operation. Complicated CS and emergency gynecological conditions where diagnosis is in controversy should be referred to higher centers. The risk of re-laparotomy can be minimized by proper diagnosis, recognizing high-risk patients, utilizing meticulous surgical technique and referral when needed to a tertiary care centre.

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