



## Original Research Article

## Relaparotomies after obstetric surgeries at a tertiary care hospital, NRI General Hospital, Chinnakakani, Guntur

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## ARTICLE INFO

## Article history:

Received 06-08-2019

Accepted 21-08-2019

Available online 06-12-2019

## Keywords:

Relaparotomy

Caesarean section

Hemorrhage

Hysterectomy

Meticulous Haemostasis

## ABSTRACT

**Objective:** To identify the risk factors and complications associated with re-laparotomy after obstetric surgeries in NRI Medical College & General Hospital (NRIGH), Chinnakani, Guntur District.

**Materials and Methods:** Cross sectional study including twelve women that underwent re-laparotomy after obstetric surgeries in NRIGH, Chinnakani, Guntur District, Andhra Pradesh during the period from January 2016 to January 2018 whether the primary operation was done at our hospital or patients were referred from other hospitals or private centres to our tertiary care centre.

**Results:** Incidence of relaparotomy was 0.77 % (12/1549). Haemorrhage was the most common indication for re-laparotomy (58%). The second most common indication was intra-peritoneal collection in 16 % of cases. Six cases were haemodynamically unstable at the time of re-laparotomy (50 %) and seven cases (58%) were admitted to ICU postoperatively. The main surgical procedure performed during re-laparotomy was hysterectomy (7 cases). The most common complication was massive blood transfusion. Maternal mortality occurred in three cases (25%). The cause for maternal deaths was multiple organ failure in one case, disseminated intravascular coagulopathy (DIC) in two cases.

**Conclusion:** Re-laparotomy is associated with high maternal morbidity and mortality. Emergency relaparotomy is a life -saving procedure. Good expertise during primary surgery and right surgical technique, maintaining intr a operative hemostasis, prevention of postoperative infection can avoid relaparotomy.

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### 1. Introduction

Relaparotomy is a Greek word with 3 components- re-repeated, Laparo-stomach and tomie-cut. If laparotomy is done within 60 days of primary surgery it is called relaparotomy. If the laparotomy is done which is planable, repeated and multiphasic to complete the primary surgery, it is not considered as relaparotomy.

Emergency operations are common occurrence in Obstetric practice. Major emergency operations are often associated with high risk. In some cases, conservative measures fail and need for reopening the abdomen. The purpose of relaparotomy is to manage complications of

the previous surgery, maintain homeostasis, to clear intra-abdominal infection and prevent sepsis. Often it is a difficult decision and requires good clinical judgment. Relaparotomy is a challenging decision and this type of surgery should be undertaken by an experienced surgical team.

Despite Improving the facilities and safety of Caesarean section(CS), it is still a major operation associated with risks and potential complication.<sup>1</sup> Studies reporting complications of re-laparotomy after CS have shown mortality rates ranging from 0.4% to 3.5% depending on the settings where these studies were conducted. A high mortality rate of 45% among relaparotomy was reported from a study done in Dhaka Medical College, Bangladesh.<sup>2</sup> The procedures performed during re-laparotomy after CS

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should be tailored according to the indication of exploration. There is no standard procedure for all cases. Procedures include hysterectomy, uterine artery ligation, Internal iliac artery ligation, Drainage of blood clots and parietal hematoma, securing angles of uterine incision, removal of a foreign body or drainage of pus and suturing abdominal wall and repair of urinary bladder or bowel injuries.<sup>3,4</sup>

Early recognition and treatment of post-operative complications which necessitate surgical exploration are mandatory to achieve a safe and successful outcome.<sup>5</sup>

## 2. Materials and Methods

This study was a cross sectional study conducted at NRI General Hospital, Chinnakani, Guntur during the period from Jan 2016 to Dec 2018. Ethical committee approval was taken before start of the study. The hospital where the study was conducted is one of the largest tertiary hospitals in Andhra Pradesh. Nearly 1513 Caesarean sections occur out of total 3513 deliveries giving a CS rate of 47% and 36 Hysterotomies according to the hospital records during the study period. The labour ward is being supervised by consultant, senior specialist and specialist. The decision of re-laparotomy and the surgical procedure is being taken by the consultant in charge also involving other specialist like Urologist, Gastroenterologist and General Surgeons.

### 2.1. Inclusion criteria

Laparotomies that were done within 60 days of primary surgery, whether it is in the institute or referred from other centre, for the sake of complications of the primary surgery. The indication for the primary surgery selected was related to obstetrics.

### 2.2. Exclusion criteria

Relaparotomies that were done after 60 days of the primary surgery. Indications for primary surgery were gynaecological, post tubectomy and other surgical causes were excluded.

### 2.3. Statistics analysis

Data collected include patients' demographic characteristics, indication for primary surgery, indication for re-laparotomy, details of the procedure done, preoperative hemodynamic state of patients, interval between primary surgery and re-laparotomy, ICU admission, blood transfusion, morbidities and mortalities.

Data were described in terms of mean  $\pm$  SD (standard deviation) for continuous variables and frequencies (number of cases) and percentages for categorical data.

## 3. Results

The study included twelve patients that underwent re-laparotomy after obstetric surgeries. The main demographic variables identified were high parity, age  $>30$  years, high body mass index (BMI), scarred uterus. The mean GA at the time of CS was  $23.5 \pm 4.16$ . Demographic variables in the study population are shown in (Table 1).

The main indication for CS in the study population was repeated CS (50%) followed by fetal distress (25%). The mean time interval between Primary surgery and re-laparotomy was  $30 \pm 15$  days (Table 2). Data of primary surgery is summarized in (Table 3). The main indication for re-laparotomy was Haemorrhage (PPH) (58%) Followed by intraperitoneal collection (16%). The mean haemoglobin at the time of re-laparotomy was  $5.75 \pm 1.65$  gm/dl. The main surgical procedure performed during re-laparotomy was hysterectomy (7 cases). Maternal mortality occurred in three cases (25%). The cause of death was multiple organ failure in one cases, disseminated intravascular coagulopathy (DIC) in two cases. The indications, procedures performed and complications of re-laparotomy are shown in (Tables 4, 5 and 6). The main causes that lead to increased incidence of complication and maternal mortality (secondary outcome) were late diagnosis, primary CS cause, need for high replacement procedure done not correlated to outcome, it was dependent to condition of the patient intraoperative.

Analysis of maternal mortalities revealed no significant difference as regards age, parity, number of previous CS or gestational age at time of CS between cases of maternal deaths and survivals. Cases of maternal deaths were more likely to be haemodynamically unstable at time of re-laparotomy, with significantly lower preoperative haemoglobin levels compared to survivals. Cases of maternal deaths received larger number of blood units transfused compared to survivals. All cases of maternal deaths were admitted to ICU after re-laparotomy. Risk factors and details of CS and re-laparotomy in cases of maternal deaths and survivals are shown in (Table 5).

## 4. Discussion

In this study the incidence, indications, risk factors and outcome of cases requiring relaparotomy in NRI Medical College were analyzed. The incidence of relaparotomy in this study was 0.77% which was similar to study of Sak Muhammet et al<sup>6</sup> 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%,<sup>7</sup> another study from India showed a relaparotomy rate of 0.33%.<sup>8</sup>

The most common indication for re-laparotomy in the current study was Haemorrhage (58%). In a study done in Turkey including 113 cases over four years, intraperitoneal collection accounted for 70.8% of indications for

**Table 1:** Characteristics and risk factors in the study population

Age	<20	20-25	>25
	2	7	3
Parity	Primi	G2	>G2
	3	6	3
BMI	<18	18-25	>25
	2	7	3
GA	<28wks	28wks -37 wks	>37wks
	2	1	9
No. of previous CS		1	>1
	6	6	0
Pre Op HB	<5	5-8	>8
	3	8	1
Primary surgery done in NRI	5		
Referred cases	7		

**Table 2:** Time interval between primary and secondary surgery

Time interval between primary and secondary surgery	Number	Percentage
< 24hrs	7	58
24hrs – 1week	3	25
1 week – 2 mths	2	16

**Table 3:** Data of primary surgery

Indication of primary surgery	Number	Percentage
Repeat CS	6	50
Fetal distress	3	25
PROM	2	16
Hysterotomy	2	16

**Table 4:** Indications of relaparotomy

Indication of relaparotomy	Number	Percentage
Haemorrhage	7	58
Intraperitoneal collection	2	16
Bladder injury	1	8
Omental protusion	1	8
Mid ileal obstruction	1	8

**Table 5:** Procedures done for relaparotomy

Procedure done	Number	Percentage
Subtotal hysterectomy	7	58
Collection drainage with cauterization of bleeder	2	16
Bladder repair	1	8
Omental removal and resuturing of rectus sheath	1	8
Ileoileal reanastomosis and adhesiolysis	1	8

**Table 6:** Complications

	Number	Percentage
Hemodynamically stable	6	50
Unstable	6	50
	Number	
ICU admission	7/12	58
Massive blood transfusion	8/12	66
DIC	2/12	16
MODS	1/12	8
Maternal death	3/12	25

re-laparotomy followed by PPH (14.7%).<sup>2</sup> In the study done Farazi et al., intra-peritoneal collection was the indication for re-laparotomy in 44% of cases.<sup>9</sup> On the other hand, the leading causes identified by Shinar and colleagues were hemodynamic shock and subcutaneous hematoma.<sup>10</sup>

The main surgical procedure performed during re-laparotomy in the current study was subtotal hysterectomy (7 cases). These results are similar to those quoted from other studies.<sup>9</sup> The time interval between CS and re-laparotomy was variable according to the indication of re-laparotomy. Short time intervals were noticed in cases of intra-peritoneal collection and PPH, while relatively long intervals were noticed in cases of sepsis.

There is wide variety of maternal complication reported in different studies.<sup>9,11-13</sup> In the current study, the most common complication reported was massive blood transfusion (66%) followed by ICU admission (58%). Three maternal deaths were reported in this study. A similar rate was reported in a study in Bangladesh.<sup>2</sup> Khan et al. reported a case fatality rate of 18.5%.<sup>13</sup> A rate of 12.76% and 15.38% were reported in two studies from India.<sup>14,15</sup> while no deaths were encountered in the study done by Lurie et al.<sup>16</sup> This wide variation in incidence of maternal mortality reported in different studies is due to variable availability of safe procedure, skilled personnel, adequate blood components, facilities for rapid transfer of complicated cases, close monitoring and timely decision for intervention

## 5. Conclusion

Centers carrying out caesarean sections in peripheral hospitals should have blood transfusion facilities and experienced staff. Use of partograms to prevent prolonged and obstructed labors should be mandatory. Careful and aseptic surgical technique, meticulous hemostasis especially placental bed, uterine angles, prophylactic balloon catheters and on the undersurface of rectus muscle are important steps to reduce the incidence of relaparotomy. Although caesarean section is a life- saving and most common obstetric operation, relaparotomy after caesarean is considered to be near miss fatality having high mortality.

## 6. Source of funding

None.

## 7. Conflict of interest

None.

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**Cite this article:** Thombarapu U, Veeravalli S, Koneru GR, Kodey PD. Relaparotomies after obstetric surgeries at a tertiary care hospital, NRI General Hospital, Chinnakakani, Guntur. *Indian J Obstet Gynecol Res* 2019;6(4):448–451.