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Original Research Article

## A five-year study of postpartum exploratory laparotomy in a tertiary care teaching hospital

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### ABSTRACT

**Background:** Emergency postpartum exploratory laparotomy is a major surgical venture invariably performed in the setting of life threatening conditions during or immediately after abdominal and vaginal deliveries. Tertiary health care centers play a prime role in such cases to avoid any mishap. In spite of that sometimes sudden such incidences in the form of maternal morbidity or mortality occur which makes us think upon.

**Methods:** A retrospective study was conducted in Dr. SCGMC, Nanded, a tertiary health care centre in Nanded Maharashtra, over a period of 5 years in the Department of OBGY i.e. between January 2012 to December 2016 of the cases who required postpartum exploratory laparotomy.

**Results:** Out of the total deliveries in our hospital and cases referred from outside hospital from January 2012 to December 2016 i.e a span of 5 years including 62525 cases under study, 39 cases required postpartum exploratory laparotomy. We found that postpartum hemorrhage is the most common cause requiring postpartum exploratory laparotomy. Other causes requiring postpartum exploratory laparotomy are burst abdomen, puerperal sepsis, rectus muscle hematoma etc.

**Conclusions:** In the era of modern obstetrics, to fulfill the main objective of obstetrics of having healthy mother and healthy baby at the end of pregnancy, postpartum exploratory laparotomy is a procedure done as an extreme measure to reduce maternal mortality and morbidity. We observed that majority of the patients who required exploratory laparotomy in postpartum period suffered morbidity in the form of prolonged hospital stay or transfusion of blood or blood products, need of ventilator support or ICU care. Though the patients suffered morbidity, mortality could be prevented by timely intervention in majority of the patients.

**Keywords:** Burst abdomen, Exploratory laparotomy, Muscle haematoma, Post partum hemorrhage

### INTRODUCTION

The practice of operative obstetrics is underpinned by the Hippocratic exhortation 'Primum non nocere' meaning 'first do no harm'. Unfortunately, errors do occur either by omission or commission. Intrapartum care is particularly susceptible to patients safety as there are two patients in one. However, recognizing and assessing patients at risk and appropriate and timely intervention

would go a long way in ensuring a better outcome in this otherwise difficult situation.

Emergency postpartum exploratory laparotomy is a major surgical venture invariably performed in the setting of life threatening conditions during or immediately after abdominal and vaginal deliveries. Despite advances in medical and surgical fields, post partum hemorrhage continues to be the leading cause of maternal morbidity

and mortality accounting for one quarter of cases of maternal mortality worldwide.<sup>1</sup> Postpartum exploratory laparotomy is the most dramatic operation in modern obstetrics and is generally performed when all conservative measures have failed in the setting of life threatening condition. The unplanned nature of the surgery and the need for performing it expeditiously, compound matters.

Tertiary health care centers play a prime role in such cases to avoid any mishap. In spite of that sometimes sudden such incidences in the form of maternal morbidity or mortality occur which makes us think upon. So, we conducted a retrospective study of the patients who required exploratory laparotomy after giving birth either vaginally or by caesarean section.

In many studies, it is found that most common cause for postpartum exploratory laparotomy was postpartum haemorrhage. Conservative measures to arrest bleeding are initially tried before considering emergency postpartum hysterectomy.<sup>2</sup> The measures include uterotonic drugs, hemostatic sutures, uterine or internal iliac artery ligation.<sup>3-6</sup> In cases not responding to conservative measures emergency obstetric hysterectomy is the only way to save life of the patient.

## METHODS

A retrospective study was conducted in Dr SCGMC, Nanded, a tertiary health care centre in Nanded Maharashtra, over a period of 5 years in the department of OBGY i.e between January 2012 to December 2016 of the cases who required postpartum exploratory laparotomy.

We obtained the medical records like demographic details, prev obstetric history, details of present pregnancy, mode of delivery, amount of blood transfusion, hospital stay, indications for exploratory laparotomy and maternal outcome arising from it.

In this study, we collected data of all the deliveries primarily conducted in our center and the cases referred from peripheries. The study included all the cases of normal vaginal delivery, assisted vaginal deliveries and caesarean section.

## RESULTS

Out of the total deliveries in our hospital and cases referred from outside hospital from January 2012 to December 2016 i.e a span of 5 years including 62525 cases under study, 39cases required postpartum exploratory laparotomy.

Among the patients requiring postpartum exploratory laparotomy (39 cases) we found that 61.5 %were primipara ( 24 cases ) and 38.46% (15 cases) of the cases were multipara (Table 1).

**Table 1: Parity (primipara v/s multipara).**

Parity	Number	Percentage
Primipara	24	61.54
Multipara	15	38.46
Total	39	100

46.15% of the cases requiring postpartum exploratory laparotomy followed a full term normal delivery and 53.84% followed emergency caesarean section (Table 2).

**Table 2: Mode of delivery (FTND v/s LSCS).**

Mode of delivery	Number	Percentage
FTND	18	46.15
Caesarean section	21	53.84
Total	39	100

It was found that there were 15 cases of atonic postpartum haemorrhage which required emergency laparotomy to save the patient from life threatening post partum haemorrhage. It accounted for 38.46% of the cases requiring emergency laparotomy in postpartum period. There were 6 cases of burst abdomen that accounted for 15.38% cases requiring laparotomy following caesarean section. There were 4 cases of placenta accreta that required emergency postpartum hysterectomy. It accounted for 10.25% of total cases. We had a total of 3 cases of bladder injury following caesarean section that required exploration for bladder repair. It accounted for 7.69% cases. There were 3 cases of perperuial sepsis that needed exploratory laparotomy with pus drainage from the abdominal cavity and out of the three one case required post operative exploration and hysterectomy. There was a case of haematoma in rectus muscle following caesarean section that required emergency laparotomy on day 2 for drainage of haematoma and haemostasis was achieved.

**Table 3: Causes for postpartum exploratory laparotomy.**

Causes	Number	Percentage
Atonic PPH	15	38.46
Burst abdomen	06	15.38
Placenta accrete with retained placenta	04	10.25
Bladder injury	03	07.69
Puerperuial sepsis	03	07.69
Uterine inversion	02	05.12
Secondary haemorrhage	02	05.12
Muscle haematoma	01	02.56
Uterine wound dehiscence	01	02.56
Subacute intestinal obstruction (band adhesion)	01	02.56
Others	01	02.56
Total	39	100

Another case of uterine wound dehiscence following caesarean section was referred from outside hospital for which exploratory laparotomy and repair was done. There was a patient who developed subacute intestinal obstruction following full term normal delivery and emergency laparotomy was done. There were band adhesions and adhesiolysis was done. A patient was referred from outside hospital with h/o LSCS done 2 days back with hypotension and abdominal distension. Patient was suspected to have internal haemorrhage and was taken for emergency laparotomy. No cause was found. It was a case of negative laparotomy (Table 3).

**Table 4: Surgical interventions done during exploratory laparotomy.**

Surgical intervention	Number	Percentage
B Lynch	00	00
Internal iliac artery ligation	07	17.94
B Lynch+ Internal iliac artery ligation	07	17.94
Obstetric hysterectomy	08	20.51
Repair of burst abdomen	06	15.38
Bladder repair	03	07.69
Exploratory laparotomy with pus drainage	03	07.69
Exploratory laparotomy with uterine wound repair	01	02.56
Exploratory laparotomy with draining muscle haematoma and repair	01	02.56
Exploratory laparotomy with adhesiolysis	01	02.56
Re exploratory laparotomy	01	02.56
Negative laparotomy	01	02.56
Total	39	100

Out of 39 cases of postpartum exploratory laparotomy, in 7 cases internal iliac artery ligation was done. i.e in 17.94% of postpartum exploratory laparotomy internal artery ligation was done to prevent PPH. In 7 cases (17.94%) B lynch with internal artery ligation was done. Eight patients of postpartum exploratory laparotomy required obstetric hysterectomy. i.e 20.51% cases required obstetric hysterectomy as a last resort in life threatening postpartum haemorrhage. Six patients of burst abdomen were treated with rectus gape resuturing and closure of wound gape. It accounted for 15.38% of the cases. In 3 patients (7.69% cases) of bladder injury, bladder repair was done. In 3 cases (7.69%) exploratory laparotomy with drainage of pus in the peritoneal cavity was done. In 1 case of muscle haematoma, exploratory laparotomy with haematoma drainage and repair was done (Table 4).

Outcome of the patients requiring postpartum exploratory laparotomy is of great importance to access the efficacy of health care delivery system. In present study, we found that out of 39 cases requiring postpartum exploratory

laparotomy there were 29 cases (74.35%) in which the baby and mother recovered well and were discharged in good health. There were 3 cases (7.69%) of maternal mortality. In 6 cases (15.38%) there was perinatal mortality with mother in the state of good health. In 1 case (2.56%) there was both perinatal and maternal mortality (Table 5).

**Table 5: Maternal and perinatal outcome in the cases.**

Outcome	Number	Percentage
Maternal mortality	03	07.69
Neonatal mortality [IUFD or still birth]	06	15.38
Maternal and neonatal mortality	01	02.56
Mother and baby well	29	74.35
Total	39	100

## DISCUSSION

The study is unique in its nature and content. There are no similar studies available for comparison of results.

In present study, we found that atonic PPH is the most common cause of emergency postpartum exploratory laparotomy. In some of the cases bleeding could be controlled by internal iliac artery ligation whereas in some cases peripartum hysterectomy was needed. Emergency peripartum hysterectomy (EPH) is a major surgical venture invariably performed in the setting of life threatening hemorrhage during or immediately after abdominal and vaginal deliveries.<sup>3,4,7-9</sup>

In our study we found that burst abdomen is also an important cause of post caesarean exploratory laparotomy. Wound complication rate was same for women with previous one caesarean and women without any previous caesarean, but the rate was 50% in cases of previous two caesarean cases.<sup>10</sup>

According to the Royal College of Obstetricians and Gynecologists (RCOG), caesarean sections carry a risk of bladder injury 1 in 1000 cases.<sup>11</sup> For post caesarean pregnancy – chance of injuries increases 3-fold. (0.6% vs 0.19%; repeat caesarean vs primary caesarean).<sup>12</sup>

Maternal sepsis is most commonly understood to mean any infection occurring in a woman between the onset of labour or rupture of membranes to 42 days postpartum.<sup>13</sup> Changes in the immune system during pregnancy to avoid rejection of the foetus increase maternal susceptibility to particular infections.<sup>14</sup> In stage 4 puerperal sepsis exploratory laparotomy and drainage of pus is required. Injectable antibiotics are given to control infection. In present study, there was a case of puerperal sepsis with peritonitis with uterine incisional necrosis. Peritonitis caused by uterine incisional necrosis or from bowel perforation must be treated promptly with surgical intervention.<sup>15</sup>

In one of our case there was a rectus muscle haematoma that required exploratory laparotomy and drainage. Rectus sheath hematoma is an uncommon complication following caesarean section and often clinically misdiagnosed cause of abdominal pains.<sup>16,17</sup> Conservative treatment is appropriate for patients who are hemodynamically stable and have small non-expanding hematoma in which symptoms are mild and the diagnosis is certain and it includes rest, analgesics, hematoma compression, ice packs, treatment of predisposing conditions and blood transfusion if necessary.<sup>17,18</sup> Surgical intervention is needed for those with hemodynamic instability, expanding hematomas or symptomatic anaemia and it includes evacuation of the hematoma, ligation of bleeding vessels, repair of rectus sheath, drainage if indicated.

In our study in treating the cases of life threatening PPH, exploratory laparotomy was done in which B lynch with internal iliac artery ligation and obstetric hysterectomy was performed as a definitive management. Bilateral iliac artery ligation is an effective second-line procedure to control massive obstetric and gynaecological haemorrhage, it is life-saving in certain cases and has the advantage that it preserves fertility, which is particularly important in young women of low parity.<sup>19</sup> B-Lynch suturing technique (brace suture) is particularly useful because of its simplicity of application, life-saving potential, relative safety and capacity for preserving the uterus and subsequent fertility.<sup>20</sup> Hysterectomy following cesarean section (CS) was first described by Porro, and was used to prevent maternal mortality due to post partum hemorrhage.<sup>21</sup>

## CONCLUSION

In the era of modern obstetrics, to fulfill the main objective of obstetrics of having healthy mother and healthy baby at the end of pregnancy, postpartum exploratory laparotomy is a procedure done as an extreme measure to reduce maternal mortality and morbidity. Postpartum exploratory laparotomy is a rare procedure done during life threatening conditions. In present study, we found that postpartum haemorrhage is the most common cause for postpartum exploratory laparotomy. In order to control life threatening haemorrhage and to save the life of patient exploratory laparotomy with B lynch or internal iliac artery ligation or even obstetric hysterectomy is done. Burst abdomen is also among the most important causes for postpartum exploratory laparotomy. Under use of antimicrobial prophylaxis, pre-operative remote infection, chorioamnionitis, pre-operative systemic disease, pre-eclampsia. increased surgical blood loss are some factors held responsible for surgical site infection and burst abdomen. Grade 4 puerperal sepsis with peritonitis and uterine incisional necrosis required emergency exploratory laparotomy for pus drainage with higher antibiotic cover to treat the condition. We observed that majority of the patients who required exploratory laparotomy in postpartum period

suffered morbidity in the form of prolonged hospital stay or transfusion of blood and blood products, need of ventilatory support or ICU care. Though the patients suffered morbidity, mortality could be prevented by prompt surgical intervention i.e exploratory laparotomy in majority of the patients.

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