

The Incidence of Obstetrics and Gynecology Cases Returning to Operation Theater due to Postoperative Complications in a Tertiary Care Hospital

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Keywords

Relaparotomy · Caesarean section · Elective · Emergency · Adhesiolysis

Abstract

Introduction: Unexpected return to operation theater carries high rate of morbidity and mortality for patients, in addition to increased hospital stay. A close look at such cases would help in identifying high-risk patients thus improving outcome. The aim of the study was to evaluate the incidence of Obs/Gyn cases returning to OT due to postoperative complications in a tertiary care hospital. **Methods:** It was a retrospective observational study done at tertiary care hospital settings affiliated with academic center in the UAE. The records of patients were scrutinized, and all booked and non-booked pregnant patients of any age undergoing emergency or elective obstetrics or gynecological procedure from January 1, 2016 to December 31, 2020 were enrolled in the study. Relaparotomy was defined as cases opened within same admission and causally associated with previous primary obstetrics or gynecological operation. **Result:** A total of 21,276 operations were performed from 2016 to 2020. In these 4 years, 33 patients had unexpected return to

operation theater making the incidence of re-exploration to 0.15% (33/21,276). There were 16 (48.48%) emergency operations and 17 (51.52%) elective operations previously done on these patients. The most common primary procedure for which re-exploration was done was lower segment caesarean section done in 11 (33.3%) of cases followed by laparoscopic adhesiolysis and myomectomy. Hematoma in the pelvic region and ooze from raw area were the most common per-operative finding in 48.48% of cases. There was no mortality in the abovementioned cases; however, 2 (6.06%) had early acute kidney injury and both recovered from it. **Discussion:** The incidence of relaparotomy in our hospital is comparable to international literature. Most patients returned to OT within 48 h. Bleeding was the most common indication for laparotomy, and lower segment cesarean section was most common primary operation. This study underscores the need for meticulous hemostasis before closing to avoid return to OT. **Conclusion:** Return to OT for the right indication saves life. Mortality in such cases may be reduced by earlier detection and treatment of postoperative problems, consideration of relaparotomy, active ICU monitoring, and postoperative care.

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Introduction

The prevalence of caesarean deliveries has rapidly increased during the past several decades worldwide [1]. Caesarean operations in spite of recent advances in surgical field still pose inherent risks and potential complications, despite the fact that their safety has greatly enhanced. When conservative procedures do not work to treat the underlying cause, the patient may need to go back to the operating room to have their abdomens reopened [2]. A relaparotomy is an unanticipated reintervention performed during the immediate postoperative period following a laparotomy that is directly connected to the original procedure. With rare exceptions, relaparotomy operations are usually conducted within the same hospital stay [3, 4]. The main purpose of re-exploration is to address the ongoing hemorrhage, prevent or minimize sepsis, and enhance the recovery of patient. It can be categorized based on the situation, the urgency, and the timing [5].

Anastomotic leakage, deep-seated infection, obstruction, abdominal dehiscence, iatrogenic abdominal gut injury, and bleeding are a few of the significant findings of relaparotomy [6–11]. Relaparotomy incidence can be reduced by knowing the contributing causes and adopting the necessary precautions. Relaparotomy risk factors include urgent first surgery, sepsis, and main suppurative illnesses. According to several published research, relaparotomy incidence ranges from 0.5 to 28% [7]. After relaparotomy, mortality might vary from 24 to 71%. Old age, septic peritonitis as primary cause of 1st operation, and multiple organ failure are factors linked to increased mortality [8].

This retrospective research was conducted at the Latifa Hospital in Dubai to examine the prevalence of relaparotomies from 2016 to 2020. Studying relaparotomy indications and assessing mortality and morbidity after relaparotomy were the main objectives.

Materials and Methods

This investigation was carried out retrospectively at Latifa Hospital by the Dubai Health Authority (Dubai, UAE). All procedures were carried out with the Ethical Committee's prior approval and in compliance with predetermined standards. As only the records of patients were scrutinized so no informed consent was required. The sampling was carried out in a sequential, non-random fashion. All the booked and non-booked pregnant patients of any age undergoing emergency or elective obstetrics or gynecological procedure from January 1, 2016 to December 31, 2020 were enrolled in the study. Relaparotomy

was defined as cases opened within same admission and causally associated with previous primary obstetrics or gynecological operation [3]. The patients who were operated on in tandem with other surgical departments such as general surgery and urology, laparotomies that were completed and performed to determine the necessity of main surgery from the initial procedure, and instances of the major case that were either gynecological or obstetric were excluded.

The demographic data collected in data sheet were age, date of primary surgery, indication of 1st surgery, per-operative findings, postoperative sequel. Patients who were reoperated had additional information as time lapse between first and relook operation, pre-operative condition and progression of patient, laboratory and radiological findings, per-operative findings, amount of blood loss, and postoperative admission and progression. The data were analyzed using Statistical Package for the Social Sciences version 21. Mean and standard deviation were calculated for age. The nonparametric variables such as amount of blood loss were represented in median and interquartile range which were compared using the Mann-Whitney U test. Time lapse between two surgeries was recategorized into groups. Qualitative variables were representative in the form of percentages as indication of first surgery, findings of second surgeries, ICU monitoring, and postoperative sequel.

Results

A total of 21,276 operations were performed from 2016 to 2020. There were 12,216 (57.45%) gynecological surgeries, and 9,060 (42.58%) were obstetric operations. There were 11,790 (55.41%) elective and 9,486 (44.59%) emergency operations during this time. Further distribution among gynecology and obstetrics is shown in Figure 1. In these 4 years, 33 patients had unexpected return to operation theater making the incidence of re-exploration to 0.15%. There were 16 (48.48%) emergency operations and 17 (51.52%) elective operations previously done on these patients. So the incidence in emergency cases was 0.158%, and in elective operations it was 0.144%. Mean age of all patients was 35.18 ± 7.91 years. 17 (51.52%) were obstetrical procedures, and 16 (48.48%) were gynecological surgeries. Moreover, there were 13 (39.4%) emergency cases and 20 (60.6%) elective primary operations.

Table 1 shows the primary procedures being carried out on the patients who were later re-explored. The most common primary procedure for which re-exploration was done was lower segment caesarean section, which was done in one-third of cases. Followed by laparoscopic adhesiolysis and myomectomy. The suspected cause and per-operative findings in cases who returned to operation theater are given in Table 2. The most common cause of return was hematoma in the pelvic region in 24.24% of cases, while equal number had ooze from raw area.

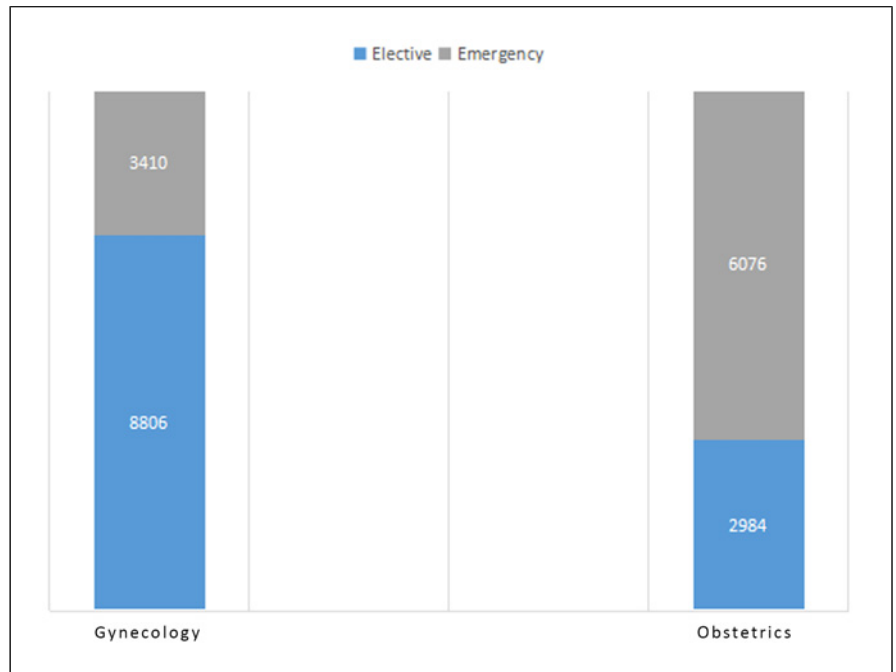


Fig. 1. Number of gynecological and obstetrics emergency/elective procedures performed in 4 years.

Table 1. Primary surgeries of patients who had re-exploration ($n = 33$)

Subject No.	Item	Cases, n (%)
1	Lower segment cesarean sections	11 (33.33)
2	Laparoscopic adhesiolysis	4 (12.12)
3	Myomectomy	4 (12.12)
4	Retained products of conception	2 (6.06)
5	Normal vaginal delivery	2 (6.06)
6	Ovarian cystectomy	2 (6.06)
7	Hysterectomy	1 (3.03)
8	Laparotomy	2 (6.06)
9	Ovarian cyst aspiration and detorsion	1 (3.03)
10	Septic miscarriage	1 (3.03)
11	Total lap hysterectomy	1 (3.03)
12	Trans-vaginal tape with posterior repair	1 (3.03)
13	Vacuum delivery	1 (3.03)

When analyzing the general and laboratory/radiological conditions of patients, 27 (81.81%) had abnormal laboratory findings such as abrupt fall in hemoglobin followed by signs of shock in 25 (75.75%) cases. Excruciating pain was present in 23 (69.69%) patients, whereas 10 (30.30%) had ooze from wound and 9 (27.27%) had continuous vaginal bleeding. Minimum amount of blood loss was 20 mL and maximum was 13 L. Median was 1,000 mL, and interquartile range was 1,725 mL. Further distribution of median blood loss between gynecology and obstetrics is

shown in Figure 2. Blood products such as red cell concentrates and fresh frozen plasma were transfused in 27 (81.8%) patients, while 9 (27.27%) had massive transfusions. There were no known major reactions noted with transfusions. Figure 3 shows the time lapse between the first and second surgery. ICU admission was warranted in 20 (60.6%) cases, whereas 12 (36.36%) were returned to ward and 1 (3.03%) had admission to HDU. There was no mortality in the abovementioned cases; however, 2 (6.06%) had early acute kidney injury and both recovered from it.

Discussion

There were a total of 21,276 surgeries performed with incidence of re-exploration of 0.15% over a span of 4 years. Reviewing international literature, it is fairly within acceptable limit. The incidence was less than 1% in the majority of the other investigations. Relaparotomy rates varied between 0.2% and 0.4% in studies by Levin et al. [9] and Shinar et al. [10]. Birkmeyer and colleagues demonstrated that there are significant implications of re-exploration and pointed out shortcomings in primary surgery to be the main cause [11]. Unfortunately, till date no guidelines have been formulated to ascertain an acceptable reoperation rate. Although there is paucity of data on unplanned return to OT in gynecology and obstetrics, however, it is estimated to account for 11.1% of all unscheduled returns to OT [12].

Table 2. Suspected cause and per-operative findings in cases who returned to operation theater ($n = 33$)

Subject No.	Item	Cases, n (%)
1	Pelvic hematoma	8 (24.24)
2	Intra-abdominal ooze from raw area	8 (24.24)
3	Postpartum hemorrhage	5 (15.15)
5	Perforation	4 (12.12)
7	Arterial bleed from ovarian bed	1 (3.03)
8	Bleeding from umbilical port site	1 (3.03)
9	Bleeding from uterine angle and broad ligament hematoma	1 (3.03)
10	Deep abscess	1 (3.03)
11	Removal of abdominal pack	1 (3.03)
12	Retained intra-uterine contraceptive device	1 (3.03)
13	Retained products of conceptions	1 (3.03)
14	Ruptured aorta	1 (3.03)

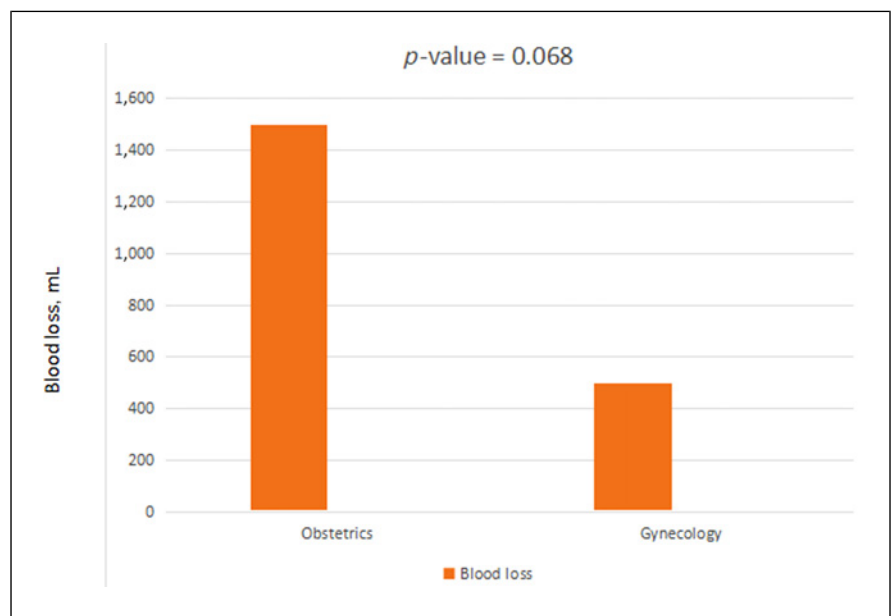


Fig. 2. Interquartile range blood loss in gynecological and obstetrics cases.

The incidence of relook operation in emergency cases was 0.158% (16/9,486) and in elective operations it was 0.144% (15/11,790). Literature review shows conflicting evidence in terms of relaparotomies between emergency and elective primary surgeries. A study by Mahfouz I and colleagues showed that 94% of their operations that required relook were elective [13]. Alternatively, Ahmed et al. [14] showed that 76.4% of caesareans performed initially that required reoperation were emergency.

While there was no statistical difference between gynecological and obstetrics reoperated cases (48.48% vs. 51.52%), caesarean section was the most prevalent primary surgery, for which relook laparotomy was required in 11 (33.3%) instances. According to Kumari's research,

first caesarean sections were performed in 35.6% of instances, despite the fact that the majority of such procedures were elective or referred [15].

Bleeding and confined hematoma were responsible for 48.48% of all cases. According to Srivastava et al. [16], intraperitoneal hemorrhage (31.5%), PPH (15.7%), and rectus sheath hematoma (15.7%) were the most common reasons for relaparotomy. However, PPH was the most frequent cause of relaparotomy in Seal et al. [17] study in 42% of cases, followed by rectus sheath hematoma in 27.3% and hemoperitoneum in 7.58% of cases. Importance of meticulous dissection during primary surgery and focusing on basic skills such as ensuring hemostasis can hardly be overemphasized and may help prevent return to OT, especially

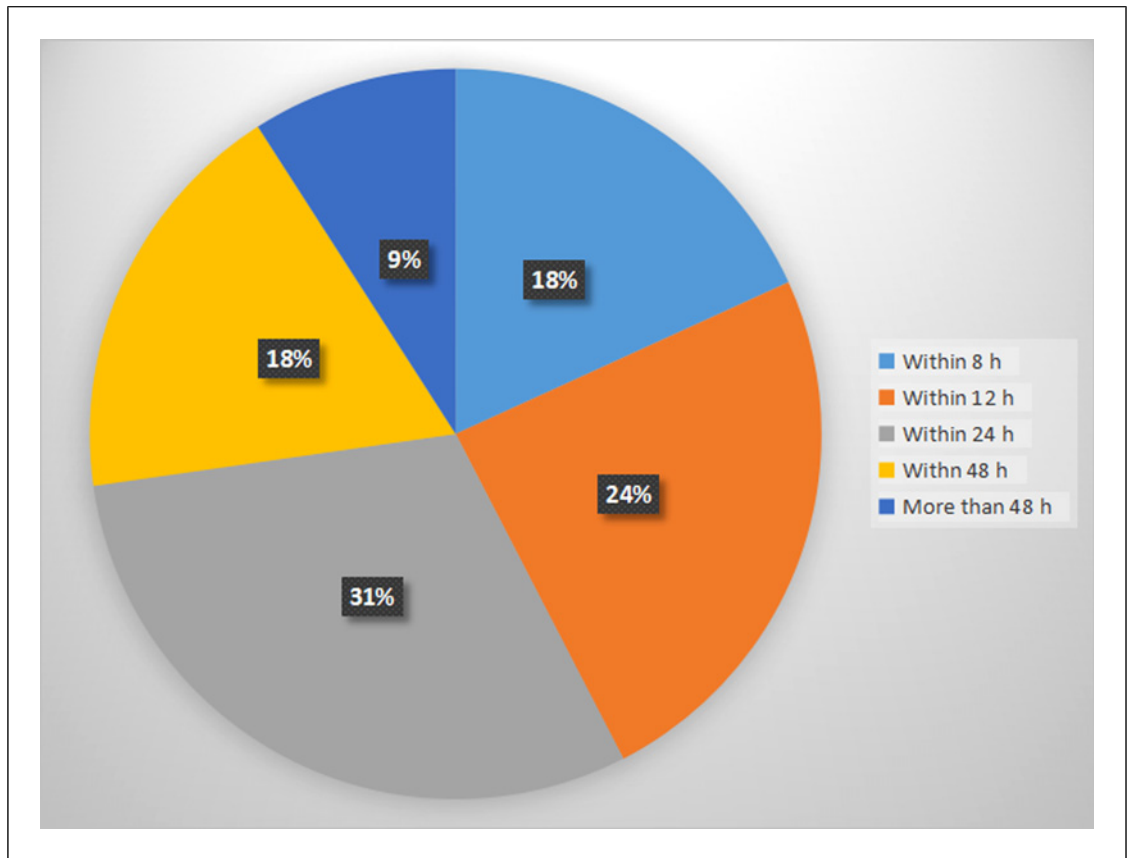


Fig. 3. Time lapse between the first and second surgery.

when it is due to bleeding, however, exceptions such as deranged clotting must also be kept in mind and treated promptly.

A close look at the patient's general condition and her laboratory parameters is of paramount importance. In our patients, 81.81% of patients had abnormal laboratory findings such as drop in hemoglobin (>2 g/L) and 75.75% showed abnormal vitals. This clearly shows the importance of early postoperative monitoring. The bleeding patients especially shows such signs and high index of suspicion warrants close monitoring of high-risk cases [18].

Analysis showed that 73% of cases returned to OT within 24 h of primary operation and 91% within 48 h. Kumari and colleagues showed that 57.1% of their patients return to OT within 24 h [14]. Maternal mortality and morbidity are very high in relaparotomy cases and have been reported to be 2.5% in Ahmed I and as high as 15.78% in another study in India [14, 19]. We had no reported mortality in our cases; however, 2 patients had acute kidney injury and one needed dialysis but both recovered.

Conclusion

Relaparotomy when done for the right indications can save lives. Most patients returned to OT within 48 h. Bleeding was the most common indication for laparotomy and lower segment cesarean section was most common primary operation. This study underscores the need for meticulous hemostasis before closing to avoid return to OT.

Acknowledgments

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Statement of Ethics

All procedures followed were in accordance with the ethical standards of the responsible committee and with the Helsinki Declaration of 1975, as revised in 2000. Study protocol was approved by the Dubai Scientific Research Ethics Committee (DSREC), Dubai

Health Authority DSREC-09/2021_31, dated October 7, 2021. Patients' consent was obtained as part of the general informed consent form that was signed upon admission to the Dubai Health Authority and stated that de-identified data may be utilized for research while the study was done in complete confidence.

Conflict of Interest Statement

The authors have no conflicts of interest to disclose.

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Author Contributions

Nighat Aftab conceived and designed the research. Saima Faraz did manuscript writing. Asma Ahmed Fahad and Raghunandini Koratkar did data collection and compiled international research. Amar Omer did data analysis.

Data Availability Statement

The data of the study are not openly available as data were collected from electronic patients' record and can compromise the privacy of patients. However, data are available upon reasonable request from the correspondence author.