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ORIGINAL ARTICLE

Outcomes of Emergency Laparotomy in Pregnant and Postpartum Patients

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ABSTRACT

Background: Emergency laparotomy in pregnant and postpartum patients is a rare but critical intervention, associated with high maternal and fetal morbidity and mortality. Obstetric and non-obstetric emergencies, including uterine rupture, postpartum hemorrhage, intestinal obstruction, and perforation, often necessitate urgent surgical exploration. Understanding local patterns of indications and outcomes is essential for improving clinical protocols and multidisciplinary care.

Objective: To assess maternal and fetal outcomes following emergency laparotomy in pregnant and postpartum patients and identify factors associated with adverse clinical outcomes at a tertiary care hospital in Peshawar.

Methods: This hospital-based observational study included all pregnant women and postpartum patients (up to 42 days post-delivery) undergoing emergency laparotomy over a defined study period. Demographic, clinical, operative, and postoperative data were collected using a structured proforma. Maternal outcomes included ICU admission, blood transfusion, surgical site infection, re-exploration, and mortality. Fetal outcomes assessed among pregnant patients included live birth, preterm delivery, fetal distress, and intrauterine fetal demise. Statistical analysis was performed using SPSS, with p-values <0.05 considered significant.

Results: A total of 120 patients were analyzed (74 pregnant, 46 postpartum). Postpartum patients had significantly higher ICU admission (47.8% vs 27.0%, p=0.02), blood transfusion (82.6% vs 54.1%, p=0.001), and maternal mortality (13.0% vs 2.7%, p=0.04) compared with pregnant patients. Live birth was achieved in 70.3% of pregnant patients, with preterm delivery in 18.9% and fetal distress in 8.1%. Obstetric indications predominated in both groups.

Conclusion: Emergency laparotomy in pregnant and postpartum patients carries substantial maternal and fetal risks, particularly in the postpartum period. Early recognition, timely surgical intervention, and multidisciplinary management are crucial to optimize outcomes.

Keywords: Emergency laparotomy, pregnancy, postpartum, maternal outcomes.

INTRODUCTION

This is because emergency laparotomy in pregnant and postpartum patients is a serious type of surgery, and both maternal and fetal risks are high. It is quite rare, but cannot be avoided in life-threatening conditions like uterine rupture, uncontrolled postpartum hemorrhage, intestinal obstruction, perforation, and severe intra-abdominal sepsis. These emergencies are highly challenging in tertiary care units and environments with low and middle income countries, because of late presentation, scarce resources, and complicated physiological alterations linked to pregnancy and puerperium[1,2].

Pregnancy is also marked by significant anatomical and physiological changes such as elevated blood circulation, coagulation patterns and abdominal visceral expulsion. These alterations tend to blur ethics, resulting in delays in diagnosing and presenting the disease at an advanced stage. As a result, pregnant women with emergency laparotomy face an increased risk of perioperative events, and it is necessary to make decisions and manage this condition multidisciplinarily in the shortest possible time to achieve positive outcomes[3,4].

Non-obstetric indications given most commonly to emergency laparotomy in pregnancy include appendicitis, bowel obstruction or perforation and obstetric catastrophes such as uterine rupture and placental abnormalities. The necessity to perform the surgery immediately usually overrides the issue of fetal exposure to anesthesia or surgical stress since maternal survival is the main determinant of how the fetus would be[5]. However, the fetal morbidity, premature birth, and infants loss are also valuable considerations.

Emergency laparotomy is often urgently needed in the postpartum period due to severe postpartum bleeding, which is not responsive to medical and conservative surgical interventions, intra-abdominal sepsis, or cesarean section complications. Postpartum patients most of the times are in critical status, having experienced hypovolemia or sepsis, hence, exposing them to postoperative morbidity and mortality. Postpartum hemorrhage has been reported to be one of the top signs of relaparotomy when it comes to obstetric practice[4].

The maternal outcomes in the realm of emergency laparotomy depend on various factors among them being the indication to undergo surgery, the state of hemodynamics at admission, technical competence of surgery and the presence of intensive care support. The complications reported are wound infection, extended hospitalization, blood transfusion requirement, multi-organ dysfunction, and in the worst case, the death of the mother. Such results are more likely in resource-constrained environments where late referrals are experienced[6].

The results of fetuses of pregnant women exposed to emergency laparotomy are largely dependent on the gestational age, maternal illness severity and events during surgery. They have also reported adverse outcomes like fetal distress, preterm birth and intrauterine fetal death, especially when the surgery is done during high gestation or when there is maternal shock or sepsis[7,8]. Irrespective of these risks, early surgical intervention has been proven to have better overall survival rates as compared to late intervention or conservative treatment.

Emergency laparotomy in pregnant and postpartum women is a major burden to surgical and obstetric services in tertiary care hospitals with high population like the Peshawar hospitals. The knowledge about local trends on indications and outcomes is important to enhance clinical practice, multidisciplinary cooperation, and resource optimization. Nevertheless, the information on this area is still scarce, which underscores the importance of institutional studies that should be focused to inform evidence-based practice.

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Objective: To evaluate the outcome of emergency laparotomy on maternal and fetal health in pregnant and postpartum patients in a tertiary care hospital in Peshawar and also to determine the factors linked to unfavorable clinical outcomes.

METHODOLOGY

Study Design and Setting: This was a hospital based observational study that was undertaken Department of Surgery and Department of Gynae/Obs Gomal Medical College D I Khan. The hospital is a large referral unit to obstetric and surgical emergencies of both urban and rural Khyber Pakhtunkhwa and surrounding places. The research aimed at assessing the results of emergency laparotomy carried out in pregnant and postpartum women with acute evidence of surgery or obstetric emergency.

Study Duration: This was conducted within a specified time frame of 6 months from February 2022 to July 2023. This time frame was chosen to allow a sufficient sample size and to provide a large variation of indications and outcomes of emergency laparotomy at various gestational and postpartum stages.

Study Population: All pregnant females of any gestational age and postpartum patients (within 42 days of birth) with emergency laparotomy during the study period were included. Emergency laparotomy was characterized as an urgent operation involving open abdomen performed in a limited duration because of conditions that are life threatening in that any delay may cause maternal or fetal morbidity or mortality.

Inclusion and Exclusion Criteria: Inclusion criteria included patients who were pregnant or postpartum and were involved in emergency laparotomy due to obstetric or non-obstetric causes and agreed to be part of the study or whose records were accessible in the hospitals. The study excluded the patients who had undergone elective abdominal surgery, laparoscopic surgeries that were not converted to open laparotomy, and the patients whose medical records were not complete.

Data Collection Procedure: The structured proforma used as data collection tools was custom-made to fit the study. Patient medical record information, operative notes, anesthesia charts and postoperative monitoring sheets were sources of information. The variables which were noted were demographic, parity, gestational age or postpartum, indication of laparotomy, preoperative clinical status, laboratory parameters, intraoperative findings, the nature of surgical procedure done, and the requirement of blood transfusion or admission to intensive care unit.

Perioperative Management and Surgical Technique.: Standard preoperative resuscitation, such as fluid management, blood transfusion when needed, and antibiotic prophylaxis as per hospital protocols were provided to all patients. Pregnant women underwent surgical procedures done by the senior obstetricians or general surgeons, where a multidisciplinary association of anesthesiologists and neonatologists would be involved. The standard of surgery and incision relied on the pathology and intraoperative observations.

Outcome Measures: Mother morbidity and mortality were used as primary outcome measures. Maternal morbidity measurements were postoperative complications, including surgical site infection, sepsis, need to re-exploration, a lengthy hospitalization and the need to receive intensive care. In the case of pregnant patients, the fetal outcomes were measured, and they included live birth, preterm birth, fetal distress, and intrauterine fetal death. Such secondary outcomes as length of stay and additional surgical interventions were also made.

Ethical Considerations: The institutional ethics committee of the hospital provided ethical approval of the study before the study commenced. All information were anonymized and patient confidentiality was strictly provided prior to analysis. The patients or their attendants were informed and gave informed consent whenever possible since the research was a case study involving emergency cases, which complies with ethical and institutional requirements.

Statistical Analysis: Statistical software like SPSS was used in entering and analysis of data. Continuous variables were displayed in the form of means standard deviation, and categorical variables were displayed in the form of frequencies and percentages. The associations between the clinical variables and outcomes were evaluated with the help of the relevant statistical tests, and the p-value below 0.05 was deemed statistically significant.

RESULTS

One hundred and twenty patients went through emergency laparotomy either in pregnancy or postpartum period. Among them, 74 patients (61.7%) were pregnant at the moment of operating, and 46 patients (38.3%) were covered with the postpartum period. The average age of the total study population was 29.835865.4 = 5.4, and there was no statistically significant difference between pregnant and postpartum groups (p = 0.42). Multigravida women were the majority in both samples; nevertheless, multigravidity was much higher in postpartum patients (p = 0.03).

Table 1: Demographic and Obstetric Characteristics by Subgroup (n = 120)

Variable	Pregnant (n = 74)	Postpartum (n = 46)	p-value
Mean age (years)	29.4 ± 5.2	30.3 ± 5.7	0.42
Primigravida	28 (37.8%)	10 (21.7%)	0.04
Multigravida	46 (62.2%)	36 (78.3%)	0.03

Pregnant and postpartum patients had quite different emergency laparotomy indications. While postpartum hemorrhage was the most common cause in the postpartum group, obstetric reasons such as uterine rupture were more common in pregnant patients. There was no statistically significant difference between the two groups' non-obstetric surgical problems, such as intestinal obstruction and perforated peritonitis (p = 0.61).

Table 2: Indications for Emergency Laparotomy by Subgroup

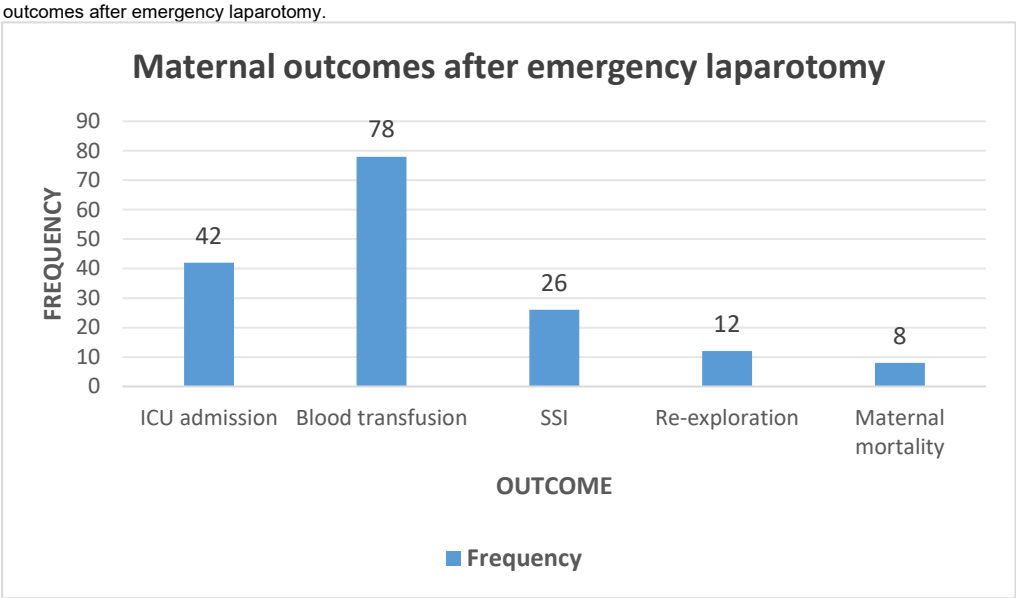
Indication	Pregnant (n = 74)	Postpartum (n = 46)	p-value
Postpartum hemorrhage	0 (0.0%)	36 (78.3%)	<0.001
Uterine rupture	22 (29.7%)	0 (0.0%)	<0.001
Intestinal obstruction	12 (16.2%)	6 (13.0%)	0.64
Perforation peritonitis	10 (13.5%)	6 (13.0%)	0.94
Burst abdomen	6 (8.1%)	8 (17.4%)	0.12
Others	24 (32.4%)	14 (30.4%)	0.82

Compared to pregnant patients, postpartum patients had far greater rates of maternal morbidity. The postpartum group had higher rates of ICU admission and blood transfusion requirements, indicating higher severity at presentation. Although the difference was not statistically significant, postpartum individuals also had greater incidence of surgical site infection and re-exploration. Postpartum patients had a significantly higher maternal death rate (p = 0.04).

Table 3: Maternal Outcomes by Subgroup

Outcome	Pregnant (n = 74)	Postpartum (n = 46)	p-value
ICU admission	20 (27.0%)	22 (47.8%)	0.02
Blood transfusion	40 (54.1%)	38 (82.6%)	0.001
Surgical site infection	14 (18.9%)	12 (26.1%)	0.34
Re-exploration	6 (8.1%)	6 (13.0%)	0.38
Maternal mortality	2 (2.7%)	6 (13.0%)	0.04

Figure 1: Maternal outcomes after emergency laparotomy.



Fetal outcomes were assessed only among pregnant patients. Live birth was achieved in the majority of cases; however, adverse fetal outcomes were observed in patients presenting with uterine rupture, sepsis, or hemodynamic instability. No fetal outcomes were applicable to the postpartum group.

Table 4: Fetal Outcomes Among Pregnant Patients (n = 74)

Outcome	Frequency (%)
Live birth	52 (70.3%)
Preterm delivery	14 (18.9%)
Fetal distress	6 (8.1%)
Intrauterine fetal demise	2 (2.7%)

DISCUSSION

The given research proves that emergency laparotomy among pregnant and postpartum women has been linked to a significant maternal morbidity and mortality, and that the differences are found between the subgroups. ICU admission, blood transfusion, and maternal death were more in postpartum patients than in pregnant patients, indicating the high clinical burden among them. The results that indicated that postpartum women needed more intense care and transfusion is in line with larger trends of acute surgical emergencies where delayed presentation and hemodynamic instability are common[9].

The risk of postpartum bleeding as a manifestation in the postpartum group and as an obstetric rupture of the uterus in expectant patients underlines the critical position of obstetric etiology in determining emergency laparotomy pathways. This trend has been in line with other reports that indicate that obstetric hemorrhage threatens life, and mechanical disruption of the uterus are the most frequent causes of surgical intervention during mid and late gestation[10,11]. Non-obstetric surgical indications, including intestinal obstruction and perforation peritonitis, however present, were not found to be significant between groups, indicating that underlying surgical pathology might not be going to be any different on pregnant and postpartum patients.

The clinical presentations are so severe that maternal morbidity in our cohort is high: blood transfusion and ICU admission are very high. The statistically significant increased requirement of blood transfusion in postpartum patients ($p = 0.001$) as contrasted with the pregnant women highlights the role of hemorrhagic complications in adverse outcomes. The evidence of published literature also indicates that the amount of transfused blood is associated with a higher perinatal risk, and the intensity of resuscitation can be prognostic[12,13]. With the background of increased morbidity and mortality of emergency laparotomy compared to elective surgery in general surgical groups[14], the increased physiological burden during pregnancy and in the immediate postpartum period is likely to contribute to the negativity outcome.

The subgroup of maternal mortality in the post partum patients was considerably more than those in pregnant patients ($p = 0.04$), which illustrates the importance of timing as a major confounder of the severity of outcome. This is reflected by the systematic findings that indicate almost a third of maternal deaths happen in the postpartum stage, which usually involves hemorrhaging and postpartum infection[15]. Such results mark the necessity to increase care attention and accelerate care upgrades during the first postpartum period, especially after the problematic delivery.

The outcome of the fetus in the pregnant subgroup is positive in most cases with live births in more than 70 percent of patients. Nevertheless, preterm births and cases of fetal distress were not uncharacteristic which is in line with the past studies that have indicated high risks of preterm birth and poor wellbeing of the fetus in case of surgical emergencies in the mother[16]. These neonatal outcomes are probably a result of the interplay between maternal hemodynamic stability, gestational age at intervention and intraoperative stress, and these heterogeneous factors must be addressed with multidisciplinary care[17].

The disparities in the maternal outcomes of the pregnant and the postpartum patients underline the fact that subgroup stratification is a clinically-relevant aspect. This is consistent with cohort studies that indicate that exposure to laparotomy and its consequences is dependent on obstetric conditions, as well as delivery mode[18]. Even though our statistical comparisons support these relationships, they also present some significant concerns regarding the systematic factors like referral delays, operating room readiness, and perioperative support that can introduce subgroup variability.

When these findings are contrasted with larger literature, better resource environments record lower maternal mortality and complication rates following emergency obstetric operation, which is probably an indicator of stronger perioperative systems. On the other hand, recent information in resource-constrained environments indicates chronically high morbidity and mortality following emergency laparotomy due to delay in presentation, co-

morbidities, or critical care infrastructure gaps[19]. These contextual variations point to the fact that, in order to enhance the outcome, a clinical intervention might not be sufficient, but structural changes in the health system might be necessary.

This study has limitations because it is based on a single-center observational study and could be limited in its ability to generalize to other environments. The sample size, in subgroup analyses, might limit the statistical power of more rare outcomes. Also, no long-term follow-up after hospital discharge was performed, which excluded the possibility of measuring the long-term morbidity and quality of life of patients who underwent emergency laparotomy. Future studies including multicenter data and future risk stratification tools would contribute to clear understanding of adverse outcome predictors and specific interventions.

CONCLUSION

Laparotomy performed in an emergency situation in pregnant or postpartum women is linked to high morbidity of both the mother and children and there is a great difference in outcomes in the postpartum period. Increased postpartum ICU admission, blood transfusion, and maternal mortality rates highlight the high rates of hemorrhagic and septic complications after childbirth. Despite the positive outcomes in the fetus of most of the patient pregnant women, the possibility of a pre-term delivery or a fetal compromise is significant. These results highlight the significance of early detection, prompt surgical response and multidisciplinary care delivery, especially during the immediate postpartum phase, to enhance maternal and perinatal outcomes of emergency surgical environment.

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