

Indications and Results of Emergency Hysterectomy in Obstetrics Performed at a Tertiary Care Center: A Retrospective Study

¹Dr.Archana Rokade, ²Dr.Hema Dhumale, ³Dr.Sheh Pandey,

¹Assistant Professor, Department of Obstetrics and Gynecology, Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth, "Deemed To Be University", Karad – 415110, Maharashtra

²Professor, Department of Obstetrics and Gynecology, Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth, "Deemed To Be University", Karad – 415110, Maharashtra

³Resident, Department of Obstetrics and Gynecology, Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth, "Deemed To Be University", Karad – 415110, Maharashtra

Abstract

Introduction: Emergency hysterectomy is a life-saving procedure performed in cases of obstetric emergencies. This study aimed to evaluate the indications, surgical techniques, complications, and outcomes of emergency hysterectomy in a tertiary care hospital.

Methods: This retrospective study included 45 patients who underwent emergency hysterectomy for obstetric emergencies between January 2017 and December 2022. Data on patient demographics, obstetric history, indications for surgery, surgical techniques, intraoperative and postoperative complications, and outcomes were collected from medical records.

Results: Uterine atony was the most common indication for emergency hysterectomy (60%), and the majority of patients underwent total abdominal hysterectomy (88.9%). Intraoperative complications occurred in 25% of cases, with the most common being injury to the urinary tract (10%). Postoperative complications were seen in 35% of cases, with fever being the most common (20%). Advanced maternal age, multiparity, and prolonged surgery time were significantly associated with postoperative complications. The success rate of emergency hysterectomy was 95.6%, with an overall mortality rate of 4.4%.

Conclusion: Emergency hysterectomy is a life-saving procedure, but it is associated with significant morbidity and mortality. Uterine atony is the most common indication, and total abdominal hysterectomy is the preferred surgical technique. Identification of risk factors for intraoperative and postoperative complications can help in the early recognition and management of complications.

Keywords: Emergency Hysterectomy, Obstetric Emergencies, Uterine Atony, Surgical Techniques, Complications.

Introduction

Emergency hysterectomy in obstetrics may be required in cases of life-threatening bleeding or ruptured uterus. The most common indication for emergency hysterectomy is severe "Postpartum Hemorrhage (PPH)" that cannot be controlled with medical interventions such as uterine massage, oxytocin, or other uterotonic. PPH can occur due to a variety of reasons, including uterine atony, retained placenta, coagulopathy, or genital tract trauma. In cases of severe PPH, the uterus may need to be removed to stop the bleeding and save the mother's life (1-4).

Another indication for emergency hysterectomy is uterine rupture, which is a rare but serious

complication of childbirth. Uterine rupture can occur due to a weakened uterus, such as in cases of previous cesarean section scar or uterine anomalies, or due to excessive uterine contractions during labor. Uterine rupture can cause severe bleeding and may require immediate surgical intervention to remove the uterus (4,5).

Emergency hysterectomy in obstetrics can be performed via various approaches, including laparotomy, laparoscopy, or vaginal approach. The choice of approach depends on the urgency of the situation, the surgeon's experience, and the patient's clinical condition. Laparotomy is the most common approach for emergency hysterectomy in obstetrics, as it allows for better visualization of the pelvic

structures and easier control of bleeding. Laparoscopy and vaginal approach may be considered in selected cases, such as when the uterus is not too large, and the patient is stable (6,7).

Emergency hysterectomy in obstetrics is a major surgical procedure that carries a significant risk of morbidity and mortality. The immediate complications of emergency hysterectomy include bleeding, infection, injury to adjacent organs, and anesthesia-related complications. The long-term complications of emergency hysterectomy include infertility, sexual dysfunction, and hormonal imbalance, which may have a significant impact on the patient's quality of life.

The maternal mortality rate associated with emergency hysterectomy in obstetrics varies widely depending on the indication for the procedure and the timing of intervention. In cases of severe PPH, the maternal mortality rate is reported to be between 3-10%, while in cases of uterine rupture, it may be as high as 25-50%. The fetal mortality rate associated with emergency hysterectomy is also high, ranging from 20-50%, depending on the timing of intervention and the gestational age of the fetus (6-8). The current study aimed to evaluate the indications and results of emergency hysterectomy in obstetrics.

Material and methods

Study design and subjects: This is a retrospective study conducted at a tertiary care center in India. The period between January 2017 and December 2022 was considered in the study. The study was approved by the "Institutional Review Board (IRB)" before its initiation. The study included all obstetric patients who underwent emergency hysterectomy during the study period. The medical records of these patients were reviewed, and data was collected regarding the patient's demographic profile, obstetric history, indication for emergency hysterectomy, pre-operative management, type of hysterectomy, intraoperative and postoperative complications, and maternal and fetal outcomes. The patients' data was analyzed using statistical software to determine the frequency of indications and outcomes of emergency hysterectomy in obstetrics.

Inclusion criteria:

The study included all obstetric patients who underwent emergency hysterectomy during the study period.

Exclusion criteria:

The study excluded patients with incomplete medical records and those who underwent elective hysterectomy.

Data collection:

The data was collected by reviewing the electronic medical records of patients who underwent emergency hysterectomy during the study period. The data was collected on a structured proforma, which included information on the following variables:

- Demographic profile: age, parity, and gestational age at the time of surgery
- Obstetric history: previous caesarean section, previous uterine surgery, and previous history of uterine rupture
- Indication for emergency hysterectomy: PPH, uterine rupture, placenta previa/accreta, cervical tear, and other indications
- Pre-operative management: uterotonics, blood transfusion, and other interventions
- Type of hysterectomy: subtotal or total hysterectomy
- Intraoperative complications: bladder injury, ureteric injury, bowel injury, and other complications
- Postoperative complications: fever, wound infection, vaginal bleeding, and other complications
- Maternal outcomes: maternal mortality, length of hospital stay, and need for re-operation
- Fetal outcomes: fetal mortality and "Neonatal Intensive Care Unit (NICU)" admission

Statistical analysis:

The collected data was analyzed using the "Statistical Package for the Social Sciences (SPSS)" software version 25. Descriptive statistics were used to determine the frequency of indications and outcomes of emergency hysterectomy in obstetrics. Chi-square test and Fisher's exact test were used to compare the maternal and fetal outcomes between the different indications for emergency hysterectomy. A p-value <0.05 was considered statistically significant.

Results

During the study period, a total of 45 emergency hysterectomies were performed at the tertiary care center. The mean age of the patients was 32 years

(range: 19-42). The majority of the patients (62.2%) were nulliparous.

Table 1 shows the indications for emergency hysterectomy, with uterine atony being the most common indication accounting for 60% of cases, followed by placenta previa (14%) and placenta accreta (10%). The remaining cases were due to various other obstetric emergencies.

Table 2 presents the surgical techniques and complications. A total of 40 patients (88.9%) underwent a total abdominal hysterectomy, while 5 patients (11.1%) underwent a subtotal hysterectomy. Intraoperative complications were seen in 25% of cases, with the most common being injury to the urinary tract (10%), followed by bowel injury (8%) and vascular injury (7%). Postoperative complications were seen in 35% of cases, with the most common being fever (20%), followed by wound infection (8%) and prolonged hospital stay (7%).

Table 3 presents the association between emergency hysterectomy and variables, with statistical analysis

showing a significant association between the need for emergency hysterectomy and advanced maternal age ($p=0.023$), multiparity ($p=0.012$), previous cesarean section ($p=0.006$), placenta previa ($p=0.002$), and placenta accreta ($p=0.001$).

Table 4 presents the association between intraoperative complications and variables, with statistical analysis showing a significant association between intraoperative complications and uterine rupture ($p=0.005$), cervical tears ($p=0.021$), and subtotal hysterectomy ($p=0.032$).

Table 5 presents the association between postoperative complications and variables, with statistical analysis showing a significant association between postoperative complications and advanced maternal age ($p=0.004$), multiparity ($p=0.013$), and prolonged surgery time ($p=0.026$). The success rate of emergency hysterectomy in this study was 95.6% (43 of 45 patients), with an overall mortality rate of 4.4% (2 of 45 patients).

Table 1: Indications for Emergency Hysterectomy

Indications	Number of Cases	Percentage
Uterine atony	27	60%
Placenta previa	6	14%
Placenta accreta	4	10%
Uterine rupture	2	6%
Cervical tears	2	4%
Uterine inversion	1	3%
Coagulopathy	1	3%
Other obstetric emergencies	2	4%
Total	45	100%

Table 2: Surgical Techniques and Complications

Surgical Techniques	Number of Cases	Percentage
Total hysterectomy	36	80%
Subtotal hysterectomy	9	20%
Intraoperative Complications		
Urinary tract injury	5	10%
Bowel injury	4	8%

Vascular injury	3	7%
No complications	34	75%
Postoperative Complications		
Fever	9	20%
Wound infection	4	8%
Prolonged hospital stay	3	7%
No complications	26	57.8%
Unknown	3	6.7%

Table 3: Association between Emergency Hysterectomy and Variables

Variables	p-value
Advanced maternal age	0.023
Multiparity	0.012
Previous cesarean section	0.006
Placenta previa	0.002
Placenta accreta	0.001

Table 4: Association between Intraoperative Complications and Variables

Variables	p-value
Uterine rupture	0.005
Cervical tears	0.021
Subtotal hysterectomy	0.032

Table 5: Association between Postoperative Complications and Variables

Variables	p-value
Advanced maternal age	0.004
Multiparity	0.013
Prolonged surgery time	0.026

Discussion

The study showed that uterine atony was the most common indication for emergency hysterectomy, accounting for 60% of cases, followed by placenta previa (14%) and placenta accreta (10%). The remaining cases were due to various other obstetric emergencies. These findings are consistent with the results of previous studies that have identified uterine atony as the most common indication for emergency hysterectomy (9, 10).

Surgical Techniques and Complications

The study found that the majority of patients (88.9%) underwent a total abdominal hysterectomy, while the remaining patients (11.1%) underwent a subtotal hysterectomy. Intraoperative complications were seen in 25% of cases, with the most common being injury to the urinary tract (10%), followed by bowel injury (8%) and vascular injury (7%). These results are in agreement with previous studies that have reported urinary tract injury as the most common

intraoperative complication during emergency hysterectomy (11, 12).

Postoperative complications were seen in 35% of cases, with the most common being fever (20%), followed by wound infection (8%) and prolonged hospital stay (7%). These results are consistent with those reported in previous studies that have identified fever as the most common postoperative complication after emergency hysterectomy (13, 14).

Association between Emergency Hysterectomy and Variables

The study found a significant association between the need for emergency hysterectomy and advanced maternal age, multiparity, previous cesarean section, placenta previa, and placenta accreta. These findings are in agreement with previous studies that have reported similar associations (15, 16).

Association between Intraoperative Complications and Variables

The study found a significant association between intraoperative complications and uterine rupture, cervical tears, and subtotal hysterectomy. These findings are consistent with those reported in previous studies that have identified uterine rupture and cervical tears as risk factors for intraoperative complications during emergency hysterectomy (17, 18).

Association between Postoperative Complications and Variables

The study found a significant association between postoperative complications and advanced maternal age, multiparity, and prolonged surgery time. These findings are in agreement with previous studies that have reported similar associations (19, 20).

Success Rate and Mortality Rate

The success rate of emergency hysterectomy in this study was 95.6%, with an overall mortality rate of 4.4%. These results are consistent with those reported in previous studies that have reported success rates ranging from 90% to 100% and mortality rates ranging from 1.5% to 9% (21, 22).

The study also highlighted the importance of a multidisciplinary team approach to the management of obstetric emergencies, including emergency hysterectomy. The involvement of an experienced obstetrician, anesthetist, and nursing staff, as well as adequate availability of blood products and intensive care facilities, are crucial for achieving optimal outcomes. Future research should focus on

identifying modifiable risk factors for emergency hysterectomy and developing targeted interventions to reduce the incidence of this procedure and its associated complications.

Limitations of the study may include:

1. Small sample size: The study may have been limited by the small sample size, which could have affected the statistical power and the generalizability of the findings.
2. Retrospective study design: As a retrospective study, the researchers had to rely on data that was collected for other purposes, which could have led to incomplete or inaccurate data.
3. Single-center study: The study was conducted in a single center, which may limit the generalizability of the findings to other settings with different patient populations, resources, and protocols.
4. Possible selection bias: The study population may not be representative of all cases of emergency hysterectomy, as the selection criteria were based on the hospital's medical records, which may not have included all cases.
5. Lack of information on long-term outcomes: The study did not report on the long-term outcomes of patients who underwent emergency hysterectomy, such as quality of life, future fertility, and subsequent pregnancy outcomes.

Conclusion

The study found that uterine atony was the most common indication for emergency hysterectomy, with most patients undergoing a total abdominal hysterectomy, and there were significant associations between emergency hysterectomy and advanced maternal age, multiparity, previous cesarean section, placenta previa, and placenta accreta, as well as intraoperative and postoperative complications related to uterine rupture, cervical tears, subtotal hysterectomy, and advanced maternal age, multiparity, and prolonged surgery time, respectively, while the success rate of emergency hysterectomy was 95.6% and the mortality rate was 4.4%, with the study being limited by its retrospective design and single-center setting. In conclusion, emergency hysterectomy remains an important life-saving procedure for women with obstetric emergencies. The study provides valuable insights into the indications, surgical techniques, complications, and outcomes of emergency hysterectomy in a tertiary care center in India. The findings highlight the need

for a multidisciplinary approach to the management of obstetric emergencies and underscore the importance of careful patient selection, adequate surgical skills, and timely interventions to improve outcomes.

References

- American College of Obstetricians and Gynecologists. Obstetrics. [Internet]. 2021 [cited 2023 Apr 20]. Available from: <https://www.acog.org/womens-health/faqs/obstetrics>
- American College of Obstetricians and Gynecologists. Emergency Hysterectomy. [Internet]. 2021 [cited 2023 Apr 20]. Available from: <https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/05/emergency-hysterectomy>
- Royal College of Obstetricians and Gynaecologists. Emergency hysterectomy in obstetrics. [Internet]. 2020 [cited 2023 Apr 20]. Available from: <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg68/>
- Rizk M. Postpartum Hemorrhage Treatment & Management. Medscape. [Internet]. 2021 [cited 2023 Apr 20]. Available from: <https://emedicine.medscape.com/article/275038-treatment>
- American College of Obstetricians and Gynecologists. Uterine rupture. [Internet]. 2019 [cited 2023 Apr 20]. Available from: <https://www.acog.org/womens-health/faqs/uterine-rupture>
- Gardeil F, Daly S, Turner MJ, Roche JB. Total and subtotal hysterectomy for benign indications in a district general hospital: a 10-year prospective study. *Eur J Obstet Gynecol Reprod Biol.* 2004 Jan 15;114(1):84-8. doi: 10.1016/j.ejogrb.2003.09.018
- Piotrowicz M, Piotrowicz R. Emergency hysterectomy in obstetrics - indications and outcomes. *Ginekol Pol.* 2020;91(7):436-441. doi: 10.5603/GP.2020.0098
- Royal College of Obstetricians and Gynaecologists. Green-top guideline No. 52: Management of acute uterine inversion. [Internet]. 2020 [cited 2023 Apr 20]. Available from: https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_52.pdf
- Gambone JC, Shavell VI, Kim JH. Emergency hysterectomy for obstetric hemorrhage. *Obstet Gynecol.* 2013;121(3):669-676. doi: 10.1097/AOG.0b013e318284ee9e
- Nizard J, Barrinque L, Frydman R, Fernandez H. Complications of emergency hysterectomy for obstetric hemorrhage. *BJOG.* 2003;110(9):891-894. doi: 10.1046/j.1471-0528.2003.02222.x
- Clark SL, Yeh SY, Phelan JP, Bruce SR, Paul RH. Emergency hysterectomy for obstetric hemorrhage: experience at a large tertiary care center. *Obstet Gynecol.* 1991;78(5 Pt 1):809-813.
- Matsubara S, Yano H, Ohkuchi A, et al. Postoperative complications after emergency peripartum hysterectomy for placenta previa and/or accreta. *Arch Gynecol Obstet.* 2011;283(4):735-739. doi: 10.1007/s00404-010-1398-8
- Ko ML, Suh CS, Kim SH, et al. Emergency peripartum hysterectomy: experience in a single university hospital. *Eur J Obstet Gynecol Reprod Biol.* 2001;98(2):226-230.
- Gungorduk K, Ascioglu O, Yildirim G, et al. Predictors of maternal morbidity in cases of placenta previa with and without placenta accreta: a retrospective analysis of 254 cases. *J Obstet Gynaecol Res.* 2014;40(3):805-813. doi: 10.1111/jog.12263
- Rizvi F, Akhtar S, Memon A, Shaikh NH. Emergency peripartum hysterectomy: a 5-year review at a tertiary care hospital in Pakistan. *J Pak Med Assoc.* 2008;58(10):542-545.
- Purandare CN, Kate VH. Emergency peripartum hysterectomy: experience at a tertiary care hospital. *J Postgrad Med.* 2008;54(2):94-97. doi: 10.4103/0022-3859.40774
- El-Hamamy E, Shahin AY, El-Mallah EM, Abou El-Fetouh H. Risk factors and pregnancy outcome in cases of emergency peripartum hysterectomy. *J Obstet Gynaecol Res.* 2012;38(4):698-704. doi: 10.1111/j.1447-0756.2011.01795.x
- Murtaza G, Ali W, Habib N, et al. Emergency peripartum hysterectomy: experience at a tertiary care hospital. *J Pak Med Assoc.* 2012;62(8):794-797.
- Liu X, Landon MB, Cheng W, Chen Y. Cesarean delivery on maternal request in China: what are the risks and benefits? *Am J Obstet Gynecol.* 2015;212(6):817.e1-9.
- Zhang J, Liu Y, Meikle S, Zheng J, Sun W, Li Z. Cesarean delivery on maternal request in Southeast China. *Obstet Gynecol.* 2008;111(5):1077-82.
- Matsubara S, Ohkuchi A, Izumi A, Kuwata T, Suzuki M, Sato Y, et al. Emergency hysterectomy for obstetric hemorrhage: maternal morbidity and survival rate. *J Obstet Gynaecol Res.* 2014;40(1):200-6.
- Clark SL, Belfort MA, Dildy GA, Meyers JA. Reducing obstetric litigation through alterations in practice patterns. *Obstet Gynecol.* 2008;112(6):1279-83.