

Original Article

EMERGENCY OBSTETRIC HYSTERECTOMY: A RETROSPECTIVE STUDY FROM A TERTIARY CARE HOSPITAL IN WEST BENGAL

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ABSTRACT

BACKGROUND: Emergency obstetric hysterectomy (EOH) is a lifesaving procedure performed when all other measures and interventions have failed and maternal life loss becomes inevitable. It is important to study such events as they provide an insight into the standard of care provided and help to formulate strategy to reduce maternal morbidity and mortality in future.

OBJECTIVE: Our aim was to evaluate the incidence, indications, risk factor and fetomaternal complications associated with obstetric hysterectomy, wherein the procedure itself is associated with significant maternal morbidity and mortality.

METHOD: This is a retrospective, observational study of women requiring EOH. We reviewed the data over a two-and-a-half-year period, from 1st October 2018 to 1st April 2021, available in the Department of Obstetrics and Gynecology, COM & JNM Hospital, Kalyani, India.

RESULTS: Uterine atony leading to postpartum hemorrhage is the commonest cause of obstetric hysterectomy followed by ruptured uterus, morbidly adherent placenta, placenta previa and abruptio placentae. During post-operative period, anemia and disseminated intravascular coagulation are the most commonly encountered complications, with a case fatality index 20%.

CONCLUSION: Even after advancement in uterotonic agents, emergency obstetric hysterectomy still remains a necessary tool for obstetricians. In severe hemorrhage, a multi-disciplinary approach including medical, critical care, surgical and radiology departments may reduce maternal mortality and morbidity.

KEY WORDS: Emergency, Obstetric hysterectomy, Uterine atony.

INTRODUCTION

Emergency obstetric hysterectomy (EOH) is defined as the surgical removal of the uterus either at the time of vaginal or caesarean delivery or within puerperium period and is usually performed due to excessive obstetric hemorrhage. It is a lifesaving procedure performed when all other measures and interventions have failed and maternal life loss becomes inevitable¹.

EOH is classified as a “maternal near miss” event by WHO; the mother barely survives the pregnancy and its complications but loses her uterus². A near miss event is defined as a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy. It is important to study such events as they provide an insight into the standard of care provided and help to formulate strategy to reduce maternal morbidity and mortality in future.

Hemorrhage continues to be the leading individual cause of maternal death worldwide, accounting for 27.1% of deaths, in that analysis, India and Nigeria together accounted for a third of global maternal deaths³. More alarming is the fact that some studies from developing nations are pointing towards an increase in the rate of postpartum haemorrhage⁴. One meta-analysis reported an annual increase of 8% in the incidence of EOH around the world⁵.

We aimed to evaluate the incidence, indications, risk factors and fetal-maternal complications associated with obstetric hysterectomy which procedure itself is associated with significant maternal morbidity and mortality.

MATERIALS NEED METHODS

This is a retrospective, observational study of women requiring EOH. We collected all the available data over a two-and-a-half-year period, from 1st October 2018 to 1st April 2021, in the Department of Obstetrics and Gynaecology, COM & JNM Hospital, Kalyani, India.

Inclusion criteria include:

1. All women who delivered in the hospital or referred after delivery between 1st October 2018 to 1st April 2021
2. Delivered above 24 weeks of gestation
3. Underwent emergency hysterectomy for obstetric indications
4. Hysterectomy done at the time of delivery or within 42 days after delivery.

Women who delivered before 24 weeks of gestation, undergoing hysterectomy for indications other than obstetric, or outside the stipulated time of 42 days post-delivery were excluded from the study.

After collecting relevant data from the operation theatre records, each patient’s case record was scrutinized with regard to incidence, age, parity, antenatal high-risk factors, indications, hysterectomy type, and complications, along with the ultimate feto-maternal outcome.

Statistical Analysis

Microsoft Excel software was used for data entry and analysis.

RESULTS

For the last 2.5 years, total 14,032 deliveries were performed at our institute among them, 20 went for obstetric hysterectomy, incidence 1.42 in 1000 deliveries. The youngest woman who underwent obstetric hysterectomy was 21 years and oldest was 35 years (Mean age 28 years), most women were in the 25 to 30 years age group 13(65%). Among 20 cases 13 patients had pre-existing anemia (65%).

Demographic Characteristics	
Age	
20-25	5 (25%)
25-30	13 (65%)
>30	2 (10%)
Parity	
1	12 (60%)
≥2	8 (40%)
Booking Status	
Yes	9 (45%)

No	11 (55%)
Referred Case	
Yes	13 (65%)
No	7 (35%)

Fig 1: Showing Demographic Characteristics among patients went through Obstetric Hysterectomy

Among 20 obstetric hysterectomies 18 (90 %) delivered by Caesarean section. Most common indication for caesarean section was post caesarean section with scar tenderness.

Mode of Delivery	No of cases
Caesarean Section	18
Vaginal Delivery	2

Fig 2: Diagram showing Mode of Delivery distribution among 20 Obstetric Hysterectomy patients

Uterine atony leading to postpartum hemorrhage is the commonest cause of obstetric hysterectomy (about 40%) followed by ruptured uterus (25%), morbidly adherent placenta (15%), placenta previa (15%), and abruptio placentae (5%). Uterine atony was associated with previous caesarean section in 5 cases, anaemia with obstructed labor, and multiple pregnancies for 1 case each. The ruptured uterus was associated with a history of two previous caesarean sections in 2 cases and one previous caesarean section in 3 cases. Among morbidly adherent placenta all 3 cases went through caesarean section before and 2 had an additional history of curettage before.

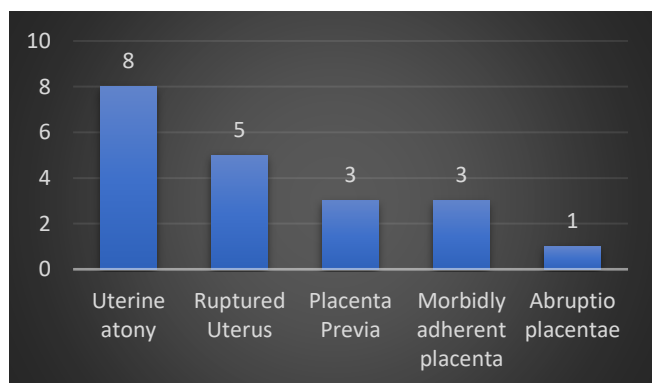


Fig3: Indications for Obstetric Hysterectomy in 20 patients

In most of the cases, total hysterectomy was

performed (17, 85%). Subtotal hysterectomy was done in 3 patients for ruptured uterus patients.

	No of Cases
Total Hysterectomy	17 (85%)
Subtotal Hysterectomy	3 (15%)

Fig4: Type of Hysterectomy done in 20 patients

During postoperative period, anaemia (12, 60%) and disseminated intravascular coagulation, DIC (6, 30%) are the most commonly encountered complications; other complications include hypovolemic shock (4, 20%), sepsis (2, 10%), acute renal failure ARF (2, 10%) and dyselectrolytemia (2, 10%). About 70% of patients received blood products during postoperative care. Seven patients required inotrope support, dopamine being the most commonly used inotropic agent. Two patients required ventilator support among them one survived and one patient received 2 episodes of haemodialysis for anuria due to acute renal failure.

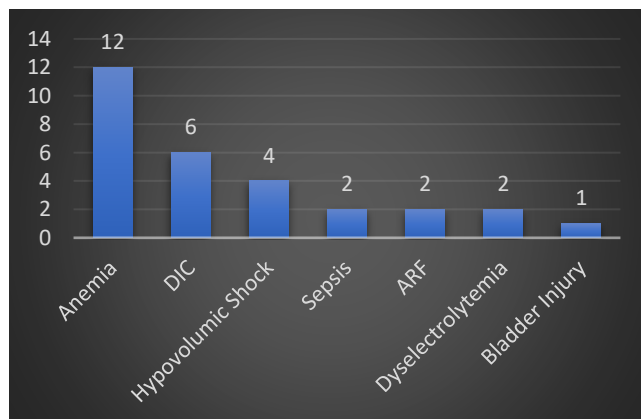


Fig5: Post-operative complications among 20 obstetric hysterectomy patients

	No of Patients
Blood Product	14 (70%)
Inotrope Support	7 (35%)
Ventilator	2 (10%)
Haemodialysis	1 (5%)

Fig6: Interventions required during post-operative care

There were 4 deaths among the study population, a case fatality index of 20%. Hospital stays ranges from six hours to 16 days; the average hospital stay for surviving patients was 8days. Among 4 deaths all had pre-existing anaemia, and we have seen a strong association between pre-existing anaemia and uterine atony (n=6, 75%).

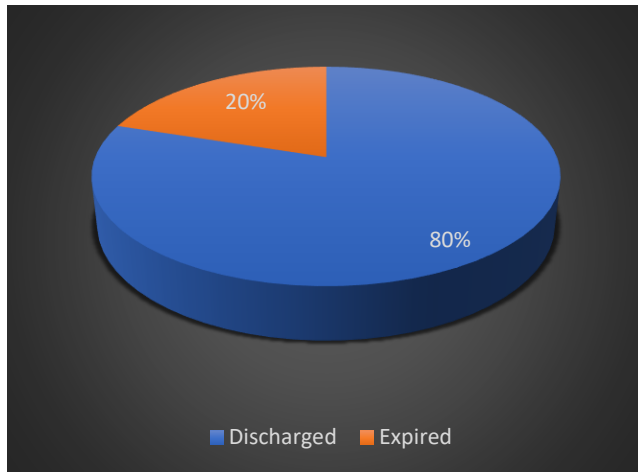


Fig7: Maternal outcome following Obstetric Hysterectomy

There were 6 (30%) fresh stillbirth cases, among them 4 cases were ruptured uterus patients, 1 patient had abruptio placentae. The total preterm baby was 7; among them 2 stillbirths (28%) were among 13 term baby 4 (31%) was stillbirth.

	Live Birth	Still Birth	Total
Pre-term Birth	5 (25%)	2 (10%)	7 (35%)
Term Birth	9 (45%)	4 (20%)	13 (65%)
Total	14 (70%)	6 (30%)	n = 20

Fig8: Foetal Outcome associated with Obstetric Hysterectomy

DISCUSSION

In our institute, the incidence of obstetric hysterectomy is 1.42 in 1000 deliveries for the last 2.5 years compared to 0.8 in Columbia⁶, 2.2 in China⁷, 5.1 in Nigeria⁸, 2.7 in Pakistan⁹, and 0.6 in USA¹⁰.

In a very crucial observation, previous caesarean section was significantly associated with 3 major indications of Obstetric Hysterectomy. In our study previous caesarean section was associated with uterine atony in 60% cases and morbidly adherent placenta in 100%, and uterine rupture in 100% cases. Bateman et al, done a similar study in the USA over 14 years found that the rate of Obstetric Hysterectomy for uterine atony increased four-fold following repeat caesarean section, 2.5-fold following primary caesarean section, and 1.5-fold following primary vaginal delivery¹¹.

The most common cause of obstetric hysterectomy in our study is uterine atony (40%) followed by uterine rupture (25%) and morbidly adherent placenta (15%). This result resembles most developing countries where uterine atony is responsible for most of the obstetric hysterectomy, but there is also a rising no of placental causes like developed countries. Studies from UK¹², Turkey¹³ also show atonic postpartum hemorrhage as the most common indication for obstetric hysterectomy. In our hospital, most uterine atony cases are managed conservatively by timely intervention with uterotonic agents, prevention plays a very important role by identifying high risk factors and active management of labor.

In our study uterine rupture accounts for 25% of obstetric hysterectomy compared to 8% in UK¹⁴ and 17% in Turkey. Unlike our study morbidly adherent placenta being second most common cause for obstetric hysterectomy in Turkey¹⁵ and UK¹⁶, about 38% and 40% respectively, whereas in our study it is 3rd most common cause and accounts for 15% cases. Surprisingly a recent study done in Pakistan by Korejo et al reported that 47.1% of cases were the result of uterine rupture, 28.9% from atony, and 17.4% from placental causes¹⁷.

Obstetric Hysterectomy is a lifesaving procedure that itself has its morbidity and mortality. Juneja SK, et al found febrile morbidity as most common complication in the post-operative period¹⁸, but in our study anaemia is the most common complication; probably early use of broad-

spectrum antibiotics in our institute has reduced the incidence of febrile morbidity. In our study, 30% of patients developed DIC where a study done by Chawla¹⁹ found 12.5%

Urinary tract injury is one of the commonest intraoperative complications encountered during emergency obstetric hysterectomy operation. There is a single case of bladder injury in our study contributing 5% of cases compared to 12.2% at UK²⁰, 3.6% at Nigeria²¹, 4.1% at China²², and 7.93% at another tertiary care centre of India²³. Our bladder injury patient was a post caesarean section ruptured uterus case, where the bladder densely adhered to the posterior surface of anterior abdominal wall, a 3cm incised injury occurred at the dome of the bladder which was repaired in 2 layers by polyglactin 2-0 suture. Foley's catheter was kept for 2 weeks with antibiotics. There was no case that required re-exploration in our study compared to 12.5 % in a study done at Hong Kong²⁴.

Some authors prefer subtotal hysterectomy over total hysterectomy as it offers the advantage of fewer chances of urinary tract injury, and takes less time to complete the operation in the face of a hemodynamic compromise state. But, in our institute, about 85% of patients went through total hysterectomy as some studies show subtotal hysterectomy was not allowing safe conclusion due to the intact cervical branch of the uterine artery²⁵.

Two patients required ventilator support, first patient had a hypovolemic shock with severe anemia that required ventilator support for 2 days with 8 units of blood product (4 units PRBC, 2 units FFP, 2 units Platelet) and inotrope support, the patient was discharged on 8th day after full recovery. Another patient was referred from an outside hospital for uterine atony leading to severe post-partum hemorrhage went through an emergency obstetric hysterectomy, developed severe anaemia, DIC, ARF and even with best of our effort patient expired on 3rd post-operative day. Both patients on the ventilator were treated at HDU. One patient with severe anemia and DIC received 18 units of blood product (8 units FFP, 6

units Platelet, 3 units PRBC and 1 Unit WB) in postoperative period.

Maternal mortality after EOH in our hospital is quite high 20% (n=4), lower rates 12.2% were cited by Najma et al.²⁶ and higher rate 23.8% were found by Umezurike et al.²⁷ The first maternal mortality case in our study was a 26 years old post caesarean section with placenta accreta. Due to intraoperative blood loss superimposed to her pre-existing anemia patient developed severe anemia, hypovolemic shock, and ARF. Even with blood transfusion, inotrope supports the patient expired within 10 hours of postoperative period. The second case was also a post caesarean section case with placenta previa. The patient went through total EOH for uncontrolled PPH after delivering a healthy-term baby. The patient developed severe anemia, DIC, and hypovolemic shock. Resuscitation was done with blood products and inotropes but patient expired within 24 hours of post-operative period. Our third maternal mortality case was an unbooked multipara case that was referred from a peripheral hospital for retained placenta with uterine atony. On admission, the patient was already in hypovolemic shock with severe anemia. As all other measures were failed, total EOH was done with the placenta in situ after ligation of uterine arteries of both sides. The patient was postoperatively immediately shifted to the ICU intubated put on inotrope support and blood products. However, she succumbed on the 3rd postoperative day due to severe sepsis and DIC. The fourth case was a 28 years old patient in term pregnancy with 2 previous two caesarean sections. The patient was admitted in comatose condition with severe anemia. An emergency operation revealed massive hemoperitoneum noted and 3.2kg fresh still born delivered from the peritoneal cavity. Total EOH with bilateral internal iliac artery ligation was done and the patient was shifted to ICU. The patient expired within 2 hours post-operative period due to hypovolemic shock and severe anemia.

Preterm birth as a result of obstetric hysterectomy is seen mostly for patients with placenta previa and placenta accrete cases. However, term delivery leading to obstetric hysterectomy due to

uterine atony, ruptured uterus was observed in most cases. Preterm and term live births are seen in 25% and 45% patients respectively compared to 16 % and 31% was observed by Uma Pandey²⁸.

Our study has few limitations; data collection was done from a single center, options like balloon tamponade, uterine artery embolization, and internal iliac ligation may in some cases remove the need for hysterectomy.

Source of funding – none

Conflicts of interest – none

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CONCLUSION

Even after advancement in uterotonic agents, emergency obstetric hysterectomy still remains a necessary tool for obstetricians. Uterine atony, placenta previa, primary or repeat caesarean section, pre-existing anaemia, grand multiparity, advanced maternal age all are associated with increased risk of obstetric hysterectomy. In most of cases severe hemorrhage being a leading cause of maternal mortality and morbidity, a multi-disciplinary approach including medical, mechanical, surgical, and radiological is necessary.

REFERENCE

1. Chawla J, Arora D, Paul M, Ajmani SN: Emergency obstetric hysterectomy: a retrospective study from a teaching hospital in North India over eight years. *Oman Med J*. 2015, 30:181-186. 10.5001/omj.2015.39
2. Say L, Souza JP, Pattinson RC; the WHO working group on Maternal Mortality and Morbidity classifications: Maternal near-miss - towards a standard tool for monitoring quality of maternal health care. *Best Pract Res Clin Obstet Gynaecol*. 2009, 23:287-296. 10.1016/j.bpobgyn.2009.01.007
3. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, et al. Global causes of

maternal death: a WHO systematic analysis. *Lancet Glob Health* 2014. Jun; 2(6): e323-e333. 10.1016/S2214-109X (14)70227-X

4. Cameron CA, Roberts CL, Olive EC, Ford JB, Fischer WE. Trends in postpartum haemorrhage. *Aust N Z J Public Health* 2006. Apr; 30(2):151-156. 10.1111/j.1467-842X.2006.tb00109.x
5. Tunçalp O, Hindin MJ, Souza JP, Chou D, Say L. The prevalence of maternal near miss: a systematic review. *BJOG* 2012. May; 119(6):653-661. 10.1111/j.1471-0528.2012.03294.x
6. Incidence and determinants of peripartum hysterectomy in the metropolitan area of the District of Columbia. *Owolabi MS, Blake RE, Mayor MT, Adegbulugbe HA J Reprod Med*. 2013 Mar-Apr; 58(3-4):167-72.
7. Emergency Peripartum Hysterectomy as Postpartum Hemorrhage Treatment: Incidence, Risk factors, and Complications. *Pradhan M, Shao Y JNMA J Nepal Med Assoc*. 2014 Jan-Mar; 52(193):668-76.
8. Emergency obstetric hysterectomy in a tertiary hospital in sokoto, Nigeria. *Nwobodo E, Nnadi D Ann Med Health Sci Res*. 2012 Jan; 2(1):37-40.
9. Emergency obstetric hysterectomy. *Korejo R, Nasir A, Yasmin H, Bhutta S J Pak Med Assoc*. 2012 Dec; 62(12):1322-5.
10. Factors associated with peripartum hysterectomy. *Bodelon C, Bernabe-Ortiz A, Schiff MA, Reed SD Obstet Gynecol*. 2009 Jul; 114(1):115-123.
11. Peripartum hysterectomy in the United States: nationwide 14-year experience. *Bateman BT, Mhyre JM, Callaghan WM, Kuklina EV Am J Obstet Gynecol*. 2012 Jan; 206(1):63. e1-8.
12. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. *Knight M, UKOSS. BJOG*. 2007 Nov; 114(11):1380-7.
13. Emergency peripartum hysterectomy in a tertiary hospital in Ankara, Turkey: a 5-year review. *Tapisiz OL, Altinbas SK, Yirci B, Cenksoy P, Kaya AE, Dede S, Kandemir O Arch Gynecol Obstet*. 2012 Nov; 286(5):1131-4.
14. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. *Knight M, UKOSS. BJOG*. 2007 Nov; 114(11):1380-7.
15. Emergency peripartum hysterectomy in a tertiary hospital in Ankara, Turkey: a 5-year

- review. Tapisiz OL, Altinbas SK, Yirci B, Cenksoy P, Kaya AE, Dede S, Kandemir O Arch Gynecol Obstet. 2012 Nov; 286(5):1131-4.
16. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. Knight M, UKOSS. BJOG. 2007 Nov; 114(11):1380-7.
17. Emergency obstetric hysterectomy. Korejo R, Nasir A, Yasmin H, Bhutta S J Pak Med Assoc. 2012 Dec; 62(12):1322-5.
18. A change in the management of intractable obstetrical hemorrhage over 15 years in a tertiary care centre. Juneja SK, Tandon P, Mohan B, Kaushal S Int J Appl Basic Med Res. 2014 Sep; 4(Suppl 1): S17-9.
19. Chawla J, Arora D, Paul M, Ajmani SN. Emergency Obstetric Hysterectomy: A Retrospective Study from a Teaching Hospital in North India over Eight Years. Oman Med J. 2015; 30(3):181-186. doi:10.5001/omj.2015.39
20. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. Knight M, UKOSS. BJOG. 2007 Nov; 114(11):1380-7.
21. Emergency peripartum hysterectomy in a tertiary hospital in southern Nigeria. Abasiattai AM, Umoiyoho AJ, Utuk NM, Inyang-Etoh EC, Asuquo OP Pan Afr Med J. 2013; 15():60.
22. Emergency Peripartum Hysterectomy as Postpartum Hemorrhage Treatment: Incidence, Risk factors, and Complications. Pradhan M, Shao Y JNMA J Nepal Med Assoc. 2014 Jan-Mar; 52(193):668-76.
23. A change in the management of intractable obstetrical hemorrhage over 15 years in a tertiary care center. Juneja SK, Tandon P, Mohan B, Kaushal S Int J Appl Basic Med Res. 2014 Sep; 4(Suppl 1): S17-9.
24. Ten years' experience of caesarean and postpartum hysterectomy in a teaching hospital in Hong Kong. Lau WC, Fung HY, Rogers MS Eur J Obstet Gynecol Reprod Biol. 1997 Aug; 74(2):133-7.
25. Chazotte C, Cohen WR. Catastrophic complications of previous cesarean section. Am J Obstet Gynecol 1990; 163: 738- 42 Crossref CAS PubMed Web of Science@Google Scholar
26. Shaikh NB, Shaikh S, Shaikh JM. Morbidity and mortality associated with obstetric hysterectomy. J Ayub Med Coll Abbottabad. 2010 Apr-Jun;22(2):100-4. PMID: 21702279.
27. UMEZURIKE, C.C., FEYI-WABOSO, P.A. and ADISA, C.A. (2008), Peripartum hysterectomy in Aba southeastern Nigeria. Australian and New Zealand Journal of Obstetrics and Gynaecology, 48: 580-582. <https://doi.org/10.1111/j.1479-828X.2008.00905.x>
28. Uma Pandey, Common Causes of Obstetric Hysterectomy in BHU, Varanasi, Department of Obstetrics and Gynecology, Banaras Hindu University, India Pandey U (2016) Common Causes of Obstetric Hysterectomy in BHU, Varanasi. Obstet Gynecol Int J 4(4): 00115. DOI: 10.15406/ogij.2016.04.00115

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