

Peripartum hysterectomy in a rural tertiary care hospital, Mahabub nagar, Telangana, India over 5 years period epidemiology and outcome

¹Dr. Laxmipadma priya, ²Dr. K Jeevan, ³Dr. Aparna, ⁴Dr. Radhika Ganesh

¹Assistant Professor, Department of OBG, Government Medical College, Mahabub nagar, Telangana, India

²Professor, Department of Surgery, Government Medical College, Mahabub nagar, Telangana, India

³Assistant Professor, Department of Surgery, Government Medical College, Mahabub nagar, Telangana, India

⁴Associate Professor, Department of OBG, Government Medical College, Mahabub nagar, Telangana, India

Corresponding Author:

Dr. Radhika Ganesh

Abstract

Introduction: Emergency Peripartum Hysterectomy (EPH), although relatively infrequent in present day obstetrics, is a life-saving procedure in the event of a massive postpartum hemorrhage.

Aim: To assess incidence, risk factors, indications and complications of peripartum hysterectomies at a tertiary care teaching hospital in India.

Materials and Methods: A retrospective study was conducted at a tertiary care medical teaching hospital in Telangana. All emergency peripartum hysterectomies performed between May, 2017 and May 2022 at a tertiary care teaching hospital, were included in the study. Demographic characteristics, risk factors, antepartum, intrapartum and post-partum events, need for blood transfusion, length of stay in intensive care unit and postoperative complications were noted. Data was entered in Microsoft Excel spreadsheet and analysed using SPSS software version 24. For categorical variables, data was compiled as frequency and percent. For continuous variables, data was calculated as mean \pm SD.

Results: Among 42703 deliveries conducted in the study period, 19306 were cesarean sections. 39 emergency peripartum hysterectomies were undertaken, the incidence being 0.09%. Women were aged 20 to 40 years (25 ± 2.83 years). Majority (92.31%) were multiparous women. Placental & Atonic PPH (Placenta previa, Placenta accreta, adherent placenta) were the most common (66.60%) indication for hysterectomy. About 48.70% of hysterectomies performed were subtotal hysterectomies. More than half of them had a previous caesarean section. Two patients had bilateral internal iliac artery ligation for ongoing hemorrhage. All patients required intensive care and blood transfusion. Four patients did not survive even after hysterectomy.

Conclusion: Placental causes and Atonic PPH were the most common reason for performing an emergency peripartum hysterectomy. Women with previous caesarean section are at increased risk, both due to atonic and traumatic postpartum hemorrhage. Regular departmental audits are needed to formulate appropriate protocols to decrease mortality and

near-miss events like EPH. Stringent protocols should be instituted for managing obstetric hemorrhage. Although EPH is lifesaving, early intervention by a senior obstetrician well versed with conservative procedures may avoid morbidity associated with EPH

Keywords: Maternal mortality, obstetric hemorrhage, uterine atony

Introduction

EPH, defined as hysterectomy performed at the time of childbirth or within 24 hours of childbirth or at any time from childbirth to discharge from the same hospitalization ^[1], is a relatively infrequent procedure in present day obstetrics. It is performed in cases of intractable obstetric hemorrhage due to uterine atony or to prevent hemorrhage from a morbidly adherent placenta or placenta previa. Other indications include uterine rupture, cervical laceration, leiomyoma, postpartum uterine infection or invasive cervical cancer. Consequentially, the risk factors for EPH are similar to those that predispose to hemorrhage or abnormal placentation. The incidence of EPH ranges from 0.035% to 0.54% worldwide ^[2-11]. The incidence is high in developing countries when compared to developed nations. This could be attributed to the disparity in the accessibility and availability of various modern obstetric services like uterine artery embolization, family planning and antenatal care facilities.

This retrospective study was conducted as a clinical audit of peripartum hysterectomies performed over a period of approximately 5 years at our institution. Through this audit, we aimed to assess the incidence of peripartum hysterectomies, identify the risk factors, indications and complications including the mortality and morbidity associated with the procedure. Audits of emergency obstetric procedures like EPH serve as a reflective practice for the authors and add to the existing literature regarding the changing trend of risk factors and incidence of EPH.

Materials and Methods

This retrospective study was conducted at a 650 bedded, tertiary care teaching hospital in southern India. Institute Ethical Committee clearance was obtained for this study and waiver of consent was granted. No patient identifiable information was used in the study.

All women who underwent childbirth and underwent hysterectomy for obstetric indications, either during childbirth or within the immediate postpartum period between May 2017 to May 2022 were included in the study.

Statistical analysis

Their demographic characteristics, antenatal risk factors, antepartum, intrapartum and postpartum events, transfusion of blood and blood products, Intensive Care Unit-Length of Stay (ICU-LOS) and postoperative complications were entered in Microsoft excel spreadsheet and analyzed using SPSS software version 24.0. For categorical variables, data was compiled as frequency and percent. For continuous variables, data was calculated as mean \pm SD.

Results

Peripartum hysterectomy was performed in 39 cases. The women were aged 20 to 40 years, with a mean age at the time of childbirth being 25 ± 2.83 years. Among these women, 92.31% were multiparous and mean gravidity at present childbirth was 3.10 ± 1.31 . 32 women had a previous Lower Segment Caesarean Section (LSCS) accounting for 82.05% of the cases

[Table 1 & 2]. The most common indication of EPH were placental causes like placenta percreta, previa, adherent placenta and uterine atony [Table-3].

The most common type of childbirth preceding hysterectomy was caesarean section, especially in multipara accounting for 92.1%. Total hysterectomy was more commonly performed (51.28%) than sub total hysterectomy. There were four intrauterine fetal demise of perinatal mortality and four women (10.26%) could not be revived even after hysterectomy. All 39 patients were admitted to the intensive care unit, for better monitoring. At least half of these women required inotropic support. Average length of ICU-LOS was 5.26 ± 2.29 days and hospital stay was 10.89 ± 5.54 days. The average requirement of blood and its products was 3.07 ± 1.89 and 2.18 ± 1.52 units. [Table 1 & 2].

The various maternal complications were febrile morbidity, Paralytic ileus, Wound infection, Urinary infection, Pelvic collection, Bladder injury DIC, Maternal death. Their incidences are depicted in [Table-4]. Uterine and internal iliac artery ligation performed in two cases after hysterectomy as they continued to bleed postoperatively. All patients required intensive care and blood transfusion. Four patients did not survive even after hysterectomy.

Subtotal hysterectomy was performed in 21 (53.85%) women while the rest 18 (46.15%) had a total hysterectomy. The comparison of both types of hysterectomy with regards to indication and complications in each is shown in table 6. Blood transfusion was required in all patients. The number of blood transfusions required ranged from 2 to 15 depending upon the blood loss. There was 48.71% fetal mortality overall out of which 60% was in patients with uterine rupture.

Table 1: Demographic and clinical characteristics of women with peripartum hysterectomy (n=39)

Age (years)	25 ± 2.83
Gravidity	3.10±1.31
Parity	1.97±1.17
Previous cesarean section; n (%)	32(82.05%)
Average duration of hospital stay (days)	10.89 ± 5.54
Blood transfusion (units)	3.07 ± 1.89
Fresh frozen plasma (units)	2.18 ± 1.52
Hospital stay	10.89± 5.54
ICU stay	5.26±2.29
Outcome of Baby	
LIVE	20(51.28%)
DEATH	19(48.72%)
Registration of pregnancy	
Booked	17 (43.59%)
Un-booked	22(56.41%)

Table 2: Mode of delivery in women with peripartum hysterectomy

Mode of delivery	Frequency (n)	Percentage (%)
Vaginal	7	17.95%
Cesarean section	32	82.05%

Table 3: Parity of women with peripartum hysterectomy

Parity	Frequency (n)	Percentage (%)
Multiparous	36	92.31%
Primiparous	3	7.69%

Table 4: Indication for emergency peripartum hysterectomy

Indication	*n=39	%
Placental causes		
Placenta previa	11	28.21%
Adherent placenta	2	5.13%
Others		
Scar dehiscence post LSCS	1	2.6%
Adnexal collection and haemoperitoneum post-operative	1	2.6%
Rupture uterus	9	23.1%
Atonic PPH	13	33.33%
Abruptio	1	2.6%
Broad ligament hematoma	1	2.6%

*n = multiple indications

Table 5: Complications (n=39)

Complications	*n=39	%
Febrile morbidity	17	43.58%
Paralytic ileus	10	25.64%
Wound infection	9	23.07%
Urinary infection	2	5.13%
Pelvic collection	1	2.56%
Bladder injury	4	10.26%
DIC	3	7.69%
Maternal death	4	10.26%

*n = multiple complications

Table 6: Comparison according to the type of hysterectomy

Indications	Subtotal Hysterectomy (*n=19)	Total Hysterectomy (*n=20)
Placenta causes	3 (15.78%)	6(30.0%)
Atonic PPH	6 (31.57%)	7 (35%)
Uterine rupture	6 (31.57%)	3 (60%)
Others	4(21.05%)	2(10%)
Blood transfusion>4 units	4 (21.05%)	11 (55%)
Intraoperative complications		
Bladder Injury	2 (10.52%)	2 (10%)
Post-operative complications		
Coagulopathy	3(15.79%)	0(0%)
Wound infection	5 (26.31%)	4(20%)
Febrile Morbidity	7 (36.84%)	10(50%)
Death	1 (5.26%)	3 (15%)

*n = multiple indications

Discussion

The incidence of peripartum hysterectomy varies in literature from 0.2 to 0.85 per 1000 deliveries [16, 17]. The incidence of peripartum hysterectomy in the present study was 0.09%, which is slightly higher than those of the developed countries like UK and Nordic countries [2, 4]. The incidence of EPH is much higher (0.2% to 0.54%) in studies from Northern India, Pakistan and Nigeria [10-12]. Atonic postpartum hemorrhage is a common complication of grand multiparity and the high percentage of grand multiparous and un-booked women in

these studies may be the reason for a higher incidence of EPH.

Grand multiparity is not as common as it was in some of the other studies due to the higher acceptability of family planning services (61%) in our region, especially female sterilization after two successful child births^[13].

The most common type of childbirth preceding the EPH was a caesarean section rather than a vaginal delivery, as was the case with majority of studies^[3, 5, 6, 8]. The incidence of peripartum hysterectomy occurring with a history of previous CS has increased significantly over the last few decades. In the present study, 92.31% of patients had a history of either one or two previous caesarean sections. This is consistent with findings in recent literature^[18, 19] from various parts of the world which found 50% to 83% of the women who underwent EPH had a prior caesarean section. The United Kingdom Obstetric Surveillance Study (UKOSS) which was population-based study, concluded that the risk of an EPH rises with increasing number of previous caesarean sections^[4].

In the present study, Placental causes like and Atonic PPH were the primary indication for peripartum hysterectomy and accounted for 66.6% of our cases of peripartum hysterectomy. Seventy one percent of these cases of placenta accreta had a history of at least one CS in the past. There has been a remarkable increase in the incidence of placenta accreta over the past 50 years and it has been the most common indication for peripartum hysterectomy in recent studies where it has accounted for 38 to 50 % of all cases of peripartum hysterectomy^[22, 23, 24, 25]. Cho GJ *et al.*, and Chen J *et al.*, observed a change in most common indication from atony to abnormal placentation, which could be attributed to their high rate of caesarean sections^[7, 9]. In contrast, some studies reported rupture uterus to be the most common indication for EPH, followed by placental causes and uterine atonicity^[8, 10, 12, 15]. Rupture of the uterus accounted for 17.25% of all cases of peripartum hysterectomy in the present study. There has been a significant decrease in the incidence of uterine rupture as the indication for peripartum hysterectomy in the developed world where it accounts for only 4% of cases of peripartum hysterectomy^[4] but it continues to be a predominant indication in developing countries like ours due to grand multiparity, lack of antenatal care and unsupervised labor at home^[20]. This is consistent with studies reporting a similar low incidence of EPH^[3, 6]. This observation could be related to the higher incidence of grand multiparity seen in these studies. Uterine atony is the most frequent indication along with patient care for peripartum hysterectomy in our study accounting for 15.38% of all cases. The incidence of atonic PPH has declined relatively over the decades due to the increased success of treatment with uterotonic agents, embolization and better surgical procedures. However, this largely preventable indication for peripartum hysterectomy continues to predominate in developing countries due to lack of proper facilities and delayed patient admission from distant areas^[21].

The choice between subtotal and total hysterectomy has long been debated. Total hysterectomy is the preferred surgical method due to the potential risk of malignancy developing in the cervical stump. However, proponents of subtotal hysterectomy report lesser blood loss, reduced operating time and reduced intra and postoperative complications^[27]. Studies have shown that both types of hysterectomies are comparable with regards to blood loss and complication rates rupture^[23, 27]. Ironically, in the present study, there was a higher incidence of intraoperative and postoperative complications in the subtotal hysterectomy group which may be explained by the fact that it was carried out in moribund patients to reduce the operative time. The final decision to perform subtotal or total hysterectomy should be influenced by patient's condition. Hence, while total abdominal hysterectomy is a desirable procedure, subtotal hysterectomy may be a better choice in certain conditions where surgery needs to be completed in a shorter time^[28].

The perinatal mortality was low in our study (7.69%), compared to other studies which reported rates of 37% to 64%. This may be due to higher rates of rupture uterus in these studies, which is known to have a detrimental effect on perinatal outcome^[6, 10, 12, 15]. There

were four maternal deaths in the present study giving a mortality rate of 10.26%. The maternal mortality in previous studies has ranged from 1.1% to 16.7% [29, 30]. This high mortality rate may be related to the characteristic of our hospital as a referral hospital. All the maternal deaths were in un-booked or referred patients who were brought in a hemodynamically unstable condition with disseminated intravascular coagulation and varying degrees of shock, a consequence of the intractable hemorrhage. The maternal mortality reported in most studies was attributed to hemorrhagic shock or disseminated intravascular coagulation in the setting of massive obstetric hemorrhage which could not be controlled even after hysterectomy [3, 6, 8, 11, 12]. The UKOSS concluded that more than 150 women were managed successfully with an EPH for each woman who died after the procedure [4]. Deaths were due to the severity of the underlying hemorrhage for which hysterectomy was performed, rather than the procedure itself.

Limitation

There were few limitations of the present study. A potential limitation was the small number of cases and its retrospective nature. Several aspects of peripartum hysterectomy could not be commented upon because of lack of documentation of information.

Conclusion

A balanced approach to EPH can prove to be life saving at times when conservative surgical modalities fail and interventional radiology is not immediately available at the medical facility. Abnormal placentation following previous cesarean section, uterine atony, multiparity, are the common indications for EPH. Most of the mortality is attributed to this indications and underlying disorders rather than procedure itself.

Regular monitoring of the institutional C section rates and effective implementation of family welfare measures can reduce the risk factors of EPH and morbidity and mortality associated with it.

References

1. Bodelon C, Bernabe-Ortiz A, Schiff MA, Reed SD. Factors associated with peripartum hysterectomy. *Obstet Gynecol.* 2009;114(1):115-23.
2. Colmorn LB, Petersen KB, Jakobsson M, Lindqvist PG, Klungsoyr K, Källén K, *et al.* The nordic obstetric surveillance study: a study of complete uterine rupture, abnormally invasive placenta, peripartum hysterectomy and severe blood loss at delivery. *Acta Obstet Gynecol Scand.* 2015;94(7):734-44.
3. Chibber R, Al-Hijji J, Fouda M, Al-Saleh E, Al-Adwani AR, Mohammed AT, *et al.* A 26-year review of emergency peripartum hysterectomy in a tertiary teaching hospital in Kuwait-years 1983-2011. *Med Princ Pract.* 2011;21(3):217-22.
4. Knight M, Kurinczuk JJ, Spark P, Brocklehurst P. Committee UKOSSS, others. Cesarean delivery and peripartum hysterectomy. *Obstet Gynecol.* 2008;111(1):97-105.
5. Ferreira Carvalho J, Cubal A, Torres S, Costa F, Carmo O Do. Emergency peripartum hysterectomy: A 10-Year Review. *ISRN Emerg. Med.* 2012, 01-07.
6. Chawla J, Arora CD, 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):181-86.
7. Cho GJ, Kim LY, Hong HR, Lee CE, Hong SC, Oh MJ, *et al.* Trends in the rates of peripartum hysterectomy and uterine artery embolization. *PLoS ONE.* 2013;8(4):e60-512.

8. Nawal R, Nooren M. Obstetric hysterectomy: A life saving emergency. *Indian J Med Sci.* 2013;67(5):99.
9. Chen J, Cui H, Na Q, Li Q, Liu C. Analysis of emergency obstetric hysterectomy: the change of indications and the application of intraoperative interventions. *Zhonghua Fu Chan Ke Za Zhi.* 2015;50(3):177-82.
10. Abasiattai AM, Umoyoho AJ, Utuk NM, Inyang-Etoh EC, Asuquo OP. Emergency peripartum hysterectomy in a tertiary hospital in southern Nigeria. *Pan Afr Med J* [Internet]. [cited 2016 May 6], 2013, 15. Available from: <http://www.panafrican-med-journal.com/content/article/15/60/full/>
11. Sharma R, Shaheen, Pathak J. Peripartum hysterectomy a review of 70 cases. *South Asian Fed Obstet Gynecol.* 2009;1(2):19-21.
12. Korejo R, Nasir A, Yasmin H, Bhutta S. Emergency obstetric hysterectomy. *JPMA.* 2012;62:13-22.
13. National Family Health Survey 4 [Internet]. India: International Institute for Population Sciences; [cited 2022 May 7], 2015-2016, 2-3. Available from: http://rchiips.org/nfhs/pdf/NFHS4/PY_FactSheet.pdf
14. Orbach A, Levy A, Wiznitzer A, Mazor M, Holcberg G, Sheiner E. Peripartum cesarean hysterectomy: critical analysis of risk factors and trends over the years. *J Matern Fetal Neonatal Med.* 2011;24(3):480-84.
15. Sahu L, Chakraverty B, Panda S. Hysterectomy for Obstetric Emergencies. *J Obstet Gynaecol India.* 2004;54(1):34-36.
16. Awan N, Bennett MJ, Walters WAW. Emergency peripartum hysterectomy: A 10-year review at the Royal Hospital for Women, Sydney. *Australian and New Zealand Journal of Obstetrics and Gynaecology.* 2011;51:210-215.
17. Nisar N, Sohoo NA. Emergency peripartum hysterectomy: Frequency, Indications and Maternal outcome. *J Ayub Med Coll Abbottabad.* 2009;21(1):48-51.
18. Jou HJ, Hung HW, Ling PY, Chen SM, Wu SC. Peripartum hysterectomy in Taiwan. *Int J Gynecol Obstet.* 2008;101:269-72.
19. Rahman J, Al-AliM, Qutub HO, Al-Suleiman SS, Al-Jama FE, Rahman MS. Emergency obstetric hysterectomy in a university hospital: a 25-year review. *J Obstet Gynaecol.* 2008;28:69-72.
20. Marwaha P, Kaur M, Gupta A. Peripartum hysterectomy-a five-year study. *J Obstet Gynecol India.* 2008;58(6):504-506.
21. Flood KM, Said S, Geary M, Robson M, Fitzpatrick C, Malone FD. Changing trends in peripartum hysterectomy over the last 4 decades. *Am J Obstet Gynecol.* 2009;200:632.
22. Razia Korejo, Shereen Bhutta, Ayesha Nasir, Haleema Yasmin. Emergency Obstetric Hysterectomy. *JPMA.* 2012;62:13-22.
23. Kastner ES, Figueroa R, Garry D, Maulik D. Emergency peripartum hysterectomy: experience at a community teaching hospital. *Obstet Gynecol.* 2002;99:971-5.
24. Kwee A, Bots ML, Visser GHA, Bruinse HW. Emergency peripartum hysterectomy: a prospective study in The Netherlands. *Eur J Obstet Gynecol.* 2006;124:187-92.
25. Sakse A, Weber T, Nickelsen C, Secher NJ. Peripartum hysterectomy in Denmark 1995-2004. *Acta Obstet Gynecol Scand.* 2007;86:1472-5.
26. Chanrachakul B, Chaturachinda K, Phuspradit W, Roungsipragarn R. Cesarean and postpartum hysterectomy. *Int J Gynecol Obstet.* 1996;54(2):109-113.
27. Smith J, Mousa HA. Peripartum hysterectomy for primary postpartum haemorrhage: incidence and maternal morbidity. *J Obstet Gynaecol.* 2007;27:44-7.
28. Lovina SM. Machado. Emergency peripartum hysterectomy: Incidence, indications, risk factors and outcome. *N Am J Med Sci.* 2011;3(8):358-361.
29. Flood KM, Said S, Geary M, Robson M, Fitzpatrick C, Malone FD. Changing trends in peripartum hysterectomy over the last 4 decades. *Am J Obstet Gynecol.* 2009;200:632.

30. Zeteroglu S, Ustun Y, Engin-Ustun Y, Sahin G, Kamari M. Peripartum hysterectomy in a teaching hospital in the eastern region of turkey. *Eur J Obstet Gynecol.* 2005;120:57-62.