International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Gupta K et al. Int J Reprod Contracept Obstet Gynecol. 2024 Mar;13(3):617-623
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20240465

Original Research Article

A retrospective study on epidemiology and outcomes of peripartum hysterectomy

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Received: 30 December 2023
Accepted: 31 January 2024

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ABSTRACT

Background: Peripartum hysterectomy is a rare condition which is associated with maternal morbidity and mortality, and the last resort to control hemorrhage when all the other methods fail. The main aim of this study was to evaluate the indications, incidence and complications, maternal and perinatal outcome and compare the risk of peripartum hysterectomy in women who underwent LSCS previously with the women who did not have previous LSCS.
Methods: A retrospective study was done over one year at a tertiary care teaching hospital in southern Rajasthan. All the women who underwent peripartum hysterectomy were included. Patients were divided into two groups, one who did not have any previous lower segment caesarean section (LSCS) and other who had history of previous LSCS, and their data was compared. The, results were calculated and represented as mean, frequency or median as appropriate.
Results: 34 women underwent peripartum hysterectomy yielding the incidence of 2.21/ 1000 deliveries. The main indication of peripartum hysterectomy was abnormally adherent placenta followed by rupture uterus. 73% cases of peripartum hysterectomy were associated was the history of LSCS.
Conclusions: The indication of peripartum hysterectomy has changed from atonic PPH to placenta spectrum syndrome. A major change can be brought about by the reduction of index cases of LSCS which has been on the rise in the recent years. Strict protocols should be made. Early transportation facility and institutional deliveries should be promoted to prevent the emergency peripartum hysterectomy.

Keywords: Post-partum haemorrhage, Atonic PPH, Caesarean section

INTRODUCTION

Hysterectomy is the surgical removal of the uterus. Peripartum hysterectomy is a rare obstetric complication. Peripartum hysterectomy is done in cases of life-threatening hemorrhage during or immediately after abdominal and vaginal deliveries.[1-4] Peripartum hysterectomy is mainly done as a last resort when all the medical and surgical methods fail to stop hemorrhage.

WHO has defined peripartum hysterectomy as a near miss criterion (women who experience severe complications of pregnancy or delivery, and who nearly died but survived).[5] The current incidence of hysterectomy varies from (0.2-10.1/1000 deliveries) worldwide with a continuous increase in trends of peripartum hysterectomy further resulting in higher maternal morbidity and mortality.[7] The incidence is more in developing countries when compared to developed nations.[8] This could be due to lack of availability of various modern obstetric services like uterine artery embolization, family planning and antenatal care facilities.

The main indications for peripartum hysterectomy are placenta accreta, atonic PPH, ruptured uterus, placenta previa, while lesser frequent indications laceration of cervix, leiomyomas, postpartum uterine infection or invasive cervical cancer.[8] Risk factors of peripartum hysterectomy include caesarean delivery in the current

pregnancy, previous LSCS, multiparity and extremes of maternal age at the time of delivery.

To get to the depth of the problem and take measures to address it, it is the need of the hour to have multiple studies on epidemiology, complications and follow up after peri-partum hysterectomy. This current study aimed to retrospectively evaluate a single center experience with peri-partum hysterectomy over a period of 1 year.

Several studies have been conducted about peri-partum hysterectomy in our country but there has been very little enlightenment on this subject in Rajasthan. Hence this study was done planned in our institute to evaluate the incidence, indications and complications of peripartum hysterectomy and compare the risk of peripartum hysterectomy in women who underwent LSCS previously with the women who did not have previous LSCS at a tertiary care teaching hospital and referral institute in Southern Rajasthan, India.

METHODS

Study design

It is a retrospective study, wherein both qualitative and quantitative data were collected.

Study setting

All the cases of peripartum hysterectomy performed at a 2000 bedded, tertiary care teaching hospital in southern Rajasthan, between January 2022 to December 2022 were who fulfilled all of the following criteria:

Inclusion criteria

Women aged between 18-49 years and peripartum hysterectomy done within 48 hours of delivery.

Exclusion criteria

Hysterectomy done before 20 weeks of gestation and/or, elective hysterectomy for gynecological indications.

Details of all the patients who met the above criteria were reviewed from the available medical records retrospectively. The collected data comprised of demographic history, past obstetric history, current pregnancy clinical characteristics, operative notes for indications, intraoperative findings, duration of surgery and blood loss, anaesthesia records, hysterectomy details, complication and fetal outcomes. All the information collected was entered in Microsoft excel spreadsheet and analysed using SPSS software version 22.0.

For categorical variables, data was compiled as frequency and percentages. For continuous variables, the results were calculated and represented as mean or frequency (%) as appropriate. Incidence was calculated per thousand number of deliveries.

Patients were divided into two groups, one who did not have any previous LSCS and other who had history of previous LSCS, and their data was compared.

Further, the patients were divided on the basis of type of placentation being normal or abnormally adherent, in order to assess its risk factors in the development of peripartum hysterectomy at later stages of the pregnancy.

All the data was collected in accordance with the declaration of Helinski after institute ethical committee approval was obtained.

RESULTS

A total of 15358 deliveries were conducted during the period of January 2022 to December 2022 (Table 1). Out of total deliveries, 34 (0.22%) underwent peripartum hysterectomy, of which 25 (73%) had previous history of LSCS and 9 cases had no history of LSCS.

The most common indication of peripartum hysterectomy cases was abnormally adherent placenta 16 (47%) followed by ruptured uterus (Figure 1). Among abnormally adherent placenta, placenta accreta was the most common (68.75%) (Figure 2).

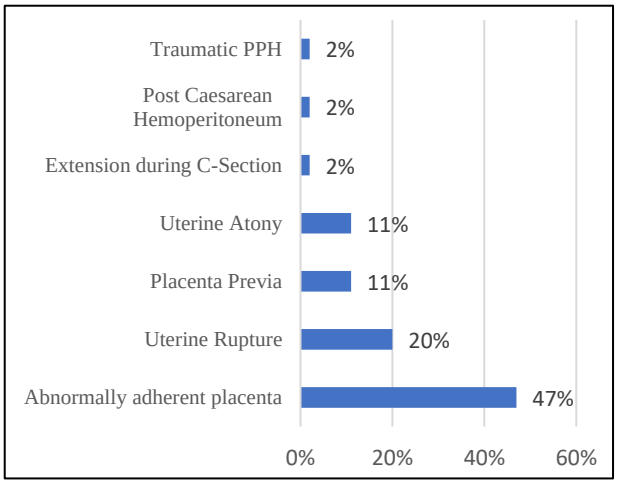

Figure 1: Indications of peripartum hysterectomy.

Out of these 16 (47%) cases of abnormally adherent placenta 14 (87%) cases had previous history of LSCS, 12 (75%) had >2 LSCS and history of curettage in 6 cases. Association of more than one factor is present in mostly all cases.

Also, 7 (20%) cases were due to rupture uterus and all of them were referred from other hospitals to our setup being a tertiary care centre, from which one was already delivered and 5 (71%) women had previous history of LSCS (Table 2).

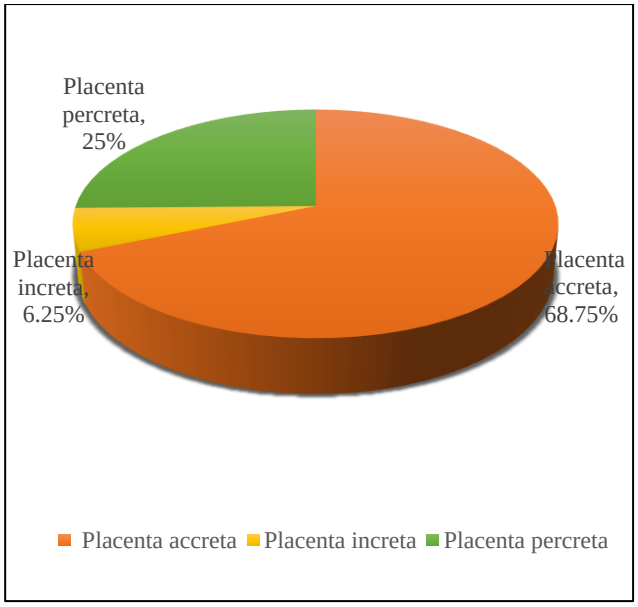

Figure 2: Abnormally adherent placenta.

Atonicity of uterus occurred in 4 (11%) cases and in all cases uterine artery + internal iliac artery ligation was done. Cases of atonicity of uterus were associated with multiparity, previous caesarean section, severe anemia, long birth interval and polyhydramnios in one case.

Out of thirty four cases, twenty three cases were referred from other hospital including all causes. Four cases were electively planned.

The age of the youngest woman who underwent peripartum hysterectomy was 23 and the oldest was 31 and the mean age was 27.5 years. Among these, 26 (76%) women were multiparous.

There were two intrauterine foetal demises resulting in 5% of the perinatal mortality and four women (11.7%) could not be revived even after hysterectomy and the CPR (Table 3).

ICU stay and blood transfusion

All 34 patients were admitted in the intensive care unit (ICU) for close monitoring and observation. ICU stay varied from minimum 7 days to 30 days depending on patient conditions. Out of 34 cases, 5 cases were intubated and 13 cases needed vasopressor support and 4 cases had bladder injury (Table 3).

Moreover, 7 cases experienced resistant hypotension and they were managed conservatively according to emergency guidelines. The main vasopressor used was adrenaline and nor-adrenaline, and in some cases, Dopamine was added for support, along with transfusion of blood products. The number of blood products transfused varied from minimum 8 units to maximum being 16.

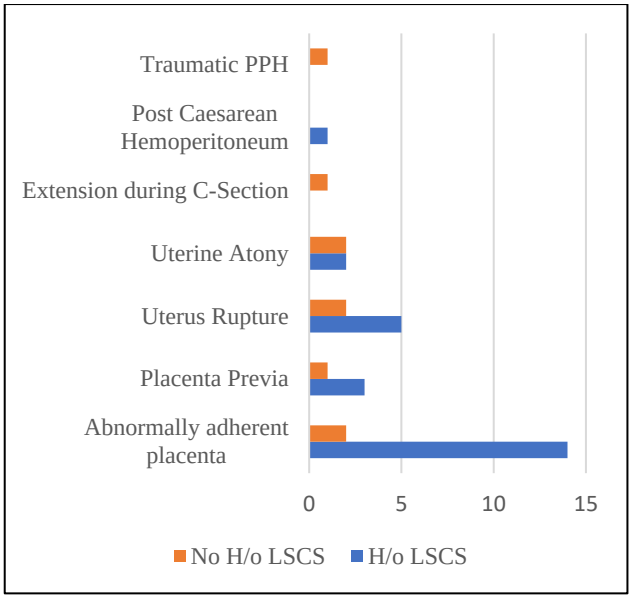

Figure 3: Comparison of causes of hysterectomy among those who had previous LSCS and others who did not have previous LSCS.

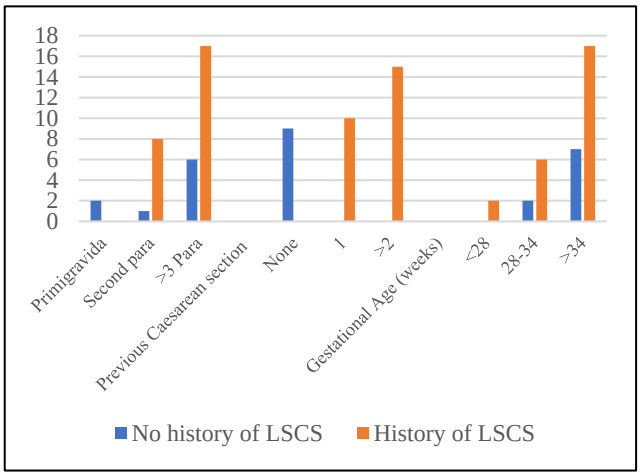

Figure 3: Maternal characteristics of cases.

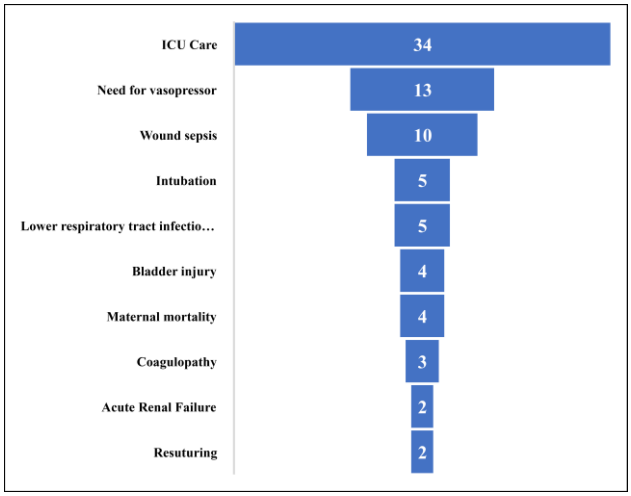

Figure 4: Complications of peripartum hysterectomy.

Table 1: Incidence of peripartum hysterectomy.

Variables	N (%)
Total number of deliveries	15358
Total number of normal vaginal deliveries	9354 (60.9)
Total number of cesarean-section	6004 (39.09)
Incidence of peripartum hysterectomy	2.21/1000 deliveries
Incidence of peripartum hysterectomy following normal vaginal deliveries	0.96/1000 deliveries
Incidence of peripartum hysterectomy following cesarean section	4.1/1000 deliveries

Table 2: Maternal characteristics of cases.

Variables	No history of LSCS	History of LSCS
Age (In years)	28.2±3.4	29.6±0.2
Parity		
Primigravida	2	0
Second para	1	8
>3 para	6	17
Previous caesarean section		
None	9	0
1	0	10
>2	0	15
Gestational age (weeks)		
<28	0	2
28-34	2	6
>34	7	17

Table 3: Complications of peripartum hysterectomy.

Variables	N (%)
Maternal factors	
ICU care	34 (100)
Wound sepsis	10 (29)
Bladder injury	4 (11)
Acute renal failure	2 (5)
Intubation	5 (14)
Need for vasopressor	13 (38)
Coagulopathy	3 (8)
Lower respiratory tract infection and pneumonia	5 (14.7)
Re-suturing	2 (5)
Days of stay in ICU	6.43±2.11
Maternal mortality	4 (11.7)
Fetal	
Perinatal mortality	2 (5)
Perinatal ICU admission	5 (14)

DISCUSSION

Postpartum haemorrhage is often a fatal complication and it should be managed quickly and efficiently to save the life of the female. When all the conservative methods fail to stop the haemorrhage, emergency peri-partum hysterectomy by a skilled obstetrician is the gold standard way to prevent shock and the death of the patient. In order to improvise upon the status of the mother, child and overall society, greater focus is necessary on the knowledge of the issues pregnant females, thereby improving the quality of maternal care in each setup.

The incidence of peripartum hysterectomy in our study has been found to be 2.21/1000 deliveries, which is also supported by the evidence shown in similar published literature.[8-15] Our institute being a tertiary care referral institute in Rajasthan, the incidence is higher than that in the study from Kasturba medical college Delhi, and the study from Southern India.[6,8] PGIMS Chandigarh and the study by Juneja being a central institute, therefore their incidence was even greater than ours.[9,11]

A large number of studies, from international authors, depict a much lower incidence of similar cases as they are much more developed than India.[14-15,18,19]

In a similar study from our institution, 5 years ago, the incidence was 1/1000 deliveries by Varalakshmi which implies that rate of peripartum hysterectomy has increased over time due to increase in LSCS rates which leads to increase in cases of morbidly adherent placenta and rupture of uterus.[16] The rate of peripartum hysterectomy has risen because of increase in rate of LSCS. The C-section deliveries have increased from 11.9% in 2015-16 to 14.3% in 2019-21.[17] Therefore awareness must be spread regarding family planning practices.

In our study 73% women had a history of LSCS and out of them 60% had previous 2 history of LSCS. In each study there is a strong association with LSCS like 71% in the study from Kasturba medical college, Delhi, 85% in study from PGIMS Chandigarh by Bharti Sharma, 77% in study from Europe by Kallianidis.[6,9-16]

In our study the most common indication of peripartum hysterectomy is placenta spectrum syndrome (47%) and the most common among this is placenta accreta (68.75%) followed by rupture uterus (20%) and atonic uterus (11%). In the similar study from our college in 2017 shows the most common cause is rupture uterus (46%) followed by atonic PPH (25%) and placenta spectrum disorder include only 10%.[16]

It implies that rate of placenta spectrum disorder has increased from 10% to 47% due to increasing trend in C section over the past few years. This can be prevented by avoiding the primary cesarean section. Also, due to change in socio-cultural practices and lack of awareness regarding contraception, the rate of voluntary termination of pregnancy by method such as manual vacuum aspiration and curettage has increased in recent trends.

This blunt trauma to uterine endometrial tissue is a major cause for high incidence of placenta spectrum syndrome.

The rate of peripartum hysterectomy due to rupture uterus has drastically decreased in our hospital from 46% to 20%. This can be attributed to increase awareness among patient regarding regular antenatal check-up and delivery in hospital, training of auxiliary nurse midwifery, Asha, Anganwadi worker and Dai. Due to this referred patient of obstructed labour has decreased and thus decreasing rate of rupture uterus.

Also rate of atonic PPH has decreased in our center from 25% to 11% this is due to timely management of 3rd stage of labor, improvement in surgical facilities like B lynching, uterine artery embolization, uterine + internal iliac artery ligation, easy accessibility of hospital services and improvement in referral and ambulance services.

Incidence of placenta accreta syndrome in our study is 47% which is similar to other national and international studies.[11-13] This shows that referral institutes like ours and PGIMS Chandigarh have similar trend of high placenta spectrum disorder like developed countries, as compared to peripheral institutes of the country.

The mean age of peripartum hysterectomy in our study is 27.5 year, while in developed countries mean age was 34.5-35.5 years.[19] This is mainly due to early marriages, short birth interval and less awareness of family planning among population of India.

Most of the cases of our study were unbooked patients, due to which, there was lack of sonographic details, anemia profile, PIH history, lack of antenatal care and awareness about the risk associated with history of LSCS. The Sonographic details like Placental localization, Scar thickness is very important to plan early intervention in high-risk cases. Thus, our national programmes like Janani Shishu Sukraksha Yojana (JSSY), Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) by ministry of health and family welfare have been promoting early Antenatal checkup and free institutional deliveries. Thus, active implementation of these programs can prevent the modifiable risk factor. This is also shown in a survey where maternal health and the mortality is less in patients who are actively utilising the benefits of these programmes.[20]

In our study, all the cases of rupture uterus were unbooked and 71% cases were associated with a history of LSCS. If timely identification of scar thickness was done then this scar dehiscence could be prevented.

Main cause of hysterectomy is PPH whether it is due to placental spectrum syndrome, atonic PPH or rupture uterus. All the cases are managed as per defined protocol of PPH.[21] Use of uterotonic agents, B lynch suturing, uterine artery ligation, internal iliac artery ligation, uterine artery embolization, factor VII transfusion can help in quick management of PPH. However, internal iliac artery ligation during emergency requires skill, effort, time and patience which come only with years of experience. Therefore, rigorous training of obstetricians in emergency surgical procedures is a must. In this institute, out of 34 cases of peripartum hysterectomy, internal iliac ligation was done in 13(38%) cases and in all cases of atonic PPH. Uterine artery embolization was not currently available at our setting.

Factor VII was used in 22 cases (64%). Factor VII activates clotting cascade by cleaving factor IX and X which further activates thrombin and fibrin. In some, cases it leads to severe anemia, thrombocytopenia, hyperfibrinogenemia which further leads to cerebrovascular events and myocardial infarction. Therefore, its use should be limited to severe life-threatening cases.[23-24]

The 11% cases of peripartum hysterectomy were associated with bladder injury in our study. In 80% cases of bladder injury history of LSCS present. Risk of bladder injury is directly linked with history of LSCS and placenta percreta.[25]

In peripartum hysterectomy, the amount of blood volume lost is massive. Up to 5.5 liters of PCV and 4.2 liters of FFP maybe transfused. This in turn has been associated with multiple organ failure, systemic inflammatory response syndrome, increased rate of infection and transfusion associated acute lung injury.[26] So broad spectrum of antibiotic is recommended to the prevent sepsis.

Though peripartum hysterectomy is a life, saving procedure, two women could not be recovered despite all efforts. So, maternal mortality rate in our setting is 11.7% which is higher than many developed countries like 0.6% in United Kingdom.[27] Both the cases of maternal death were due to atonic PPH which had been referred from other hospitals and were hemodynamic unstable at the time of admission. In both cases, uterine artery + internal iliac ligation was done and factor VII was given. Hence, delayed transportation, severe anemia and delay in decision to perform hysterectomy play a vital role in enhancing the rates of maternal mortality. Thus, awareness about the improvement in transport facility to tertiary center, regular ANC visit, 1st line management at primary level and increase a positive outlook among society about hospital delivery are essential.

Limitations

This is a single center study over a limited time duration. More data collection is required so that trends in incidence of peripartum hysterectomy can be analyzed.

CONCLUSION

The indication of peripartum hysterectomy has changed from atonic PPH to placenta spectrum syndrome. A major change can be brought about by the reduction of index cases of LSCS which has been on the rise in recent years.

Early registration of pregnancy, regular ANC checkup, training of healthcare worker at primary level of management of PPH, early transportation facility and institutional delivery should be done to reduce the incidence of emergency PPH. Greater awareness and quicker actions around this issue are required so that incidence can be reduced.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Christopoulos P, Hassiakos D, Tsitoura A, Panoulis K, Papadias K, Vitoratos N. Obstetric hysterectomy: a review of cases over 16 years. J Obstet Gynaecol. 2011;31(2):139-41.
2. Kwee A, Bots ML, Visser GH, Bruinse HW. Emergency peripartum hysterectomy: a prospective study in the Netherlands. Eur J Obstet Gynecol Reprod Biol. 2006;124(2):187-92.
3. Karayalçın R, Özcan S, Özyer Ş, Mollamahmutoğlu L, Danışman N. Emergency peripartum hysterectomy. Arch Gynecol Obstet. 2011;283(4):723-7.
4. El -Jallad MF, Zayed F, Al-Rimawi HS. Emergency peripartum hysterectomy in Northern Jordon: indications and obstetric outcome (an 8 year review). Arch Gynecol Obstet. 2004;270(4):271-3.
5. Souza JP, Cecatti JG, Faundes A, Morais SS, Villar J, Carroli G et al. 2005 Global survey on maternal and perinatal Health Research Group. Maternal near miss and maternal death in the World Health Organization''s 2005 global survey on maternal and perinatal health. Bull World Health Organ. 2010;88(2):113-9.
6. 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):181-6.
7. Van den Akker T, Brobbel C, Dekkers OM, Bloemenkamp KWM. Prevalence, indications, risk indicators, and outcomes of emergency peripartum hysterectomy worldwide: A systematic review and meta-analysis. Obstet Gynecol 2016;128(6):1281-94.
8. Tahmina S, Daniel M, Gunasegaran P. Emergency peripartum hysterectomy: A 14-year experience at a Tertiary Care Centre in India. J Clin Diagn Res. 2017;11(9):QC08-11.
9. Juneja SK, Tandon P, Mohan B, Kaushal S. A change in the management of intractable obstetrical hemorrhage over 15 years in a tertiary care center. Int J Appl Basic Med Res. 2014;4(1):S17-9.
10. Machado LS. Emergency peripartum hysterectomy: Incidence, indications, risk factors and outcome. N Am J Med Sci. 2011;3(8):358-61.
11. Gupta A, Gupta N. Improving outcomes for peripartum hysterectomy: still a long way to Go! J Anaesthesiol Clin Pharmacol. 2017;33(3):328-30.
12. Pettersen S, Falk RS, Vangen S, Nyfløt LT. Peripartum hysterectomy due to severe postpartum hemorrhage: a hospital-based study. Acta Obstet Gynecol Scand. 2022;101(7):819-26.
13. Rawashdeh H, Obeidat R, Masaadeh L. Emergency peripartum hysterectomy in a tertiary teaching hospital in Northern Jordan: a 15-year review. Gynecol Surg. 2021;18(1):1.
14. Gică N, Ragea C, Botezatu R, Peltecu G, Gică C, Panaitescu AM. Incidence of Eemergency peripartum hysterectomy in a Tertiary Obstetrics Unit in Romania. Medicina (Kaunas). 2022;58(1):111.
15. Bodelon C, Bernabe-Ortiz A, Schiff MA, Reed SD. Factors associated with peripartum hysterectomy. Obstet Gynecol. 2009;114(1):115-23.
16. Varalakshmi K, Rastogi R, Choudhary N. Study of maternal outcome in emergency peripartum hysterectomy at a tertiary hospital. Int J Reprod Contracept Obstet Gynecol. 2017;6:5602-8.
17. Ministry of Health and Family Welfare, GoI. National Family health Survey (NFHS-5), 2019-21, India Report. Available at: https://main.mohfw.gov.in/sites/default/files/NFHS-5_Phase-II_0.pdf. Accessed on 25 December, 2023.
18. Kallianidis AF, Rijntjes D, Brobbel CMD, Dekkers OM, Bloemenkamp, Kitty KWM, van den Akker TMD. Incidence, indications, risk factors, and outcomes of emergency peripartum hysterectomy worldwide: A systematic review and meta-analysis. Obstet Gynecol. 2023;141(1):35-48.
19. Jakobsson M, Tapper AM, Colmorn LB, Lindqvist PG, Klungsøyr K, Krebs L, et al. Emergency peripartum hysterectomy: results from the prospective Nordic Obstetric Surveillance Study (NOSS). Acta Obstet Gynecol Scand. 2015;94(7):745-54.
20. Montgomery AL, Ram U, Kumar R, Jha P, Million Death Study Collaborators. Maternal mortality in India: causes and healthcare service use based on a nationally representative survey. PLOS One. 2014;9(1):e83331.
21. Günaydın B. Management of postpartum haemorrhage. Turk J Anaesthesiol Reanim. 2022;50(6):396-402.
22. Bouet PE, Brun S, Madar H, Schinkel E, Merlot B, Sentilhes L. Surgical management of postpartum haemorrhage: survey of French obstetricians. Sci Rep. 2016;6:30342.
23. Ghadimi K, Levy JH, Welsby IJ. Prothrombin complex concentrates for bleeding in the perioperative setting. Anesth Analg. 2016;122(5):1287-300.
24. Ahonen J, Jokela R, Korttila K. An open non-randomized study of recombinant activated factor VII in major postpartum haemorrhage. Acta Anaesthesiol Scand. 2007;51(7):929-36.
25. Matsubara S. Letter to the Editor: Considerations to prevent bladder injury during placenta accreta spectrum surgery. Int J Gynaecol Obstet. 2023;161(1):331-2.

26. Sihler KC, Napolitano LM. Complications of massive transfusion. Chest. 2010;137(1):209-20.
27. Knight M, UKOSS. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. BJOG. 2007;114(11):1380-7.
28. Knight M. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. BJOG. 2007;114:1380-87.

Cite this article as: Gupta K, Maurya A, Bhandari A, Jorwal A. A retrospective study on epidemiology and outcomes of peripartum hysterectomy. Int J Reprod Contracept Obstet Gynecol 2024;13:617-23.