International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Patel TL et al. Int J Reprod Contracept Obstet Gynecol. 2023 Feb;12(2):354-359
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20230037

Original Research Article

Management of post-partum haemorhage at tertiary care center

Tejal L. Patel, Prachi G. Shah*

Department of Obstetrics and Gynaecology, Civil Hospital Ahmedabad, Gujarat, India

Received: 14 December 2022
Accepted: 09 January 2023

***Correspondence:**
Dr. Prachi G. Shah,
E-mail: prachishah0708@gmail.com

ABSTRACT

Background: In developing countries like India post-partum haemorrhage (PPH) contributes to 35% of all maternal deaths and 239 per 1,00,000 deaths. So, PPH is a high-risk condition which increases maternal morbidities and mortalities. Hence it mandates a multidisciplinary approach. Audit of misses and near misses helps to determine causes of maternal morbidity and mortality and identify gaps in care. Aim of the study was to study conservative and definitive management of PPH.
Methods: A retrospective analysis of all patients who has undergone PPH and also cases who referred from outside with PPH in department of obstetrics and gynaecology at civil hospital Ahmedabad from January 2021 to January 2022.
Results: Out of 6029 deliveries there were 171 cases of PPH (2.8%). Which of 150 cases (87.7%) managed by conservative management (uterine conserving) and 21 (12.3%) cases were required definitive management (hysterectomy) due to failure of conservative management. Out of all cases 78.8% cases of PPH were due to atonicity of uterus and 19.1% cases were due to traumatic cause. Early recourse to hysterectomy was recommended especially where bleeding is associated with morbidly adherent placenta.
Conclusions: PPH is an important cause of morbidity and mortality. We now have more options for conservative management which can greatly reduce its sequelae and more importantly in patients with wider issues of reproductive health. But in case of intractable bleeding and non-responsive by conservative management definitive management (Hysterectomy) is life saving and last resource.

Keywords: PPH, Conservative management, Definitive management, Vaginal delivery, Cesarean delivery

INTRODUCTION

Obstetrics is a bloody business still holds true.[1] PPH is most feared obstetric emergency that can occur to any woman at childbirth. If unattended haemorrhage can kill even a healthy woman.[2] PPH has been defined as blood loss ≥500 ml, after third stage of labour. The American college of obstetricians and gynecologists (2019a) now defines PPH as cumulative blood loss >1000 mL or blood loss accompanied by signs and symptoms of hypovolemia.[3]

Complications of pregnancy and childbirth remain a leading cause of death and disability among women of reproductive age in developing countries. Globally, PPH is the most important single cause of maternal death, accounting for about 25% of the total and claiming an estimated 150000 lives annually. The majority of these deaths (88%) occur within four hours of delivery, indicating that they are the consequences of events in the third stage of labour.[3] Furthermore, a significant precipitating factor, anemia, has a high prevalence in developing countries; one half of women of childbearing age in Africa are anemic.

Primary PPH occurs within 24 hours after delivery, and secondary PPH occurs after this time. The ability of women to cope with blood loss depends on a number of factors, including her previous health, the presence or absence of anemia, and the presence and or absence of volume contraction due to dehydration or preeclampsia. Estimation of blood loss is subjective and generally

underestimated. Emergency measures should be initiated if there is perceived loss more than one third of estimated blood volume or loss of 1000 mL or a change in vital signs.

Excessive bleeding occurs because of an abnormality in one of four basic processes, referred tp in the "4T" mnemonic, either individually or in combination; tone (poor uterine contraction after delivery), tissue (retained products of conception or blood clots), trauma (to genital tract) or thrombin (coagulation abnormalities).[4]

The prediction of PPH using antenatal risk assessment is poor: only 40% of women with an identified risk factor develop PPH.[5] However, with changes in the obstetric population (e.g., increased mean maternal age at childbirth, increasing number of women with complex medical disorders becoming pregnant) and advances in technology (e.g., assisted reproduction leading to an increased rate of multiple pregnancy, increasing caesarean section rates leading to placenta previa and its sequelae), some of these risk factors may become more important and others less so in the future. Great grand multiparas were traditionally thought to be at high risk of PPH, but some studies suggest that their risk may be no greater than that of women of lower parity.[6] Women with these risk factors should be transferred to centres with transfusion facilities and intensive care unit (ICU) for delivery if these are not available locally. Early oxytocic therapy, cord clamping, and placental delivery by gentle controlled cord traction following signs of placental separation reduce the incidence and severity of PPH, postpartum anemia, and the need for blood transfusion. The value of prophylactic prostaglandins, either intramuscular prostaglandins or misoprostol, in a hospital setting was shown to be no better than conventional injectable oxytocin in reducing measured blood loss of 1000 mL or more.[7]

Rapid recognition, resuscitation, and restoration of circulating blood volume and simultaneous identification and treatment of the cause is the key to the management of PPH. Blood and blood product transfusion may be required if blood loss is continuing, if the blood volume lost is over 30%, or if the patient's clinical status reflects developing shock despite aggressive resuscitation. A search for the cause of bleeding should be made while resuscitation is continued. The 4Ts mnemonic provides a simple, systematic approach for identifying the cause of bleeding. Thorough assessment and exploration of the uterus and genital tract should be performed. If the uterus is atonic, vigorous massage and therapeutic uterotonic agents should be commenced. Pressure or packing over the repair may be usefull to achieve hemostasis. If exploration has excluded retained tissue or trauma, bleeding from a well-contracted uterus is due to a defect in hemostasis.

Although the vast majority of women with PPH can be managed without surgical intervention, those with uterine rupture or genital tract trauma cannot. If the uterus remains atonic after initial oxytocic therapy, Syntometrine or ergometrine should be repeated, or, alternatively, oxytocin 10 units can be given by slow IV bolus. When medical management fails and patient is still bleeding without delay patient should be taken to operating room for surgical management. Intrauterine packing has very good role in achieving bleeding control. The ability of the tamponade to arrest bleeding, or a positive "tamponade test," has a predictive value of 87% in successfully managing PPH without the need for further surgical intervention.[8]

Tamponade can be done by Bakari balloon catheter or Sangstaken Blakemore tube or condom catheter. Another surgical options includes B-lynch suturing, internal iliac ligation, uterine artery ligation and uterine artery embolization. These all are surgical conservative management. If bleeding is not stopped still only definitive management left is hysterectomy. In case of morbidly adherent placenta sometimes it is only first and last option lest in case of intractable bleeding.

Thus, prompt diagnosis and treatment can save a life of a woman. Because immediate and effective professional care during and after labour and delivery can mean the difference between life and death.

METHODS

A retrospective analysis and observational study of need of conservative or definitive management in all patients underwent PPH after delivery admitted in department of obstetrics and gynaecology in our institute at civil hospital Ahmedabad from January 2021 to January 2022.

Inclusion criteria

All patients underwent PPH after vaginal delivery or caesarean section, all patients of PPH managed by medical management, all patients of PPH managed surgically by conservative or by definitive management and all patients underwent PPH needed transfusion of blood products were included in the study.

Exclusion criteria

All patients of morbidly adherent placenta as in those cases conservative management is not attempted at our institute were excluded from the study.

Statistical tools used-none (as it is an observational study)

RESULTS

In present study we analysed data of 6029 deliveries during the study period, of which there were 171 cases of PPH (2.8%). This study was conducted at our hospital and mode of management of PPH was studied during my residency.

Table 1 shows parity wise distribution and it is clearly seen that multigravida has higher rates of PPH than primi. In

our study primi patients has incidence of 32% and in multigravida it nearly doubles to 67.8%.

Table 1: Parity wise distribution.

Parity	N	Percentages (%)
Primi	71	32.1
Multigravida	150	67.8

Table 2: Mode of management of PPH in vaginal and cesaean delivery.

Mode of management	Vaginal delivery, n (%)	Cesarean delivery, n (%)	Total, n (%)
Conservative management	66 (38.5)	84 (49.1)	150 (87.7)
Definitive management	1 (0.5)	20 (11.7)	21 (12.3)
Total	67 (39.2)	104 (60.8)	171 (100)

Table 2 shows mode of management of PPH in vaginal and cesarean delivery.

Here, it is seen in approx. 87.7% cases conservative management done successfully.

In cases of PPH in vaginal delivery almost all cases were managed conservatively. Definitive management was required in only once case where after vaginal delivery uterine atonicity manifested, conservative management failed and decision of laparotomy was made out and which was later followed by hysterectomy.

Out of 104 cases of PPH in cesarean delivery 84 cases (80.7%) were managed conservatively and 20 cases (19.2%) were managed by hysterectomy.

Hysterectomy was never a first approach in any case of PPH but failure of conservative management lead to decision of hysterectomy in all the cases.

Table 3: Causes of PPH.

Variables	Atonic cause, n (%)	Traumatic cause, n (%)	Other causes, n (%)
Vaginal delivery	50 (29.2)	16 (9.3)	1 (0.5)
Cesarean delivery	85 (49.7)	17 (9.94)	2 (1.16)
Total	135 (78.8)	33 (19.1)	3 (2.1)

Atonicity was the most common cause of PPH in our study (78.8%).

The 2nd most common cause of PPH was trauma to lower genital tract which was found out in 19.1% cases.

Table 4: Management of PPH in caesarean delivery.

Management	Conservative management, n (%)	Definitive management (Hysterectomy), n (%)
Uterine packing	44 (2.57)	2 (4.5)
Balloon tamponade	4 (2.33)	1 (20)
B lynch sutures	5 (2.9)	-
Uterine artery ligation	15 (8.78)	5 (25)
Internal iliac ligation	3 (1.75)	7 (70)
Medical management	13 (7.6)	5 (27.8)

Management of PPH is done as per WHO guidelines.

Medical management done in all cases of PPH which consist of-oxytocin infusion 40 U in 500 ml of normal saline at rate of 40-60 drops/min, 250 mcg carboprost every 15-90 min for 8 doses (max. 2 mg), 500 mcg carboprost intramyometrially, 800 mcg misoprost rectally.

Out of 104 cases of caesarean delivery in whom PPH was encountered 44 cases managed by uterine packing and in 2 cases despite of uterine packing hysterectomy was carried out due to failure.

Out of 5 cases in which Bakari balloon tamponade was done in only 1 case hysterectomy was required and 4 cases managed conservatively. As in all cases of uterine packing and Bakari balloon tamponade, prophylactically uterine artery ligation was done.

In all cases of internal iliac artery ligation 1st there was uterine artery ligation done already. In our study in 10 cases internal iliac artery ligation done and successful in only 30% cases and 70% (7) needed hysterectomy.

Table 5: Management of PPH in normal delivery.

Management	Conservative management, n (%)	Definitive management, n (%)
Uterine packing	18 (10.8)	1 (0.5)
Balloon tamponade	5 (2.9)	-
Medical management	21 (12.3)	-

Table 5 shows management of PPH in normal delivery as it clearly shows that almost all the cases of PPH in normal delivery was managed conservatively and in only 1 case hysterectomy was carried out as discussed above.

In cases with secondary PPH due to RPOC was managed by dilatation and evacuation successfully.

Balloon tamponade was done in 5 cases of vaginal delivery and was successful in all cases.

Medical management with oxytocic was done in 21 cases as discussed above.

Table 6: Success rate of conservative management.

Management	Vaginal delivery, (%)	Caesarean delivery, (%)
Uterine packing	95	95.5
Balloon tamponade	100	80
Medical management	100	72
Uterine artery ligation	-	75
Internal iliac ligation	-	30
B lynch sutures	-	72

Table 6 shows success rate of conservative management as in all cases of PPH conservative management was done primarily. Decision of hysterectomy was done only after failure of conservative management.

Uterine packing was successful in 95% cases of both vaginal and cesarean delivery so it was the most effective method to manage PPH at our institute.

Balloon tamponade was successful in all cases of vaginal delivery and it was also effective in caesarean delivery.

As uterus receives its 90% blood supply from uterine artery, ligation of uterine artery managed 75% of cases of PPH successfully. Ligation of internal iliac was always performed only after ligating uterine artery and it was successful in 30% cases rest cases needed hysterectomy. In total 30 patient's arterial ligation performed per-op.

Table 7: Maternal outcome.

Variables	Normal delivery, n (%)	Caesarean delivery, n (%)
ICU stay >2 days	1 (0.5)	17 (10)
DIC	1 (0.5)	5 (3)
Purpureal sepsis	2 (1)	3 (2)
Renal failure	0 (0)	3 (2)
Maternal mortality	0 (0)	0 (0)

Table 7 showing complications in mother due to PPH. As here we can see it was seen in most of the patients in whom definitive management was carried out.

Purpureal sepsis was seen in patients whom intrauterine packing or Bakri balloon tamponade was done and it was seen in long term. 3 cases went into renal failure after caesarean delivery and 5 cases developed DIC.

DISCUSSION

In the present study, prevalence of PPH was found to be 4.1% with atonicity of uterus being predominant cause (78.8%). A systemic review reported highest rates of PPH in Africa (27.5%) and the lowest in Oceania (7.2%) with an overall rate globally of (10.8%).[9]

In our study atonicity of uterus was most predominant cause of PPH (78.8%). In a study conducted by Asraf et al uterine atony was found in 34% cases.[10] In international studies uterine atony was the most common cause of PPH, ranging from 50% to 76% cases.[11,12]

The 2nd most common cause is traumatic in our study 19.1%. International studies also mention a frequency ranging from 9% to 20% of cases of traumatic lesions as the cause of PPH.[13]

In our study 22.8% patients managed conservatively by medical management and 64.9% patients were managed conservatively by surgical management. The incidence of peripartum hysterectomy done for atonicity was 12.3% as compared to reports by McMohan and Miller, in 2021 which was 10-20% of such women required hysterectomy for hemostasis.[14,15]

The development of acute severe anemia due to PPH in our study was found in 41.6% cases as compared to 41.14% in a study by Singh and Pandey in Kanpur and 90.1% in a study conducted by Ayub ar al.[16,17] It must be noted that the study conducted by Ayub at al takes into account all the cases with anemia and in our study total patients with anemia was 88.6%. DIC was found in 4.5% cases of PPH in study by Ayub et al.[17] In our study DIC was found on 3.5% cases.

In our study Intrauterine packing done in 38% cases out of only 8.5% cases needed hysterectomy. So, it was very successful conservative method for management of PPH. Bakari balloon tamponade in our study employed in 5.8% cases, in only 1 case hysterectomy was needed. So, success rate of Bakri balloon tamponade was 90%. Selective artery embolization can be done in hemodynamically stable patients but it requires availability of skilled interventional radiologists. So only 1 case noted in our study.

Uterine artery ligation is also very useful technique in PPH management as occlusion of uterine artery reduces 90% of blood flow in our study it was done in 17.54% cases. B-lynch brace sutures has been reported with delayed ischemic necrosis and also is not useful in central placenta previa.

In our study out of 171 cases of PPH 150 cases were managed conservatively. He 39 cases (22.8%) managed medically and success rate was 75%. Which was due to expert care, blood bank and ICU facilities available at our institute (tertiary care center).

Hysterectomy was done in 12.3% cases where almost all cases were after caesarean delivery only in 1 case of normal delivery hysterectomy was carried out.

Maternal mortality due to haemorrhage was observed in 24.68% of women by different authors.[5,7] In our study it was 0%. There is a huge difference in percentage mortality reflects the high standard of medical and surgical facilities available and expert care delivered at our institute.

Limitations of the study are that it is a single center audit with limited time duration and a retrospective study in which patients identified from the records. There is need of data collection from prospective study spanning over a few years, which would give a true picture of the improvement in obstetric care.

CONCLUSION

In the present study, multidisciplinary consultation was sough in all patients regarding optimal management.

Although the incidence of PPH is less in our institute, it is still an important cause of maternal morbidity and mortality. Multidisciplinary management reduces adverse events and results in satisfactory maternal outcome.

If effective measures are taken to ensure provision of antenatal care to all pregnant ladies, safe hospital deliveries and complications are expected to reduce.

Proper anticipation and skilled management will lead to significant reduction in maternal morbidity and mortality. So, as PPH is a significant contributor to maternal mortality, that the 5th millennium development goal aims at reducing the maternal mortality by primarily reducing the number of cases of PPH.

Conservative surgical management in PPH is used to avoid hysterectomy and its morbidity as well as to preserve patient's fertility. But, in cases where conservative measures have failed to achieve bleeding control or morbidly adherent placenta. When it is indicated it should be performed as early as possible, to avoid the installation of coagulopathy.

Limitation of the study are that it is a single center audit with limited time duration and a retrospective study which patients identified from the records. There is a need of data collection from prospective study spanning over a few years, which would give a true picture of the improvement in obstetric care.

Finally, prophylaxis of PPH is correct management of all stages of the labour.

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

REFERENCES

1. Cunningham FG, Leveno KJ, Bloom SL, Dashe JS, Hoffman BL, Casey BM et al. In Ch 35. Stillbirth, William's obstetrics 23rd edition, McGraw-Hill Education. 2018;757.
2. Chong YS, Su LL, Arulkumaran S. Current strategies for the prevention of postpartum haemorrhage in the third stage of labour. Curr Opin Obstet Gynecol. 2004;16:143-50.
3. Cunningham FG, Leveno KJ, Bloom SL, Dashe JS, Hoffman BL, Casey BM et al. In Ch 42. Preterm Birth, William's obstetrics 23rd edition, McGraw-Hill Education. 2018.
4. Society of Obstetricians and Gynaecologists of Canada. Advances in Labour and Risk Management (ALARM) Course Manual. 9th ed. Ottawa, Ontario: Society of Obstetricians and Gynaecologists of Canada; 2002.
5. Sherman SJ, Greenspoon JS, Nelson JM, Paul RH. Identifying the obstetric patient at high risk of multiple-unit blood transfusions. J Reprod Med. 1992;37:649-52.
6. Abu-Heija AT, Chalabi HE. Great grand multiparity: is it a risk? J Obstet Gynaecol. 1998;18:136-8.
7. Gülmezoglu AM, Forna F, Villar J, Hofmeyr GJ. Prostaglandins for prevention of postpartum haemorrhage. Cochrane Database Syst Rev. 2004;1:CD000494.
8. Condous GS, Arulkumaran S, Symonds I, Chapman R, Sinha A, Razvi K. The "tamponade test" in the management of massive postpartum haemorrhage. Obstet Gynecol. 2003;101:767-72.
9. Calvert C, Thomas SL, Ronsmans C, Wagner KS, Adler AJ, Filippi V. Identifying regional variation in the prevalence of postpartum haemorrhage: a systematic review and meta-analysis. PloS one. 2012;7(7):e41114.
10. Ashraf T. Postpartum Haemorrhage experience at Sandeman Civil Hospital, Quetta. J Coll Physicians Surg Pak. 1997;8:68-71.
11. Sabrina D, Peter S. Postpartum hemorrhage and abnormal puerperium. Current Obstetrics and Gynecology logic diagram. 6th ed. London: Appleton and Lange. 1987;574-82.
12. Japaraj RP, Raman S. Segstaken-Blakemore tube to control massive post-partum haemorrhage. Med J Malaysia. 2003;58;6074.
13. Rizvi F, Mackey R, Barrett T, Mckenna P, Geary M. Successful reduction of massive postpartum hemorrhage by use of guidelines and staff education. BJOG. 2004;111:495-8.
14. McMohan MJ, Luther ER, Bowes WA Jr. Comparison of trial of labour with an elective second caesarian section. N Engl J Med. 1996;335:689.
15. Miller DA, Goodwin TM Gherman RB. Intrapartum rupture of the unscarred uterus. Obstet Gynecol. 1997;89:671.

16. Singh N, Pandey K. A study of referral cases of postpartum hemorrhage. Ind J Res-Paripex. 2014;3(6):149.
17. Humaira N, Iram S, Anisa F, Aziz UN. Maternal Morbidity and Mortality Due to Primary Pph–Experience at Ayub Teaching Hospital Abbottabad. J Ayub Med Coll Abbottabad. 2008;20(2):59-64.

Cite this article as: Patel TL, Shah PG. Management of post-partum haemorhage at tertiary care center. Int J Reprod Contracept Obstet Gynecol 2023;12:354-9.