

Peripartum Hysterectomy – A Retrospective Study from A Teaching Hospital in South India Over 8 Years

Dr. Nina V Kate¹, Dr. Rahul Anand K.², Dr. Parvathy Das³

¹department of Obgyn, Rggwch, Puducherry, India

²department of Obgyn, Rggwch, Puducherry, India

³department of Obgyn, Rggwch, Puducherry, India

Abstract: Peripartum hysterectomy (PH) is associated with a significant morbidity and mortality. Although it is performed as a life-saving procedure in the case of persistent, intractable obstetric haemorrhage, most often due to uterine atony, there is a rise in the incidence of PH globally. Our study aims to estimate the incidence of Peripartum Hysterectomy and to describe the maternal characteristics, indications, foetal & maternal outcomes and complications associated with it. This was a longitudinal retrospective study conducted in RGGWCH, a teaching hospital in Puducherry, India by reviewing the records of all women who had undergone PH from January 2011 to December 2018. The incidence of PH was 0.51/1000 deliveries and obstetric haemorrhage consequent to uterine atony was the leading cause.

Date of Submission: 18-12-2019

Date of Acceptance: 01-01-2020

I. Introduction

Peripartum hysterectomy (PH) is defined as the extirpation of the uterus at the time of caesarean section or following vaginal delivery or within the puerperium.(1) It is almost always performed in the face of unrelenting, life-threatening obstetric haemorrhage and is associated with momentous complications.(2) It is essentially indispensable in cases where conservative measures fail and interventional radiology is not readily available. A balanced approach is the need for the hour to mitigate the adverse outcomes associated with it.(3)

The common indications for PH include atonic postpartum haemorrhage, rupture uterus, morbidly adherent placenta and haemorrhage associated with caesarean section. Although relatively infrequent carcinoma cervix, leiomyomata and sepsis have also been tackled with peripartum hysterectomy.(4)

The complications that follow PH are manifold. Inadvertent injury to adjacent structures viz. bladder, ureter and bowel do happen inspite of diligent measures. Expectedly, PH is associated with extensive blood loss. Complications of hypovolemic shock thus ensue.(5) Febrile morbidity, Acute renal injury, ARDS, Pulmonary oedema, need for ventilatory support, disseminated intravascular coagulation (DIC), Thrombo-embolism, wound dehiscence and prolonged hospitalisation are encountered incessantly. Remote complications, namely vesico-vaginal fistulae, loss of fertility, depression, dementia, premature menopause and osteoporosis can occur.(6)

PH is also associated with maternal and neonatal mortality. According to the WHO, for each maternal death following PH, 150 mothers are saved.(7) A Maternal Near-Miss event (MNM) is a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy.(8) Rightly so, PH is one of the identification criteria for MNM, and also a clinical intervention to save the life of a woman following a pregnancy complication.(9) Thus, it becomes prudent to study the characteristics of PH to formulate strategies to minimise adverse maternal and perinatal outcomes.

The present study aims to estimate the incidence of PH among the total number of women who delivered in Rajiv Gandhi Government Women and Children Hospital (RGGWCH), a teaching hospital in Puducherry, India during 2011-2018.

II. Materials And Methods

AIM: To evaluate Peripartum Hysterectomy cases, over an eight-year time frame, in a teaching hospital, Puducherry, India

PRIMARY OBJECTIVE: To estimate the incidence of PH among all delivered women.

SECONDARY OBJECTIVES: To describe the maternal characteristics, indications, complications and foetal & maternal outcomes associated with PH.

STUDY DESIGN: Retrospective longitudinal study

STUDY POPULATION: All women who delivered during 2011-2018

STUDY AREA: RGGWCH, Puducherry, India

INCLUSION CRITERIA: All cases of Peripartum hysterectomy during 2011-2018

PROCEDURE AND METHODOLOGY: Hysterectomies done after 20 weeks of gestation only were included in the study. The cases of PH, the total number of deliveries which included the number of vaginal and caesarean deliveries, data on socio- demographic factors, previous obstetric history, risk factors, indications for PH, and maternal and neonatal morbidity and mortality in the study period were obtained from hospital records, entered in Microsoft Excel and analysed using SPSS-17 statistical software. The baseline clinical characteristics of the patients and maternal and neonatal morbidity and mortality were expressed in frequencies and percentage, measures of central tendencies and dispersion.

III. Results

The total number of deliveries during the study period was 79,635. Among which 50,966 women had a vaginal delivery, 18,101 women had a primary caesarean section, 9,614 women had a repeat caesarean section and 950 women had 2 prior caesarean sections. The number of cases of PH during the study period was 40. The incidence of PH was 0.50 per 1,000 deliveries.

The descriptive statistics are presented in the tables below.

Table 1: Incidence of PH and mode of delivery

Mode of delivery	Number of deliveries	Number of PH	Incidence / 1000 deliveries
Vaginal delivery	50,966 (63.99%)	14	0.27
Primary Caesarean	18,101 (22.73%)	22	1.21
Repeat Caesarean	9,614 (12.08%)	4	0.41
Previous 2 Caesarean	950 (1.19%)	0	0
Previous 3 Caesarean	4(0.005%)	0	0
Total	79,635 (100%)	40	0.50

Table 2: Maternal age and PH

Maternal age	Frequency	Percentage
<20	2	05.00%
20-24	9	22.50%
25-29	18	45.00%
30-34	7	17.50%
>35	4	10.00%

Table 3: Parity and prior Abortal status and PH

Parity	Frequency of PH	Percentage
0	11	27.5.0%
1	24	60.00%
2	5	12.50%
≥3	0	0
Prior Abortion	8	20.00%

Table 4: Booking Status and PH

Booking status	Frequency	Percentage
Booked	40	100%
Unbooked	0	0

Table 5: Gestational age and PH

Gestational Age	Frequency	Percentage
<34	0	0
34-37	2	05.00%
37-40	27	67.50%
>40	11	27.50%

Table 6: Indications for PH

Indication	Frequency	Percentage
Atonic PPH	23	57.50%
Rupture Uterus (Scarred)	4	10.00%
Rupture Uterus (Unscarred)	2	05.00%
Morbidly Adherent Placenta	3	07.50%
Broad ligament Hematoma	6	15.00%
Colporrhexis	2	05.00%

Table 7: Conservative measures before proceeding to PH

Conservative Measures	Frequency	Percentage
Medical Management	40	100.00%
Uterine compression sutures	15	37.50%
Uterine artery Ligation	18	45.00%
Internal Iliac artery ligation	13	32.50%
Balloon Tamponade	0	0
Interventional Radiology	0	0

Table 8: Timing of PH

Timing of PH	Frequency	Percentage
Laparotomy following Vaginal delivery	14	35.00%
Concurrent caesarean hysterectomy - Elective	6	15.00%
Concurrent caesarean hysterectomy – Emergency	11	27.50%
Re-laparotomy following caesarean section	9	22.50%

Table 9: Neonatal Outcomes in PH

Neonatal Outcomes	Frequency	Percentage
Live Birth – APGAR \geq 8 /10	21	52.50%
Birth Asphyxia	9	22.50%
Neonatal Convulsions	4	10.00%
Still Birth	6	15.00%

Table 10: Maternal Complications associated with PH

Maternal Complication	Frequency	Percentage
Maternal Death	5	12.50%
Febrile Morbidity	34	85.00%
Bladder injury	7	17.50%
Bowel injury	0	0
Acute Renal Failure	1	02.50%
Pulmonary Oedema	3	07.50%
Disseminated intravascular Coagulation	6	15.50%
Need for Massive Transfusion	29	72.50%
Ventilatory support	8	20.00%
Re-Laparotomy following PH	6	15.00%
Wound infection	7	17.50%
Adnexectomy	3	07.50%

Table 11: Type of PH

Type of PH	Frequency	Percentage
Total Hysterectomy	5	12.50%
Subtotal Hysterectomy	35	87.50%

The mean age of the women who had underwent PH was 27.4 years. 60% of the women (n=24) who had a PH were primipara. 20% of the women (n=8) had previous uterine instrumentation for abortion. 100% of the women (n=40) were booked under RGGWCH. 67.50% of the women (n=27) had a term gestation at the time of delivery.

Atonic Postpartum Haemorrhage was the most common indication for PH and accounted for 57.50% of the cases. (n=23). Medical Management was tried for 100% (n=40) of the cases, before proceeding with PH. Internal iliac artery ligation was performed in 32.50% of the cases. (n=13)

Balloon tamponade and interventional radiology was not attempted/available for any of the 40 women who underwent PH. 35% of the women (n=14) had PH, following a vaginal delivery. 42.50% of the women (n=17) had a concurrent caesarean hysterectomy. 22.50% of the women (n=9) had a Re-Laparotomy with PH, following a Caesarean section.

87.50% of the PH (n=35) were Sub-total hysterectomies whereas the remaining 12.50% of the cases (n=5) were total hysterectomies. The 5 total hysterectomies were done for Colporrhexis (n=3) and Morbidly adherent placenta (n=2)

85% of the women (n=34) who underwent PH had a live birth and the remaining 15% of the women (n=6) had a still birth.

There were totally 5 maternal deaths following PH. The case fatality rate was 12.50%. Two of the deaths were due to Refractory Hypovolemic Shock following Atonic Postpartum Haemorrhage and the remaining three were due to Disseminated Intravascular Coagulation.

72.50% of the cases (n=39) had been managed with massive transfusion protocol. Febrile morbidity was the most common post-operative complication and was observed in 85% of the cases. (n= 34) The mean duration of hospital stay was 14.3 days.

IV. Discussion

The unplanned nature of PH, the need to for performing it expeditiously and the acute loss of blood complicates the performance of PH.(10) Emergency PH following a caesarean section was first reported by Porro and was done to prevent maternal mortality due to PPH.(11)

The commonest cause for PH in the present study is Obstetric Haemorrhage following uterine atony which is in stark contrast with studies from the western world. Morbidly adherent placenta is the leading cause for PH in developed countries due to increase in Caesarean section on maternal request.(12)

The following table compares the incidence of PH across the globe

Table 12: Comparison of incidence of PH of the present study with other studies

Study	Incidence of PH / 1000 deliveries
Present study	0.50
Christpoulos et al (13)	0.92
Parazzini et al (14)	0.70
Zia et al (15)	1.97
Francois et al (16)	2.27
Ogelle et al (17)	0.38
Wingprawat et al (18)	1.30
Wong et al (19)	0.40
Vandenberghes et al (20)	0.33
Stanco et al (21)	1.30
Chen et al (22)	1.88
Gungorduk et al (23)	0.67
Sakinci et al (24)	5.03
Colmorn et al (25)	0.35
Ng et al (26)	0.17
Okusanya et al (27)	4.80

It is seen that in studies by Sakinci et al (24) and Okusanya et al (27), the incidence of PH is very high, that is 5.03 and 4.80 respectively. This could be attributed to the increase in caesarean section rate and increase in the incidence of morbid adherent placenta in their study population.

In studies by Ogelle et al (17) and Wong et al (19), the incidence of PH is comparable to that of the present study. The rate of PH is lesser in the present study due to the near-optimal caesarean section rate, reduction in the incidence of grand multipara due to the extensive family planning initiative by the Government and the tightly knit referral chain from the primary health centres to the Tertiary care hospitals.

The WHO defines Severe Maternal Outcome (SMO) as a combination of maternal deaths and maternal near miss (MNM). The maternal severity score (MSS) is the number of severity markers a woman has. The more the number of MSS, the higher the probability of maternal death.(28)

Table 13: The WHO set of severity markers (life-threatening conditions) used in maternal near-miss assessments.

	Group A	Group B
Cardiovascular dysfunction	•Shock	•pH <7.1
	•Lactate >5	•Use of continuous vasoactive drugs
		•Cardiac arrest
		•Cardio-pulmonary resuscitation (CPR)
Respiratory dysfunction	•Acute cyanosis	•Gaspings
	•Respiratory rate >40 or <6/min	•PaO ₂ /FiO ₂ <200 mmHg
	•Oxygen saturation <90% for ≥60 minutes	•Intubation and ventilation not related to anaesthesia
Renal dysfunction	•Oliguria non-responsive to fluids or diuretics	•Creatinine ≥300 mmol/l or ≥3,5 mg/dl
		•Dialysis for acute renal failure
Coagulation/haematological dysfunction	•Clotting failure	•Acute thrombocytopenia (<50 000 platelets)
	•Transfusion of ≥5 units of blood/red cells	
Hepatic dysfunction	•Jaundice in the presence of pre-eclampsia	•Bilirubin>100 mmol/l or >6,0 mg/dl
Neurological dysfunction	•Metabolic coma (loss of consciousness ANDthe presence of glucose and ketoacids in urine)	•Coma/loss of consciousness lasting 12 hours or more
	•Stroke	

	Group A	Group B
	•Status epilepticus/Uncontrollable fits/total paralysis	
Uterine dysfunction	•Hysterectomy due to infection or haemorrhage	

Table 14: Relationship between MSS and maternal deaths in cases of PH in the present study

MSS	Frequency	Maternal deaths	Mortality
0	15	0	0
1	8	0	0
2	8	0	0
3	5	1	20%
4	3	3	100%
≥ 5	1	1	100%

It is seen that with increase in the number of MSS, the maternal mortality steeply increases. Women without any of the MSS, recover from PH very well whereas those with an MSS of 4 or more succumb to the morbidity associated with the procedure.

The absence of severity markers in women who survived PH supports the view that delayed decision on PH results in maternal death, even when the procedure was eventually performed. This implies when a woman has an indication for hysterectomy, it should be performed as quickly as possible, before other complications set in, particularly, if skilled personnel are available. There should be immediate involvement of consultant staff members in obstetrics, anaesthesia and haematology to supervise the management of the woman.(8)

V. Conclusion

The major strength of the study is the volume of deliveries per year and that is was conducted in a teaching hospital whereas the limitation of the study is its retrospective nature. Furthermore, the measures taken to avoid hysterectomy may have affected the results. Among the conservative measures, tranexamic acid, cryoprecipitate, fibrinogen concentrate and recombinant factor VII, which are used to handle the coagulopathy, would affect the incidence of bleeding, as well as life-threatening PPH and to some extent the incidence of Peripartum Hysterectomy.

Research on whether monitoring coagulopathy and corresponding effective treatment would be helpful to avoid or decrease the incidence of peripartum hysterectomy in the future.

The need for a stringent protocol for managing obstetric haemorrhage should be reiterated. Although, PH is not commonly performed in modern obstetrics, its association with the mode of delivery and prior caesarean section emphasises the need for curtailing the caesarean section rates. Regular departmental audits are needed to formulate appropriate protocols to decrease mortality and near miss events like PH.

References

- [1]. Abu-Heija AT, Jallad FF. Emergency peripartum hysterectomy at the Princess Badeea Teaching Hospital in North Jordan. *J Obstet Gynaecol Res.* 1999;
- [2]. Basnet P, Agrawal A, Rai R, Joshi R, Thakur A. Peripartum hysterectomy and analysis of risk factors. *Int J Gynecol Obstet.* 2015;
- [3]. Langdana F, Geary M, Haw W, Keane D. Peripartum hysterectomy in the 1990s: Any new lessons? *J Obstet Gynaecol (Lahore).* 2001;
- [4]. Bakshi S, Meyer BA. Indications for and outcomes of emergency peripartum hysterectomy: A five-year review. *J Reprod Med Obstet Gynecol.* 2000;
- [5]. Wei Q, Zhang W, Chen M, Zhang L, He G, Liu X. Peripartum hysterectomy in 38 hospitals in China: A population-based study. *Arch Gynecol Obstet.* 2014;
- [6]. Bassey G, Akani CI. Emergency peripartum hysterectomy in a low resource setting: a 5-year analysis. *Niger J Med.* 2014;
- [7]. Campbell SM, Corcoran P, Manning E, Greene RA. Peripartum hysterectomy incidence, risk factors and clinical characteristics in Ireland. *Eur J Obstet Gynecol Reprod Biol.* 2016;
- [8]. Nasrat HA, Youssef MHM, Marzooqi A, Talab F. "Near miss" obstetric morbidity in an inner city hospital in Saudi Arabia. *East Mediterr Heal J.* 1999;
- [9]. Khanum F, Sadaf R, Meher-un-Nisa, Zahid M. Emergency peripartum hysterectomy in a tertiary care hospital. *J Med Sci.* 2013;
- [10]. Kwame-aryee R., Kwakye A., Seff J. Peripartum hysterectomies at the korle-bu teaching hospital: a review of 182 consecutive cases. *Ghana Med J.* 2010;
- [11]. Lim WH, Pavlov T, Dennis AE. Analysis of emergency peripartum hysterectomy in Northern Tasmania. *Aust J Rural Health.* 2014;
- [12]. Rabi KA, Akinlusi FM, Adewunmi AA, Akinola OI. Emergency peripartum hysterectomy in a tertiary hospital in Lagos, Nigeria: A five-year review. *Trop Doct.* 2010;
- [13]. Christopoulos P, Hassiakos D, Tsitoura A, Panoulis K, Papadias K, Vitoratos N. Obstetric hysterectomy: A review of cases over 16 years. *J Obstet Gynaecol (Lahore).* 2011;
- [14]. Parazzini F, Ricci E, Cipriani S, Chiaffarino F, Bortolus R, Chiantera V, et al. Temporal trends and determinants of peripartum hysterectomy in Lombardy, Northern Italy, 1996-2010. *Arch Gynecol Obstet.* 2013;
- [15]. Zia S, Rafique M, Rizwan A, Khan T, Al-Shamrani A. Maternal outcome in emergency peripartum hysterectomy: Minimizing the

- risks. J SAFOG. 2013;
- [16]. Francois K, Ortiz J, Harris C, Foley MR, Elliott JP. Is peripartum hysterectomy more common in multiple gestations? *Obstet Gynecol.* 2005;
- [17]. Ogelle O, Okafor C, Eke AC, Obiechina N, Mbamara S. Current trends in hysterectomies at a Nigerian tertiary center. *J Gynecol Surg.* 2010;
- [18]. Wingprawat S, Chittacharoen A, Suthutvoravut S. Risk factors for emergency peripartum cesarean hysterectomy. *Int J Gynecol Obstet.* 2005;
- [19]. Wong TY. Emergency peripartum hysterectomy: A 10-year review in a tertiary obstetric hospital. *New Zealand Medical Journal.* 2011.
- [20]. Vandenberghe G, Guisset M, Janssens I, Leeuw V Van, Roelens K, Hanssens M, et al. A nationwide population-based cohort study of peripartum hysterectomy and arterial embolisation in Belgium: Results from the Belgian Obstetric Surveillance System. *BMJ Open.* 2017;
- [21]. Stanco LM, Schrimmer DB, Paul RH, Mishell, DR. Emergency peripartum hysterectomy and associated risk factors. *Am J Obstet Gynecol.* 1993;
- [22]. Chen M, Zhang L, Wei Q, Fu X, Gao Q, Liu X. Peripartum hysterectomy between 2009 and 2010 in Sichuan, China. *Int J Gynecol Obstet.* 2013;
- [23]. Güngördük K, Yildirim G, Dugan N, Polat I, Sudolmus S, Ark C. Peripartum hysterectomy in Turkey: A case-control study. *J Obstet Gynaecol (Lahore).* 2009;
- [24]. Sakinci M, Kuru O, Tosun M, Karagoz A, Celik H, Bildircin FD, et al. Clinical analysis of emergency peripartum hysterectomies in a tertiary center. *Clin Exp Obstet Gynecol.* 2014;
- [25]. Colmorn LB, Petersen KB, Jakobsson M, Lindqvist PG, Klungsoyr K, Källen 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;
- [26]. Ng YS, Tan LK. Peripartum hysterectomy: A retrospective ten year series in a tertiary hospital. *Int J Gynecol Obstet.* 2015;
- [27]. Okusanya B, Sajo A, Osanyin G, Okojie O, Abodunrin O. Peripartum hysterectomy in a Nigerian university hospital: An assessment of severe maternal outcomes with the maternal severity index model. *Niger Postgrad Med J.* 2016;
- [28]. Zanonato G, Cavaliere E, Iacovella C, Vassanelli A, Schweiger V, Cipriani S, et al. Severe maternal morbidity in a tertiary care centre of northern Italy: A 5-year review. *Journal of Maternal-Fetal and Neonatal Medicine.* 2012.

Dr. Nina V Kate. "Peripartum Hysterectomy – A Retrospective Study from A Teaching Hospital in South India Over 8 Years". *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 12, 2019, pp 01-06.