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Case Series

## Audit of peripartum hysterectomies at an Indian tertiary care centre: a 12-year review

Sandhya Gadre\*, Gunjan Chaudhary

Department of Obstetrics and Gynecology, Chirayu Medical College and Hospital, Bhopal, Madhya Pradesh, India

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**\*Correspondence:**

Dr. Sandhya Gadre,

E-mail: [gadre.sandhya@gmail.com](mailto:gadre.sandhya@gmail.com)

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### ABSTRACT

Peripartum hysterectomy is performed in critical conditions like major obstetric haemorrhage, abnormally-invasive placenta, rupture uterus. In developing countries incidence is 0.2–5/1000 deliveries. It can also be done as non-emergent surgeries for suspected cases by pre-planning. If high-risk patients are identified, timely intervention done, yields better outcome. Data of peripartum hysterectomy patients during last 12 years collected. Demographic details, menstrual-obstetric history, high-risk factors, previous and current delivery details, postpartum haemorrhage, indication, operative details of peripartum-hysterectomy, maternal-perinatal outcome, blood loss, anaesthesia records, length of ICU and hospital stay quantity of blood and products transfused analysed. 18 cases of peripartum hysterectomy with incidence of 2.76 per 1000 deliveries noted. 14-emergency, 4-electively done. In current pregnancy 13 had caesarean deliveries, 5 had vaginal deliveries, all required emergency hysterectomy. Majority were 26-30 years, 83% multiparous. 11 required emergency hysterectomy. 27.77% were due to atonic PPH and 22.22% placenta accreta spectrum. Mean anaesthesia duration, ICU stay, mean blood loss, units of blood and products was more in emergency group. Maternal and perinatal outcomes were favourable in elective group. Keeping high index of suspicion for accrete, identifying risk factors for atonic PPH, managing proactively, results in favourable maternal-perinatal outcome.

**Keywords:** Peripartum hysterectomy, Placenta accreta spectrum, Postpartum haemorrhage, Previous caesarean section

### INTRODUCTION

Peripartum hysterectomy is a surgical procedure which is most dramatic and usually performed in the face of unrelenting and life-threatening conditions in emergency situation like major intractable obstetric haemorrhage, abnormally invasive placenta, rupture uterus. Maternal mortality is still among the worst performing health indicators in resource-poor settings. A comparison of guidelines given by Royal College of Obstetricians and Gynaecologists (RCOG), American College of Obstetricians and Gynecologists (ACOG), Society for Maternal-Fetal Medicine (SMFM), Federation International of Gynecology and Obstetrics (FIGO) and Society of Obstetricians and Gynecologists of Canada (SOGC)

highlights common strong recommendations on the need to carefully evaluate women at high risk for PAS (e.g. prior uterine surgery presenting with anterior low-lying placenta or placenta previa), using multi-modal ultrasound imaging.<sup>1</sup> Amongst the all armantarium of the obstetricians emergency obstetric hysterectomy is very crucial. Obstetric hysterectomy saves mother's life but sacrifices her obstetric carrier, hence is always a surgical dilemma. It is important to study such events since they provide an insight into the standard of care provided and help to reduce maternal morbidity and mortality.<sup>2</sup> In postpartum haemorrhage (PPH), during or immediately after abdominal or vaginal delivery, when all other conservative means like uterine massage, bimanual compression, misoprostol, oxytocin, balloon catheter,

uterine artery embolization, compression sutures fail to achieve haemostasis, peripartum hysterectomy is the last lifesaving resort. A pregnant woman who had undergone caesarean, curettage and myomectomy previously is at higher risk of abnormally invasive placentation causing PPH hence increased chances for the need of hysterectomy.

As per a recent systematic review the median incidence rate of emergency peripartum hysterectomy is 0.61/1000 deliveries.<sup>3</sup> In developing countries it is 0.2–5/1000 deliveries.<sup>4</sup> 8% annual increase in incidence of emergency obstetric hysterectomy is reported by one systematic review.<sup>5</sup>

However, diagnostic criteria of PAS vary among different studies. The reported incidences of PAS in the placenta previa cohort vary with a median 11.10% and a wide IQR 7.65e17.35%.<sup>6</sup>

Researchers have reported incidence of placenta accreta spectrum with previous 0,1,2,3,4,5 caesarean sections are 0.24%, 0.31%, 0.57%, 2.31%, 2.33% and 6.74% respectively and the incidence of abnormal placentation with placenta previa with previous 0,1,2,3,4,5 lscs are 3%, 11%, 40%, 61%, 67% and 61 % respectively.<sup>7</sup>

After vaginal delivery the chance is the least, which goes on increasing after each caesarean. Peripartum hysterectomy is mostly done in critical situations and is unplanned then. The need to perform it expeditiously further adds to complexity. Such situations are near-miss events. Peripartum hysterectomies can also be done as non-emergent surgeries for suspected cases in planned manner. If high-risk patients are timely identified, assessed and appropriate timely intervention with multidisciplinary approach is implemented, much better outcome results.

PPH is the most challenging complication that obstetrician can face and is leading cause of maternal mortality in developed countries like India. According to FOGSI (The

Federation of Obstetric and Gynaecological Societies of India) PPH contributed to 38% of all maternal deaths in India.

In the previous years, traumatic PPH was major contributor for caesarean hysterectomies, which is difficult to be predicted antenatally every time. Over the decade there is a shift in the indication, majorly heading towards adherent placenta spectrum, as a result of increasing trend of caesarean deliveries. However, this condition can be diagnosed antenatally and electively managed.

## CASE SERIES

The study was conducted in a tertiary care hospital in central India. Total number of confinement during study period were 6503. 3715 were vaginal deliveries including normal and instrumental delivery and 2788 cesarean deliveries. Total 18 cases of peripartum hysterectomy were recorded. The incidence of peripartum hysterectomy of 2.76 per 1000 deliveries was noted.

Out of 18 peripartum hysterectomies, 14 were performed in emergency, however 4 were electively done. 13/18 had cesarean deliveries in current pregnancy in which 9 required emergency hysterectomy and 4 had planned hysterectomy. 5/18 had vaginal deliveries in current pregnancy, all of which required emergency hysterectomy.

**Table 1: Age and parity distribution of the study subjects (n=18).**

S. no.	Age group (in years)	N (%)
1.	20-25	5 (27.77)
2.	26-30	9 (50)
3.	31-36	4 (22.22)
	<b>Parity</b>	<b>N (%)</b>
1.	Multiparous	15 (83.33)
2.	Primiparous	3 (16.66)

**Table 2: Obstetric details of study subjects.**

S. no.	Parameters	Emergency peripartum hysterectomy (n=14)	Elective peripartum hysterectomy (n=4)
1.	<b>Parity</b>	Primi	Nil
		Multi	4
2.	<b>Previous cesarean section</b>	Zero	Nil
		One	3 (75%)
		≥Two	1 (25%)
3.	<b>Mode of current delivery</b>	Vaginal	Nil
		Caesarean	4 (100%)

In this study, majority of the women undergoing hysterectomy were in the age group 26-30 years and 15(83%) were multiparous. Out of these 11 required

hysterectomies in emergency. 71.42% women undergoing emergency hysterectomy had no history of previous caesarean section.

Exploring the indications of peripartum hysterectomy majority 27.77% were due to atonic PPH, followed by placenta accrete spectrum which constituted 22.22%.

On comparing the data of emergency and elective peripartum hysterectomy mean duration of anesthesia (p=0.021), ICU stay, mean blood loss and units of blood and products transfusion was more in emergency group.

The maternal and perinatal outcomes were favourable in elective group. There was no maternal mortality/perinatal mortality observed in elective group. 85.71% patients in emergency group were referred out of which 71.42% were unbooked. In emergency group, complications were more compared to elective group. After analysing all the cases, following observations were noted.

**Table 3: Indications of peripartum hysterectomy.**

S. no.	Indication	Frequency (n=18) %
1	Atonic PPH	5 (27.77)
2	Adherent placenta, central placenta previa with focal increta,percreta	4 (22.22)
3	Traumatic PPH	3 (16.66)
4	Hemoperitoneum	1 (5.55)
5	Secondary PPH	1 (5.55)
6	Rupture uterus	1 (5.55)
7	Continuous oozing from angle	1 (5.55)
8	Placenta previa (without aceta, increta, percreta)	1 (5.55)
9	Broad ligament hematoma	1 (5.55)

**Table 4: Maternal and perinatal outcome of study subjects.**

S. no.	Parameters	Emergency peripartum hysterectomy (n=14)	Elective peripartum hysterectomy (n=4)
1	Mean preoperative Hb in gm %	8.30	10.47
2	Mean duration of anaesthesia in hrs.	2.68	1.87
		P value =0.021 statistically significant	
3	Mean units of blood and blood products transfusion	12.7	8.5
4	No. of patients who required inotropic support	8 (57.14%)	Nil (Zero%)
5	ICU Stay in days	8.89	2.5
6	Mean Hb on discharge in gm %	5.54	9.87
	<b>Maternal outcome</b>		
7	Alive	9 (50%)	4 (100%)
	Died	4 (28.57%)	Nil
	LAMA	1 (7.14%)	Nil
	<b>Perinatal outcome</b>		
8	NICU admission	9 (50%)	1 (25%)
	Alive	9 (64.28%)	4 (100%)
	Mortality	5 (35.71%)	Nil
9	Referred	12 (85.71%)	1 (25%)
	Non-referred	2 (14.28%)	3 (75%)
10	Booked	4 (28.57%)	3 (75%)
	Unbooked	10 (71.42%)	1 (25%)
11	Mean Blood Loss in ml	3773	1825

**Table 5: Postoperative complications following peripartum hysterectomy.**

S. no.	Complication	Emergency (n=14)%	Elective (n=4)%
<b>Maternal</b>			
1	Death	4 (28.57)	Zero
2	Febrile morbidity	3 (21.42)	1 (25)
3	Renal failure requiring dialysis	3 (21.42)	Zero
4	Pelvic collection	2 (14.28)	Zero
5	Re-exploration	1 (7.14)	1 (25)

Continued.

S. no.	Complication	Emergency (n=14)%	Elective (n=4)%
6	Post-operative wound sepsis	1 (7.14)	1 (25)
7	DIC	1 (7.14)	Zero
8	Respiratory complication	1 (7.14)	Zero
9	LAMA	1 (7.14)	Zero
<b>Perinatal</b>			
1	NICU admission	9 (50)	1 (25)
2	Alive	9 (50)	4 (100)
3	Mortality	5 (35.71)	Nil

Some patients had more than one complication.

## DISCUSSION

In modern times there has been a consistent rise in the caesarean deliveries, the causes may be attributable to early diagnosis of complications, small family norms, maternal apprehension towards pains during labour, usage of consumer forum and its medico-legal implications, etc. New developments in anaesthesia, blood bank facilities, good antibiotics, increased use of artificial reproductive techniques and back-up of intensive care facilities has eventually added up to the increasing caesarean trend furthermore. Hence chances of repeat caesarean sections increase, ultimately increasing the incidence of placenta previa and accreta spectrum.

In our series, the incidence of peripartum hysterectomies was 2.76/1000 deliveries. Worldwide, the rate of peripartum hysterectomy varies widely. In high income countries less than one in 1000 deliveries is complicated by peripartum hysterectomy, whereas in Nigeria and Pakistan the incidence is 4 and 11 per 1000 deliveries, respectively.<sup>8</sup> Other researchers quote it as 6.9/1000.<sup>9</sup>

Majority of our patients were in 26-30 years' age group. Jaya et al had majority mothers >20-30 years of age, this could be due to socio-cultural difference.<sup>10</sup>

As far as previous delivery was concerned, out of all the women, 33.3% had previous one CS, 11.11% had previous two CS and 55.55% had previous vaginal delivery. Sharma reported 85% previous CS, one study quotes incidence of previous CS to be 45 to 73 %.<sup>7,9</sup> A nine-fold higher risk of hysterectomy after caesarean section is reported in a study, where 77% of women undergoing hysterectomy were delivered by caesarean section, more than half of these were planned.<sup>11</sup>

In total we had 72.22% women requiring CS in current delivery whereas 27.77% patients delivered by vaginal route in current delivery.

In our study, out of 14 who underwent emergency hysterectomies, 10 women had no history of any prior caesarean. 27.77% hysterectomies were for atonic PPH, adherent placenta had a lesser contribution, 22.22% followed by traumatic PPH (16.66%).

We found that there were 0.46% hysterectomies following CS in current pregnancy and 0.13% following vaginal delivery. Jaya et al found 0.27% after CS and 0.03% after vaginal delivery.<sup>10</sup>

Recent studies have made the prenatal diagnosis of placenta accreta in 11-14 weeks of gestation.<sup>12</sup> Serial follow up scans are recommended starting from 28 weeks to predict degree and extent of invasion.<sup>13</sup>

Prenatal screening for PAS is extremely important to prevent adverse outcomes. Three vital steps are important, identification of high-risk women from a risk population, accurate diagnosis for analysing the degree and extent of invasion and planned management.

ACOG recommends delivery at 34 to 35+6 weeks by a scheduled C-section and hysterectomy in a stable patient.<sup>14</sup>

In this series the most common indication was atonic PPH 27.77%, which is consistent with Jaya 25% Sharma 27.6%.<sup>9,10</sup> This was followed by adherent placenta-22.22%, similar to Jaya et al 21.4%.<sup>10</sup> In this series traumatic PPH was 16.66% consistent with Jaya et al 17.9%.<sup>10</sup> However recent studies have indicated that abnormal placentation is replacing uterine atony as most common indication.

In our series atony was mostly seen in referred cases where prolonged obstructed labour and anaemia was observed. Recently most studies report adherent placenta as the most common indication. The incidence of rupture uterus as an indication for hysterectomy was 1/18 (5.55%). This may be attributable to the changes in modern obstetric practice with more judicious use of oxytocin as well as judicious trial of labour in cases of previous caesarean.

We found overall 22.22% maternal deaths, in all referred cases in whom emergency peripartum hysterectomies were performed. Cause of death was adherent placenta in two, atonic PPH in one and traumatic PPH in one woman. Others report maternal mortality of 17.9%, 10.5%.<sup>9,10</sup> Febrile morbidities were observed in 4 (22.22%) cases - three in emergency and one in elective, Jaya et al reported as 25%, renal failure requiring dialysis was in 16.66% in this series.<sup>10</sup>

Neonates who required NICU admission were from emergency group (50%) and only 25% were from elective group. Perinatal mortality was 27.77% which was from emergency group similar to Jaya et al 28.6%, no perinatal mortality from elective group.<sup>10</sup>

A concept of near-miss is described by WHO. Any woman who undergoes peripartum hysterectomy could have potentially died without timely and proper management.

ACOG obstetric consensus Placenta Acreta spectrum (PAS) has developed a standardized risk-appropriate idealized care system for facilities, based on region and expertise of the medical staff to reduce overall maternal morbidity and mortality in United States.<sup>14</sup> This system exists for conditions like placenta acreta spectrum. Definite diagnostic and management plans are released in the document for “expected or antenatally diagnosed” and “unexpected/unplanned” intraoperative recognition of placenta acreta spectrum.

Most important fact is PAS must be diagnosed early with a high index of suspicion in situations of low-lying placenta in a gravida with previous caesarean delivery. USG Doppler and MRI being the best diagnostic modalities. This helps in minimizing maternal and foetal morbidity and mortality to a great extent. Peripartum hysterectomy is associated with significant blood loss, needing large volumes of blood and blood product transfusion. In cases of obstetric haemorrhage, the decision for peripartum hysterectomy should be taken before the patient goes in irreversible shock without wasting time in managing the irresponsive haemorrhage. Multidisciplinary team comprising of Obstetrician, Anaesthetist, Radiologist and Neonatologist is an absolute requirement in patients with PAS.

In this study 77.77% peripartum hysterectomies were performed in emergency and 22.22% were electively planned. All done electively were for adherent placenta. Sharma reports it to be 40% for elective and 60% for emergency.<sup>9</sup>

The postoperative complications and morbidity was significantly less in electively done cases. Elective cases were done for placenta acreta, a multidisciplinary approach, prior arrangements of blood & blood products with ICU backup resulted in good outcome this is consistent with Sharma.<sup>9</sup> There was no mortality in elective group which is consistent with Sharma.<sup>10</sup>

In our case series, patients in whom peripartum hysterectomy was performed electively had a favourable maternal and perinatal outcome in terms of mean duration of anaesthesia, mean units of blood and blood products transfused, inotropic support, length of ICU Stay, maternal morbidity and mortality, length of NICU stay and perinatal mortality as compared to those who had peripartum hysterectomy in emergency situations (Table 4).

Some conservative methods to manage intractable obstetric haemorrhage have been described. One is triple-P procedure-which involves perioperative placental localization and delivery of the fetus via transverse uterine incision above the upper border of the placenta; pelvic devascularization; and placental non-separation with myometrial excision and reconstruction of the uterine wall-as a safe and effective alternative to conservative management or peripartum hysterectomy. Other being common iliac artery balloon occlusion before caesarean hysterectomy for PAS has been studied, concluding its efficacy.<sup>15</sup>

## CONCLUSION

Peripartum hysterectomy is one of the dreadful situations in the obstetric practice with very high foeto-maternal morbidity and mortality. Rate of peripartum hysterectomy was higher in women who gave birth by caesarean section. Electively planned peripartum hysterectomies with a multidisciplinary team approach results in better outcome. Commonest indications were uterine atony and abnormal placentation. With the increasing trend of caesarean deliveries, there is shift in the spectrum of indications towards placenta accreta spectrum.

Additionally, keeping a high index of suspicion for prenatal diagnosis of accreta spectrum and identifying risk factors for atonic PPH, good antenatal care, awareness in general population and encouraging family planning will definitely result in a favourable maternal and perinatal outcome. For this, obstetrician needs to have a watchful eye on cutting down the caesarean trend by careful management of labour.

The medical fraternity should try with the fullest capacity to save every mother and baby. We need larger scale studies to ascertain the recent trend analysis in risk factors and appropriate management and timely intervention.

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