



## PERIPARTUM HYSTERECTOMY- A RETROSPECTIVE ANALYSIS

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**ABSTRACT**

**Background:** Peripartum hysterectomy (PH) is the removal of the uterus performed in obstetrical complications such as irreparable uterine rupture, uncontrolled postpartum hemorrhage (PPH) and placenta accrete syndrome. In spite of increased medical facilities its incidence has increased in recent years.

**Methods:** A retrospective analysis of 20 cases of peripartum hysterectomy performed from January 2014 to June 2021 was done. The total numbers of caesarean and vaginal deliveries were recorded. Main outcome measures were the incidence, indication, management option used, maternal and fetal outcome.

**Results:** There were a total of 6824 deliveries; 3901 vaginal and 2923 caesarean sections. A total of 20 patients underwent PH. The incidence of PH in our study was 2.9/1000 total deliveries and 6.8 /1,000 caesarean births. The main indication was rupture uterus with total of 10 cases (50%). Majority of cases 13 (65%) were in the age group of 20-30years and 17 (85%) were unbooked. 17 (85%) cases were referred from peripheral centers. All women who had uterine rupture were referrals from other centers. Intensive care management was required in 17(85%) women postoperatively. The common maternal complications were febrile morbidity, bladder injury, and surgical site infection. There was no maternal mortality. But neonatal mortality was in 10 cases (50%). The average period of hospital stay was 10 days.

**Conclusion:** The most common indication for peripartum hysterectomy was rupture uterus. Correct assessment with quick intervention with a multidisciplinary team approach is the main key to prevent maternal mortality and morbidity.

**KEYWORDS :** Peripartum hysterectomy, uterine atony, rupture uterus, placenta accrete, maternal mortality.

**INTRODUCTION**

Peripartum hysterectomy refers to surgical removal of the uterus during pregnancy or postpartum.<sup>1</sup> When performed at the time of cesarean delivery, the operation is termed cesarean hysterectomy. If done within a short time after vaginal delivery, it is termed postpartum hysterectomy. Peripartum hysterectomy is a broader term that combines the two.<sup>2</sup> It is usually performed for severe obstetric complications such as major obstetric hemorrhage, abnormally invasive placenta, uterine rupture, or sepsis. Peripartum hysterectomy is included by the World Health Organization as a maternal near-miss criterion and used as a marker for severe postpartum hemorrhage and therefore used as an outcome of interest in obstetric surveillance.<sup>3</sup>

Maternal Mortality Ratio(MMR) of India for the period 2016-18, as per the latest report of the national Sample Registration system (SRS) data is 113/100,000 live births.

The major complications that account for nearly two-thirds of all maternal deaths are severe bleeding (mostly bleeding after childbirth), infections (usually after childbirth), high blood pressure during pregnancy (pre-eclampsia and eclampsia), complications from delivery and unsafe abortions.

Peripartum hysterectomy complicates almost 1 per 1000 deliveries world-wide ranging from 0.2–10.1 per 1000 births, with the prevalence higher in low and middle income, than upper middle and high income settings: 2.8 compared with 0.7 per 1000 deliveries respectively.<sup>4</sup>

Peripartum hysterectomy becomes a life saving procedure when severe obstetrical hemorrhage fails to respond to conservative treatment. The incidence of peripartum hysterectomy may vary from each institute depending on the level of obstetric facilities at peripheral centers. Good obstetric outcome depends on many factors like awareness about regular antenatal care, intranatal maternal and fetal monitoring, skill of the birth attendant, proficiency of attending physician/obstetrician, availability of blood transfusion and quick transport facility to higher center in case of emergency. The present study was carried out to determine the incidence, indications, maternal and perinatal outcome associated with peripartum hysterectomy.

**MATERIAL & METHOD****Study population and case definition**

This was a descriptive, retrospective cohort study in which all women undergoing PH from January 2014 to June 2021 at a tertiary care center

of North India were identified from the medical records. The total numbers of deliveries including cesarean and vaginal deliveries in the study period were also recorded. PH was defined as hysterectomy performed at the time, or at any time from delivery beyond 20 weeks of gestation to discharge from the primary obstetric event<sup>5</sup>. All cases conforming to the case definition were included in the study. Relevant demographic and clinical data (such as age, parity, type of delivery, indication for hysterectomy, obstetric risk factors, management, and outcomes) were recorded and analyzed. Preoperative obstetric ultrasound including morphology, location of the placenta and operative notes, and histopathology of the uterus and placenta were used to confirm the final diagnosis.

There were no elective obstetric hysterectomies performed for sterilization or any other gynecological condition during the study period. All deliveries were performed after 24 weeks' gestation and the hysterectomy was performed within 24 h after delivery. Ethical approval for the study was obtained from the institute ethics committee.

**RESULTS:**

There were a total of 6824 deliveries; 3901 vaginal and 2923 caesarean sections. A total of 20 patients underwent a PH. During the study period there was 1 case of uterine rupture and 1 previous caesarean scar rupture; both of them underwent repair of the uterus and hence not included in the study. The incidence of PH in our study was 2.9 per 1,000 total deliveries and 6.8 /1,000 caesarean births. The main indication was rupture uterus with 10 cases (50%). All patients received transfusion of blood and blood products.

	N (%)	incidence per 1000
Total Deliveries	6824	
Total Vaginal Deliveries	3901(57.2%)	
Total Caesarean Deliveries	2923(42.8%)	
Total PH Cases	20(0.29%)	2.9
PH Cases Following Caesarean Delivery	5(25%)	
PH Cases Following Vaginal Delivery	6(30%)	
PH After Laparotomy	9(45%)	

**Table 1 Incidence of PH**

Demographics and clinical characteristics

The mean age of women undergoing hysterectomy was 27.6 years, with 13 women (65%) less than 30 years. 17 women (85%) were unbooked and 13 women were referred from the peripheral centre. 6

women were Para 5 or more. 7 (35%) were preterm with 3 women being less than 28 weeks. Out of these 3 women 1 had traumatic PPH after home delivery, 1 had complete placenta previa and 1 had placenta percreta.

**Table 2 Sociodemographic characteristics of PH**

VARIABLE	NUMBER(n=20)	PERCENTAGE
AGE(years)		
<20	0	
20-30	13	65
>30	7	35
PARITY		
Primi	0	
2-4	14	70
>=5	6	30
GESTATIONAL AGE		
>37 weeks	13	65
28-37 weeks	4	20
<28 weeks	3	15
Booking status		
Booked	3	15
Unbooked	17	85
Referred	17	85

Indication of hysterectomy  
Rupture uterus (10/20; 50%) was the major indication for PRH. Of these eight had ruptured at arrival in our emergency room, one woman had rupture following delivery after trial of vaginal birth after caesarean (VBAC) and one had perioperative partial uterine rupture during caesarean. Of the 5 women with intractable hemorrhage, 4 had atonic PPH, 1 had traumatic PPH. out of 5 women with abnormal placenta, 2 had placenta previa and 3 had placenta accrete.

**Table 3 Indication and clinical course**

Variable		number (n=20)	Percentage
<b>Indications of PH</b>			
Uterine rupture	Unscarred uterus	9	45
	Scar rupture	1	5
Postpartum haemorrhage(PPH)	Atonic	4	20
	Traumatic	1	5
Abnormal placenta	Placenta previa	2	10
	Placenta accrete syndrome	3	15
<b>Type of surgery</b>			
Subtotal hysterectomy		16	80
Total hysterectomy		4	20
<b>Complications of PH</b>			
Febrile morbidity		12	60
Blood transfusion		20	100
Wound infection		11	55
Bladder injury		3	15
Bowel injury		1	5
ICU admission		17	85
Prolonged hospital stay(>10 days)		9	45
Maternal mortality		0	0
<b>Fetal outcome</b>			
Alive & mother side		5	25
Alive & NICU admission		5	25
Intrauterine death		10	50

**Maternal and fetal outcomes**

Preoperatively, 11 (55%) patients were hemodynamically unstable and required resuscitation. All cases were operated under general anesthesia. All patients required transfusion of blood and blood products. Mean duration of surgery was 2.2 ± 1 h. 15 (75%) patients were extubated on operation theater table after surgery while 5 (25%) had delayed extubation. 17(85%) patients were admitted in ICU. In ICU, the maximum duration of stay was 5 days and minimum was 1 day. There was no maternal mortality. The febrile illness (12/20; 60%) was the most common post-PH complication and the surgical site infection (11/20: 55%) was the second most common complication. Bladder and bowel injury was in 3(15%) and 1 (5%) case respectively. 10(50%) women had intrauterine fetal death. 5(25%) were alive and

mother side and 5(25%) were admitted in NICU.

**Table 4 comparison of rupture uterus and other causes**

Variable	Rupture (10)	Other causes(10)	
		PPH(5)	Abnormal placenta(5)
Age			
20-30	4	3	3
>30	6	2	2
Parity			
2-4	3	2	2
>5	7	3	3
Gestational age			
>37 weeks	7	3	3
28-37 weeks	3	1	0
<28 weeks	0	1	2
Booking status			
Booked	1	1	3
Unbooked	9	4	2
Referred			
Yes	10	4	3
No	0	1	2
Mode of delivery			
Laparotomy	9	0	0
Vaginal	1	2	3
Caesarean	0	3	2
Duration of surgery	2.5+/-1.2 hours	1.2+/-0.8 hours	1.1+/-0.5 hours
Type of surgery			
Subtotal hysterectomy	8	4	4
Total hysterectomy	2	1	1
Estimated blood loss(litres)	2.3+/-1.6	2.1+/-1.7	1.6+/-1.1
Post operative haemoglobin(g/dl)	8.1+/-1.5	8.5+/-1.0	8.4+/-1.1
Bladder injury	3	0	0
Yes			
No	7	0	0
Bowel injury			
Yes	1	0	0
No	9	0	0
Wound infection			
Yes	8	1	2
No	2	4	3
Blood transfusion	10	5	5
ICU admission	9	5	3
Hospital stay			
>10 days	8	1	0
<10 days	2	4	5
Fetal outcome			
Alive	1	5	4
Intra uterine death	9	0	1

**DISCUSSION**

Worldwide, the rate of PH varies widely from rates less than one in 1,000 deliveries to as high as 50/1,000 deliveries<sup>6,7,8</sup>

The incidence of PH in our hospital was 2.9 per 1,000 deliveries which is more than the reported rates in Asia and India.<sup>5,9</sup>

Over the years, the incidence of peripartum hysterectomy has increased from 1.2% to 2.9 % in our institute. This may be because our institute is a tertiary care referral center and women are referred from peripheral centers mostly when the case gets complicated.

In our study, the most common indications of peripartum hysterectomy were rupture uterus (50%), atonic PPH (20%), and (15%). In a similar study, the main indications were uterine rupture (62%) followed by atony (18%) and adherent placenta (18%).<sup>10</sup>

This is in contrast to other studies where placenta accreta has been the primary indication for hysterectomy and accounts for 38%–50% of all peripartum hysterectomies.<sup>11,12</sup>

In the present study obstructed labour, malpresentations,

grandmultiparity, fetopelvic disproportion and injudicious use of oxytocin led to spontaneous extensive rupture of unscarred uterus. The anatomy was distorted to the extent that conservation of organ was not possible. Hysterectomy was the only option to save the life of the patient. This highlights the problem of poor antenatal and intranatal care, and inaccess to health services. Regular antenatal care helps in the early identification of high risk factors, correction of modifiable risk factors, and planning of interventions in high risk conditions. National programs promote regular ANC care and institutional deliveries, but still, many women report to the hospital either in labor or after a complication. This again shifts the focus on the age old problems of illiteracy, poverty, lack of infrastructure and transport facility in the state.

Uterine atony was the second commonest indication for peripartum hysterectomy. All patients in this group received oxytocin infusion, misoprostol and ergometrine. In addition, 3 patients had intramyometrial injections of prostaglandin F2 alpha and intrauterine packing.

Women who underwent PH in our study were younger (30 years or less) compared to high-income countries where the mean age was  $34.5 \pm 5.5$  years<sup>7,8</sup>. Younger age at hysterectomy can be attributed to younger age at marriage and childbearing in our country. A similar trend was also seen in the woman's trial, where the mean age was 28 years among women in Asia and Africa undergoing PH<sup>6</sup>

Majority of women in the study were unbooked and referred to our center. Unbooked women were those who had either one or no antenatal visit in a healthcare center and presented at our hospital in labor or with a high-risk condition such as placenta previa, uterine rupture etc. Most cases of uterine rupture, who presented to our hospital, were unbooked, thereby missing the opportunity of early intervention which could have prevented PH. This was attributed to a lack of understanding about the possible risk in pregnancy and perceiving pregnancy as a natural process. Unbooked status was significantly associated with anaemia due to poor nutrition and limited intake of recommended iron and folic acid tablets<sup>13</sup>

Postoperative adverse maternal events were febrile morbidity, wound sepsis, bladder and bowel injury all of which responded to broad-spectrum antibiotics. Liberal use of blood products can result in a risk of serious infections such as pneumonia, bloodstream infections, and wound infections<sup>14</sup>. Hence broad-spectrum antibiotics must be given in the event of massive transfusion and sepsis, which helps in the recovery of women.

There was no maternal mortality in our study. This can be attributed to an early decision for hysterectomy, immediate blood and blood products replacement, team effort of experienced obstetrician, surgeon, and anesthetist in management of PH and intensivist in post-surgical care of the patient in ICU.

Few studies have mentioned fetal outcomes in PH. 10(50%) babies were still born and majority was in cases of uterine rupture (9/10). Perinatal mortality in our study was 50% and the most common cause was rupture uterus. This is lower than the study conducted by others in Libya and Saudi Arabia which revealed that 73% of fetal mortality in their series was due to uterine rupture<sup>15</sup>. Alive with mother side and alive requiring NICU support were 5(25%) in each group. PH is a risk factor for stillbirth when undertaken in the presence of maternal complications such as a ruptured uterus, obstetric haemorrhage, MAP, placental abruption, and associated severe anaemia. These conditions cause fetal anaemia leading to intrauterine demise which is likely cause in our babies<sup>16,17</sup>.

## CONCLUSION

Peripartum hysterectomy is a challenging obstetric surgery performed in trying circumstances of life threatening hemorrhage. A significant percentage of the patients who are at high risk for adverse obstetric outcome and a possible need of hysterectomy can be identified in antenatal period with proper antenatal assessment. The preoperative risk factors include previous history of CS, placenta previa and accreta. The presence of preoperative risk factors should involve senior consultation and referral or transfer of patients to a tertiary care facility in the antenatal period. Maternal morbidity and mortality can be lowered with anticipation of the risk factors, involvement of an experienced obstetrician at an early stage of management and a prompt decision regarding hysterectomy after adequate resuscitation.

**Conflict of interest:-** None

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