



## PERIPARTUM HYSTERECTOMY: A RETROSPECTIVE ANALYSIS AND EVALUATION OF THE NEED OF THE LIVE SAVING PROCEDURE IN A TERTIARY CARE HOSPITAL

### Community Medicine

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### ABSTRACT

**Background:** Peripartum hysterectomy is a major operation and is invariably performed in the presence of life threatening situation to the mother, during or immediately after abdominal or vaginal deliveries. **Aim:** To evaluate and analyse the incidence, risk factors, indications, outcomes, and complications of Peripartum hysterectomy performed in a tertiary care hospital and to compare the results with the literature. **Materials And Methods:** The medical records of 13 patients who had undergone Peripartum hysterectomy between November 2020 and October 2021 were reviewed retrospectively. Maternal factors predisposing to pph in the present pregnancy and delivery, hysterectomy indications, operative complications, postoperative conditions, maternal and neonatal outcomes were evaluated. There were 13 Peripartum hysterectomy out of 4910 deliveries, a rate of 2.64 per 1,000 deliveries. 10 hysterectomies were performed after abdominal deliveries and 3 after vaginal delivery. The most common indication for hysterectomy was atonic PPH (6/13), followed by placenta previa (4/13). There was 1 case of intraoperative bladder injury. 2 hysterectomies done for cases referred as post lscs with shock due to internal haemorrhage and hemoperitoneum. There was one maternal death because of Irreversible shock with acute renal injury due to internal haemorrhage and late referral after 36 hours. There were 3 cases of neonatal mortality. **Conclusion:** Postpartum hemorrhage and placenta previa are the leading causes of obstetric hysterectomy in a tertiary care set up. Emergency obstetric hysterectomy has been a life saving intervention for mothers with life threatening obstetric hemorrhage when conservative surgical modalities fail and interventional radiology is not immediately available and the patient presents with shock.

### KEYWORDS

#### INTRODUCTION:

Peripartum hysterectomy is defined as the surgical removal of uterus either at the time of vaginal or caesarean delivery or within puerperium period and is usually performed due to excessive obstetric hemorrhage. It is a lifesaving procedure, when all other measures and interventions to secure maternal life have failed and maternal life loss becomes inevitable [1].

Severe postpartum hemorrhage (PPH) is a major cause of maternal mortality and morbidity [2,3] and is increasing in incidence worldwide [4,5]. Hemorrhage is the cause of 12% to 18% of deaths during pregnancy [6-8] and emergency hysterectomy is increasingly performed to treat uncontrollable PPH. Sustainable Development Goal 3.1, by WHO, aims to reduce the maternal mortality ratio (MMR) to less than 70/100,000 live births by 2030 [11]. Hysterectomy following Caesarean section was ever first described by Porro E (1876), it was performed to prevent maternal death from postpartum haemorrhage [9]. The incidence of emergency obstetric hysterectomy varies from about 1/350 to 1/7000 deliveries and the maternal mortality rate ranges from 0% to 35%.

The most common indication for EPH is severe uterine hemorrhage that cannot be controlled by conservative measures [12]. Such hemorrhage may be due to abnormal placentation (e.g., placenta previa and placenta previa accreta), uterine atony, uterine rupture, leiomyomas, coagulopathy, or laceration of a uterine vessel that is not treatable by conservative measures [12-14]. The relative frequency of these conditions is variable and is dependent upon the patient population and practice patterns [12].

A sequence of conservative measures to control uterine hemorrhage should be attempted before resorting to more radical surgical procedures. If an intervention does not succeed, the next treatment in the sequence should be swiftly instituted.

This study was designed to determine the rate of Peripartum hysterectomy at Government Sivagangai medical college hospital, a tertiary care centre, the indication for performing the procedure, predisposing factors, the complications and need of the procedure in spite of new advanced managements for PPH and the outcome of mother and baby.

#### Aim Of The Study:

The aim of the study is to evaluate the need of this life saving procedure

and to make recommendations and preventive measures that will reduce the incidence of the procedure and improve its outcome.

#### MATERIAL AND METHODS:

This is a retrospective, observational study of antenatal/ postnatal women requiring Peripartum hysterectomy. The data over a period of one year, from November 2020 to October 2021 from the Department of Obstetrics and Gynecology, Government Sivagangai medical college hospital, Sivagangai, Tamilnadu was collected and analysed.

Inclusion criteria included all women who delivered in the hospital between November 2020 to October 2021 and who underwent hysterectomy for obstetric indications after 28wks of gestation, at the time of delivery or subsequently within the defined period of puerperium (42 days). All women who delivered outside the hospital and were referred for obstetric complications meriting a hysterectomy and fulfilling all the above conditions were also included in the study. Exclusion criteria: Women who underwent hysterectomy before 28wks of gestation, for indications other than obstetric, or outside the stipulated time of 42 days post-delivery were excluded from the study.

The collected data was analysed. The incidence, age, parity, antenatal high risk factors, indications for hysterectomy and complications, along with the ultimate foeto-maternal outcome was analysed.

#### RESULTS:

The outcome of the study conducted at a tertiary care centre which caters 4 districts was analysed and it was compared and reviewed with existing literatures.

Out of 4910 deliveries, the incidence of obstetric hysterectomy in our study was 0.15% following vaginal delivery, and 0.33% following abdominal delivery. The overall incidence was 0.26%. Table 1 shows the association of type of delivery with emergency obstetric hysterectomy.

**Table 1:-Incidence Of Peripartum Hysterectomy Following Vaginal Delivery And Cesarean Section.**

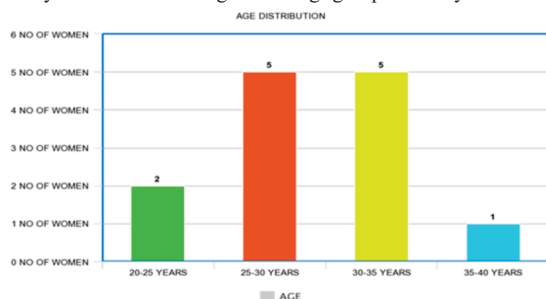
|                    | No. of pts | EOH | Incidence(%) |
|--------------------|------------|-----|--------------|
| Vaginal delivery   | 1916       | 3   | 0.15%        |
| Abdominal delivery | 2994       | 10  | 0.33%        |
| Total              | 4910       | 13  | 0.26%        |

The youngest woman to undergo hysterectomy were 23 years old and the oldest was aged 37 years. Women in the 25 to 35 year-old age group constituted over 77% of cases, and 92.3% of cases were multiparous [Table 2].

**Table 2:- Age Distribution Of Women Included In The Study.**

| AGE   | No. | %     |
|-------|-----|-------|
| 20-25 | 2   | 15.4% |
| 25-30 | 5   | 38.5% |
| 30-35 | 5   | 38.5% |
| 35-40 | 1   | 7.7%  |

Nearly 77% of cases belonged to the age group 25 to 35 years.



**Table 3:- Parity Distribution Of Women Included In The Study.**

| Parity | No. | %     |
|--------|-----|-------|
| P1     | 2   | 15.4% |
| P2     | 7   | 53.8% |
| P3     | 4   | 30.8% |

Multiparous women are more prone for PPH (P2 - 53.8% and P3 -30.8 %)

**Table 4:- Place Of Delivery**

| Place Of Delivery                       | No. | %     |
|-----------------------------------------|-----|-------|
| GSMCH                                   | 11  | 84.6% |
| Outside deliveries (GH)                 | 2   | 15.3% |
| PHC, other tertiary care, Pvt hospitals | 0   | 0     |

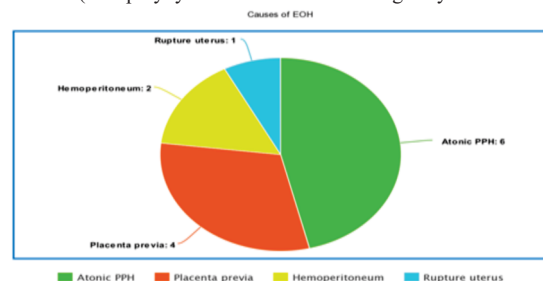
Of the 13 cases of Peripartum hysterectomy studied, 84.6% of patients delivered in our institution where as 15.3% of patients delivered outside the hospital and were later referred for further management.

**Table 5:- Indications Of Peripartum Hysterectomy In The Study Population.**

| INDICATION              | NUMBER | PERCENTAGE |
|-------------------------|--------|------------|
| Atonic PPH              | 6      | 46.15%     |
| Adherent placenta       | 4      | 30.8%      |
| Hemoperitoneum/hematoma | 2      | 15.3%      |
| Rupture uterus          | 1      | 7.7%       |
| TOTAL                   | 13     |            |

Atony, morbidly adherent placenta, and traumatic PPH were the three chief indications for the procedure[Table 5].

Atonic postpartum hemorrhage was the indication for Peripartum hysterectomy in 6 cases (46.15%). Atony was associated with previous cesarean in 2 cases, with abruption in 2 cases and with distended uterus in 2 cases (as in polyhydramnios in 1 case and big baby in one case).



Morbidly adherent placenta was the indication for peripartum hysterectomy in 4 cases (30.8%) and all were associated with previous caesarean complicating pregnancies. 2 cases were referred from outside as traumatic PPH. A case of previous 2 cesarean ended up in rupture uterus and hysterectomy was done.

Only 30.8% (4/13) of cases underwent total hysterectomy in our study. In the remaining 69.2%(9/13) sub-total hysterectomy was performed. Total hysterectomy was performed mainly for cases of low-lying placenta, adherent or otherwise, where removal of the cervix was considered mandatory for complete hemostasis. Bilateral uterine artery ligation and B lynch were done in all 6 cases of atonic PPH.

Initial resuscitation was done by adequate replacement with IV fluids and blood products. All patients received transfusion of blood and blood products, as per requirement, ranging from 4 to 12 units, with an average of 7 units.

**Table 6:- Total Transfusion Of Blood Products**

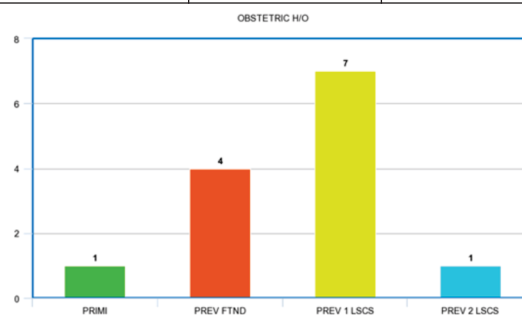
| INDICATION        | No of cases | PC | PLATELET | FFP |
|-------------------|-------------|----|----------|-----|
| Atonic PPH        | 4           | 12 | 3        | 22  |
| Adherent placenta | 4           | 11 | -        | 8   |
| Abruption         | 2           | 5  | 4        | 6   |
| Traumatic PPH     | 2           | 3  | 2        | 4   |
| Rupture uterus    | 1           | 6  | 2        | 4   |

There was bladder injury in a case of previous 2 cesarean section with rupture uterus. There were two cases of Disseminated intravascular coagulopathy, that reversed with prompt management.

The median postoperative hospital stay was 12 days (range 10–21) days. There was one maternal death because of irreversible shock and acute renal failure due to late referral.

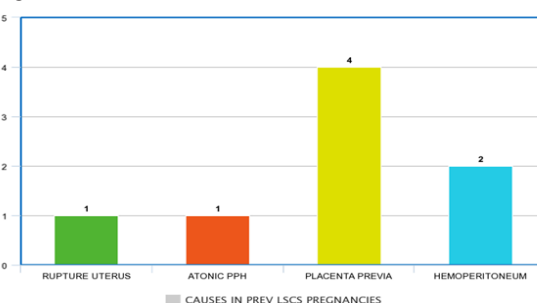
**Table 7:- Obstetric History**

| Obstetric H/o   | No. | %     |
|-----------------|-----|-------|
| Primigravida    | 1   | 7.7%  |
| Prev normal del | 4   | 30.8% |
| Prev 1 LSCS     | 7   | 53.8% |
| Prev 2 LSCS     | 1   | 7.7%  |



In our study atonic PPH was the cause of hysterectomy in cases of previous vaginal delivery patients. Among the 5 cases, 2 cases had overdistended uterus due to polyhydramnios and twins and 2 cases were associated with abruption.

In our study history of previous LSCS increases risk of peripartum hysterectomy as 8 out of 13 cases were previous LSCS complicating pregnancies which is 61.5%.



**Table 8:- Causes Of Hysterectomy In Previous LSCS Complicating Pregnancy.**

| Cause of hysterectomy in Prev LSCS | No. | %     |
|------------------------------------|-----|-------|
| Atonic PPH                         | 1   | 7.7%  |
| Traumatic PPH                      | 2   | 15.3% |
| Adherent Placenta                  | 4   | 30.8% |
| Rupture uterus                     | 1   | 7.7%  |

Among 8 patients who had previous LSCS complicating pregnancy only 1 patient(7.7%) had EPH due to atonicity. Remaining 7 patients had EPH because of complications related to previous LSCS complicating pregnancy like placenta previa(30.8%), rupture uterus(7.7%) and traumatic PPH(15.3%).

**Table 9:- Factor Of Placenta Previa**

|                                              | No. | Ended in EPH | %    |
|----------------------------------------------|-----|--------------|------|
| Total placenta previa out of 4910 deliveries | 82  | 4            | 4.9% |
| Placenta previa in Previous LSCS compl preg  | 76  | 4            | 5.3% |
| Placenta previa in Previous normal del       | 6   | 0            | 0    |

Incidence of placenta previa in our institution was 1.67%. 82 out of 4910 patients had placenta previa. Out of the 82 patients 76 patients were previous LSCS. 4 out of 76 patients ended in EPH. Patients with placenta previa who had previous normal vaginal delivery did not have major complications at child birth.

**Table 10 :- Feto-maternal Complications**

| MATERNAL COMPLICATIONS | NUMBER | PERCENTAGE |
|------------------------|--------|------------|
| Fever                  | 3      | 23.07%     |
| Coagulopathy           | 2      | 15.38%     |
| Wound sepsis           | 1      | 7.69%      |
| Bladder injury         | 1      | 7.69%      |
| Need for vasopressors  | 2      | 15.38%     |
| Ventilator support     | 3      | 23.07%     |
| Mortality              | 1      | 7.69%      |
| NEONATAL COMPLICATIONS |        |            |
| NICU admission         | 3      | 23.07%     |
| Mortality              | 3      | 23.07%     |

Incidence of maternal mortality after peripartum hysterectomy in our study is 7.69%. Nearly 23% of neonates were admitted to the neonatal intensive care unit (NICU). Neonatal mortality in this study was 23% mainly in cases involving abruption and rupture uterus.

#### PREVENTIVE MEASURES:

According to our study the major risk factor for EPH is previous LSCS complicating pregnancy and overdistended uterus. Measures should be taken for safe reduction of primary LSCS rate. Vigorous curettage to be avoided in abortion. During LSCS proper two layered closure to be followed. Complete hemostasis to be ascertained before abdomen closure. In case of placenta previa cases antenatal MRI should be taken to rule out accreta. In case of previous 2 LSCS patients proper maternal pulse rate chart to be monitored even from 36 weeks of gestation.

#### DISCUSSION

Storer performed the first cesarean hysterectomy in the United States in 1869.[10] Soon thereafter, Porro of Milan described the first cesarean hysterectomy in which the infant and mother survived. As a mark of honor, the procedure is frequently referred to as the Porro operation. [15]

Postpartum hemorrhage remains one of the leading causes of maternal morbidity and mortality. Peripartum hysterectomy is a life saving intervention when all the conservative methods have failed. The reported incidence of emergency peripartum hysterectomy varies from 0.24 to 5.09 per 1,000 deliveries in the literature. Our incidence of 0.26% is in agreement with the recent studies.

In our study, 77% of patients who underwent peripartum hysterectomy were in age group 25-35 years and were multipara. Similar trend was observed by Amad and Mir [16] and Barclay et al. [17]. Other risk factors for peripartum hysterectomy like previous cesarean birth, current cesarean delivery and abnormal placental implantation and invasion were similar to the literature [18].

The most frequent indication for EOH in the present study was uterine atony (46.15%), followed by morbidly adherent placenta (30.76%). A very important observation was the prominent association of prior cesarean delivery with the three major indications of peripartum hysterectomy.

Traditionally, uterine atony was the most common indication for

hysterectomy. In our study, uterine atony is the most common cause of hysterectomy (46.15%). Recent studies have indicated that abnormal placentation is replacing uterine atony as the most common indication for EOH which is being reflected in our study as abnormal placentation is the 2<sup>nd</sup> most common cause(30.76%) of hysterectomy[19].

Uterine rupture leads to EOH in 8% of cases in the UK, [20]and close to 17% in Turkey. But as per our study only 1 case (7.7%) was rupture uterus and incidence of hysterectomy due to rupture uterus is very low because of proper follow up of antenatal mothers throughout their pregnancy, timely referral and prompt management of the referred case at teaching hospital level.

From all this data, we can conclude that there is a considerable variability in the indications of obstetric hysterectomy worldwide, and it varies with obstetric practice in each center.

Peripartum hysterectomy is associated with high complication rates, mainly due to the need for massive blood transfusions, coagulopathy, and injury of the urinary tract[21,22]. All of our patients received blood transfusions and had over two units of blood. Bladder injury was found in 1 patient, and this patient had a previous 2 cesarean delivery. Thus, urological injuries appear to be related to scarring and secondary adhesion of the vesicouterine space following previous cesarean section. In comparison with Smith's 6%, Kwee's 15%, Yucel's 8.8%, Zeteroglu's 12.5%, and Zelop's 9%, in our study urinary tract injury rate is 7.7%. [22,23,24].

In our series, 2 women (15.38%) developed disseminated intravascular coagulopathy, lower than the 33% rate previously reported by Smith and Mousa and Lau et al. [23]. The febrile morbidity rate of 7.7% is higher than that of their studies [23, 25]. There was one maternal death ( 7.7%) in our study. Lower rates of 4 and 4.5% were cited by Kwee et al. and Zorlu et al. and much higher rates of 20 and 23.8% were found by Hamsho and Alsakka and Umezurike et al. Our low mortality rate may be related to an optimal obstetric intervention in the cases of EOH in our department.

Low neonatal mortality 23% in our study is because majority of hysterectomies were due to atonic PPH and those mothers developed complications after delivery of the baby. Even cases with placenta previa babies were delivered healthy because of proper birth planning for such high risk mothers.

Our results confirm the previous observations that EPH is associated with high operative and postoperative complications rates.

Also in our study it was observed that in patients who had previous normal deliveries cause of peripartum hysterectomy was Atonic PPH. whereas in patients who had previous caesarean section, placenta previa was the major cause along with atonic PPH

#### CONCLUSION

Although no risk assessment system can predict all instances where cesarean delivery will be needed, a significant percentage of the patients who are at high risk for severe hemorrhage and the subsequent need of emergency hysterectomy can be identified before surgery. The presence of preoperative risk factors should facilitate consultation, referral or transfer of patients before surgery to a tertiary care facility. Proper surgical measures such as hemostatic sutures or uterine or hypogastric artery ligation or embolization are options in attempting uterine conservation particularly in patients who are young and in whom future fertility is important and who are relatively haemodynamically stable. When conservative treatment is not feasible or has failed, prompt Emergency peripartum hysterectomy is performed failing which the delay would contribute to the maternal morbidity and in unfortunate cases mortality.

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