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# Peripartum Hysterectomy: Incidence, Indications and Maternal Outcomes - A Prospective Study from South India

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**Abstract:** ***Background**: Emergency peripartum hysterectomy (EPH) is a life-saving procedure performed to control intractable obstetric hemorrhage. The incidence and indications have evolved over time, necessitating contemporary analysis. **Objective**: To analyze the incidence, risk factors, indications, and fetomaternal outcomes of peripartum hysterectomy at a tertiary care hospital in South India. **Methods**: A prospective observational study was conducted at Government Raja Mirasudhar Hospital, Thanjavur for a period of 12 months. All cases of peripartum hysterectomy were analyzed for demographic characteristics, indications, risk factors, surgical details, and maternal and neonatal outcomes. **Results**: Among 18,527 deliveries, 46 peripartum hysterectomies were performed, yielding an incidence of 2.5 per 1,000 deliveries (0.2%). The incidence was higher following cesarean section (4.8/1000) compared to vaginal delivery (0.7/1000). The majority of women (71.7%) were aged 25-34 years, and 89.1% were multiparous. Abnormally invasive placenta was the leading indication (60.9%), followed by intractable atonic postpartum hemorrhage (32.6%). Major risk factors included multiparity (89.1%), previous cesarean sections (82.9%), and placenta previa (60.9%). Maternal complications included coagulopathy (28.3%), febrile episodes (26.1%), and acute kidney injury (23.9%). Maternal mortality was 4.3%, and perinatal mortality was 12.8%. **Conclusion**: The incidence of peripartum hysterectomy remains significant, with abnormally invasive placenta being the predominant indication. Previous cesarean sections emerged as a major risk factor, highlighting the importance of judicious use of primary cesarean delivery.*

**Keywords:** Peripartum hysterectomy, postpartum hemorrhage, placenta accreta, cesarean section, maternal mortality

## 1. Introduction

Emergency peripartum hysterectomy (EPH) is defined as the removal of the uterus at the time of cesarean section or within the puerperium, performed as a life-saving procedure in cases of intractable massive obstetric hemorrhage [1]. It represents one of the most challenging obstetric emergencies, requiring immediate surgical intervention to prevent maternal mortality.

The global incidence of peripartum hysterectomy ranges from 0.035% to 0.54%, with higher rates reported from developing countries [2,3]. The procedure has evolved significantly since its first description by Eduardo Porro in 1876, with changing indications reflecting advances in obstetric care and rising cesarean section rates [4].

Contemporary obstetric practice has witnessed a shift in the primary indications for EPH from uterine atony to abnormally invasive placenta, primarily attributed to the increasing incidence of cesarean deliveries and associated placental complications [5]. This study aims to analyze the current incidence, indications, risk factors, and outcomes of peripartum hysterectomy at a tertiary care center in South India.

## 2. Materials and Methods

- **Study Design:** A prospective observational study was conducted at the Department of Obstetrics and Gynecology, Government Raja Mirasudhar Hospital, Thanjavur Medical College, for a period of 12 months.
- **Study Population:** All cases of peripartum hysterectomy performed during the study period were included. Women up to 6 weeks postpartum, irrespective of gestational age, parity, or mode of delivery were included.
- **Data Collection:** Comprehensive data were collected including maternal demographics, obstetric history, indications for hysterectomy, surgical details, complications, and maternal and neonatal outcomes. Institutional ethical committee approval was obtained.
- **Statistical Analysis:** Data were analyzed using SPSS version 18. Descriptive statistics were calculated, and chi-square test was used for categorical variables with significance set at $p<0.05$.

## 3. Results

### 3.1 Incidence and Demographics

During the study period, 46 peripartum hysterectomies were performed among 18,527 deliveries, yielding an overall incidence of 2.5 per 1,000 deliveries (0.2%). The incidence was significantly higher following cesarean section (4.8/1000) compared to vaginal delivery (0.7/1000) and assisted vaginal delivery (0.9/1000).

The mean age of women was 29.2 years (range: 22-41 years). The majority (71.7%) were aged 25-34 years, with 39.1% in the 25-29 years group and 32.6% in the 30-34 years group. Most women (89.1%) were multiparous, with 47.8% being para 3 and 39.1% being para 2. Nearly all cases (97.8%) were booked, and 78.3% were referred from peripheral centers, Figure -1

**Table 1:** Incidence of Peripartum hysterectomy

| S. No. | Mode of delivery | Numbers | Peripartum Hysterectomy | Percentage % | Incidence (per 1000 deliveries) |
|---|---|---|---|---|---|
| 1 | LSCS | 7838 | 38 | 0.5 | 4.8 |
| 2 | NVD | 9619 | 7 | 0.1 | 0.7 |
| 3 | Assisted vaginal delivery | 1070 | 1 | 0.1 | 0.9 |
| | Total | 18527 | 46 | 0.2 | 2.5 |

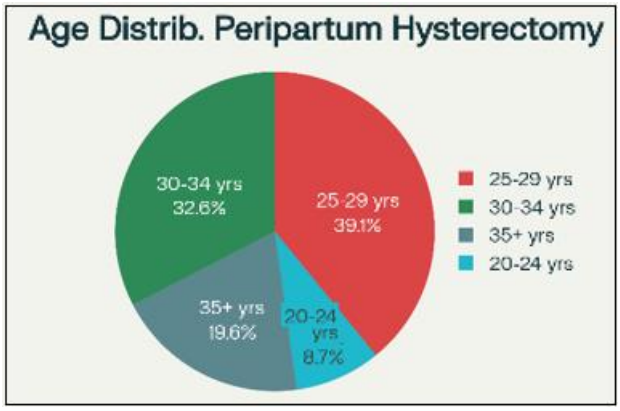


**Figure 1**

### 3.2 Indications and Risk Factors

Abnormally invasive placenta was the leading indication for EPH (60.9%), followed by intractable atonic postpartum hemorrhage (32.6%). Other indications included abruptio placentae, uterine rupture, and retained placenta (2.2% each).

**Table 2:** Peripartum Hysterectomy in various age group

| S. No | Age category in years | Number of cases | percentage % |
|---|---|---|---|
| 1 | 20 -24 years | 4 | 8.7 |
| 2 | 25 -29 years | 18 | 39.1 |
| 3 | 30 -34 years | 15 | 32.6 |
| 4 | 35 years and above | 9 | 19.6 |
| | Total | 46 | 100.0 |

Major risk factors (Figure -2) identified were multiparity (89.1%), history of previous cesarean sections (82.9% - including 43.9% with 2 previous LSCS and 39.0% with 1 previous LSCS), placenta previa (60.9%), previous abortions (21.7%), anemia (23.9%), and advanced maternal age ≥35 years (19.6%).

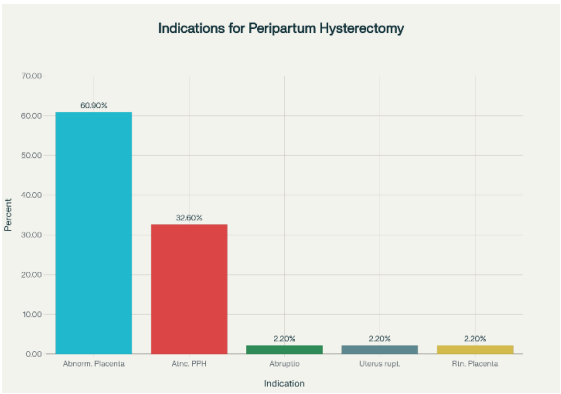


**Figure 2**

### 3.3 Surgical Details

Total hysterectomy was performed in 89.1% of cases, while subtotal hysterectomy was done in 10.9%. Conservative procedures attempted prior to hysterectomy included bilateral uterine artery ligation (60.7% of abnormally invasive placenta cases) and compression sutures (60% of atonic PPH cases), Figure-3

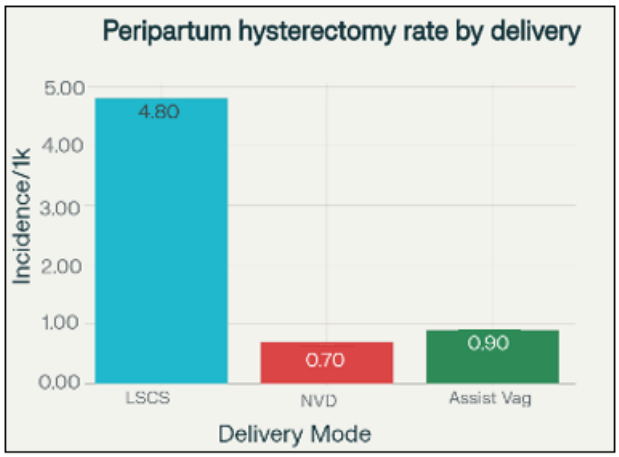


**Figure 3**

### 3.4 Maternal Outcomes

Maternal complications were significant: coagulopathy (28.3%), febrile episodes (26.1%), acute kidney injury (23.9%), ventilator support requirement (21.7%), ionotropic support (17.4%), and bladder injury (6.5%). Two maternal deaths occurred (4.3%), both in referred cases with delayed presentation.

Blood transfusion was universal, with mean requirements of 5.2 units packed cells, 5.8 units fresh frozen plasma, and 3.3 units platelets per patient. Hospital stay ranged from 12 hours to 35 days, with most patients (52.2%) staying 10-19 days. Figure-4

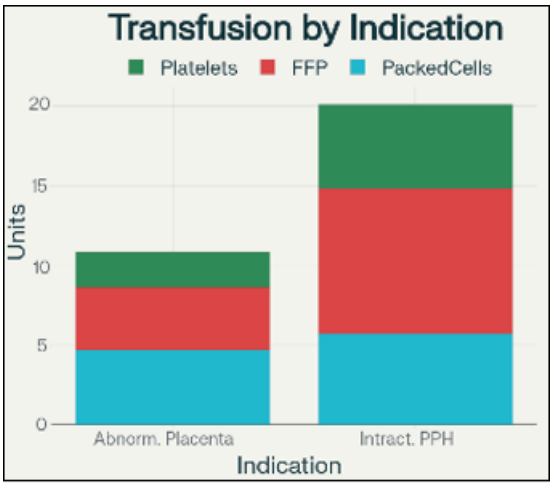


**Figure 4**

### 3.5 Neonatal Outcomes

Among 47 babies (one twin pregnancy), 91.5% were born alive, 8.5% were stillborn, and 30.2% required NICU

admission. The overall perinatal mortality was 12.8% (6 deaths: 4 stillbirths and 2 neonatal deaths).

| S.No. | Neonatal outcome | Number of cases | Percentage % |
|---|---|---|---|
| 1 | Alive | 43 | 91.5 |
| 2 | Still birth | 4 | 8.5 |
| | Total | 47 | 100.0 |

## 4. Discussion

The incidence of peripartum hysterectomy in our study (2.5/1000 deliveries) is higher than reported from developed countries but comparable to other developing nations [6,7]. The predominance of abnormally invasive placenta (60.9%) as the leading indication reflects the global trend away from uterine atony, attributed to improved conservative management techniques and the rising incidence of placenta accreta spectrum disorders [8].

The strong association between previous cesarean sections and EPH (82.9% had prior LSCS) underscores the cascade effect of primary cesarean delivery. Women with previous cesarean sections had significantly higher rates of placenta previa and accreta spectrum disorders, emphasizing the importance of judicious indication for primary cesarean section [9].

Our maternal mortality rate (4.3%) is lower than many developing country reports but higher than developed nations [10]. The deaths occurred in referred cases with delayed presentation, highlighting the importance of early recognition and timely referral. The high referral rate (78.3%) indicates the regional nature of our institution and the complexity of cases managed.

The predominance of total hysterectomy (89.1%) in our series reflects the need for complete hemostasis in cases of adherent placenta involving the lower uterine segment. This approach is consistent with contemporary recommendations for managing placenta accreta spectrum disorders [11].

**Limitations:** Single-center study with relatively small sample size and short study duration limit generalizability of findings.

## 5. Conclusion

Peripartum hysterectomy remains a significant obstetric challenge with an incidence of 2.5 per 1000 deliveries in our setting. The shift from uterine atony to abnormally invasive placenta as the primary indication reflects changing obstetric practices and rising cesarean section rates. Previous cesarean delivery emerged as the most significant modifiable risk factor.

Prevention strategies should focus on reducing primary cesarean section rates through evidence-based indications, improving antenatal detection of placenta accreta spectrum disorders, and ensuring timely referral of high-risk cases to tertiary centers. Enhanced training in conservative surgical techniques and blood banking facilities are essential for managing these complex cases.

**Conflict of Interest:** The authors declare no conflict of interest.

**Funding:** No external funding received for this study.

**Ethical Approval:** Institutional ethical committee approval was obtained from Thanjavur Medical College.

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