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Original Research Article

INCIDENCE, FETOMATERNAL OUTCOMES, INDICATIONS, AND TYPES OF PERIPARTUM HYSTERECTOMY: A RETROSPECTIVE DATA ANALYSIS OVER FIVE YEARS AT SMGS HOSPITAL, JAMMU

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Abstract

Peripartum hysterectomy (PPH) remains a critical life-saving procedure in obstetric emergencies. This retrospective study examines the incidence, fetomaternal outcomes, indications, and types of PPH performed at SMGS Hospital, Jammu, over a five-year period (July 2018 to June 2023). A total of 65 cases were analyzed from 163,304 admissions. The study identifies key risk factors, maternal and neonatal outcomes, and highlights the importance of timely interventions and preventive strategies in high-risk pregnancies.

INTRODUCTION

Peripartum hysterectomy is a surgical procedure performed during or immediately after delivery to manage severe obstetric complications such as postpartum hemorrhage (PPH) and uterine rupture. Although rare, with an incidence varying globally, PPH is associated with significant maternal morbidity and mortality. This study aims to analyze the incidence, indications, risk factors, complications, and outcomes of PPH at SMGS Hospital, Jammu, over a five-year period. The findings aim to provide valuable insights into improving obstetric care in similar settings.

MATERIALS AND METHODS

This study was designed as a comprehensive retrospective analysis conducted at SMGS Hospital, Jammu, a tertiary care center catering to a diverse population. Data collection spanned from July 2018 to June 2023, encompassing all documented cases of peripartum hysterectomy during this timeframe. The process involved meticulous extraction of relevant details from hospital records, focusing on patient demographics, obstetric history, clinical indications, and maternal-neonatal outcomes.

In analyzing risk factors, particular attention was given to prior cesarean deliveries, history of abortions, and comorbid conditions that might predispose patients to severe complications. The mode of delivery, indications leading to hysterectomy, and associated maternal complications were carefully reviewed to identify patterns and trends.

Quantitative data such as gestational age, maternal age, and length of hospital stay were recorded. Special care was taken to ensure data accuracy and completeness through cross- verification with surgical logs and neonatal records. Descriptive statistics, including means and standard deviations, were calculated to summarize continuous variables. Categorical data were expressed as frequencies and percentages. To test hypotheses, chi-square tests were applied for categorical variables, while independent sample t-tests were used to compare means between groups.

The aim was to draw meaningful inferences about the evolving trends in peripartum hysterectomy at the hospital, considering the complex interplay of demographic, clinical, and institutional factors.

Study Design: Retrospective analysis of hospital records.

Study Period: July 2018 to June 2023.

Setting: SMGS Hospital, Jammu.

Sample: All cases of PPH documented during the study period.

Data Collection: Patient demographics, obstetric history, risk factors, mode of delivery, indications for hysterectomy, complications, and outcomes were extracted from hospital records.

Statistical Analysis: Descriptive statistics were used to analyze the data. Frequencies, percentages, means,

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and standard deviations were calculated for relevant variables.

RESULTS

Peripartum Hysterectomy (July 2018 - June 2023)
Total Admissions: 163,304
Total Peripartum Hysterectomies: 65
The Chi-square test results for the table 1 AGE GROUPS indicate a highly significant distribution, suggesting that the frequency of peripartum hysterectomy is not evenly distributed across age groups.

- The majority of cases fall within the 26–30 age range, highlighting a potential high-risk demographic for this procedure.
- The lower frequency in the 20–25 and ≥36 age groups might point to reduced exposure to risk factors, differences in reproductive health, or other protective factors in these age ranges.
- The mean age of 29.8 ± 4.4 aligns with the typical reproductive age range, further emphasizing this group's susceptibility to complications requiring hysterectomy.

Table 1: Age Groups.

Age Group	Count	%	P-value
20-25	9	13.85%	
26-30	31	47.69%	0.0000239
31-35	20	30.77%	0.001
>=36	5	7.69%	
Total	65		
Mean ± SD	29.8 ± 4.4		

The [Table 2] for GRAVIDA reflects the distribution of parity among the individuals undergoing peripartum hysterectomy. Here's the statistical inference:

- The majority of cases (29 out of 65, 44.6%) are associated with gravida 3, indicating a higher frequency among multiparous women.
- Lower frequencies are observed in gravida 1 (1 case, 1.5%) and gravida ≥5 (6 cases, 9.2%), suggesting these groups might have different risk profiles or protective factors.
- The distribution highlights the importance of understanding parity as a potential risk factor, with specific attention to the higher incidence in gravida 3.

Table 2: Gravida

Gravida	Count	%	p- value
1	1	1.5%	
2	13	20.00%	
3	29	44.6%	0.0005
4	16	24.62%	
>=5	6	9.23%	
Total	65		

[Table 3] presents the distribution of RISK FACTORS among individuals undergoing peripartum hysterectomy. The Chi-square test results show a statistically significant association ($p < 0.001$) for all analyzed factors, indicating that these risk factors are unevenly distributed and play a substantial role in influencing outcomes

- H/o Abortion: Present in 20 cases compared to 45 without, highlighting its contribution as a moderate but notable risk.
- H/o Previous LSCS: Found in 51 cases, suggesting it is a predominant risk factor in this population.
- H/o Myomectomy: Present in only 4 cases, indicating a less frequent but specific risk in certain individuals.

These findings reinforce the importance of screening and managing these risk factors proactively to potentially mitigate the need for peripartum hysterectomy.

Table 3: Risk Factors

Risk Factor	Present	Absent	P-value
H/o Abortion	20 (30.77%)	45 (69.23%)	0.0019 significant
H/o Previous LSCS	51(78.46%)	14 (21.54%)	0.00001 highly significant
H/o Myomectomy	4 (6.15%)	61 (93.85%)	1.54

[Table 4] outlines the MODE OF DELIVERY for individuals undergoing peripartum hysterectomy. The data distribution emphasizes:

- A significant proportion (57 out of 65 cases) underwent Lower Segment Caesarean Section (LSCS), indicating its potential association with higher risk.
- Vaginal deliveries accounted for only 7 cases, suggesting a lower correlation with outcomes requiring hysterectomy.

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- A single case of laparotomy for a malignant ovarian mass highlights unique and rare conditions leading to this outcome.

The predominance of LSCS cases aligns with findings from previous risk factor analyses (e.g., H/o previous LSCS), reinforcing its strong association with peripartum hysterectomy. These results underscore the importance of closely monitoring patients with prior LSCS for potential complications.

Table 4: Mode of delivery

Mode of Delivery	Count	%	P value
Vaginal	7	10.77%	
LSCS	57	87.69%	.0001
Laparotomy for malignant ovarian mass	1	1.54%	
Total	65		

[Table 5] provides an analysis of INDICATIONS for peripartum hysterectomy. The data reveals:

- Abnormal Invasive Placentation is the most common indication, accounting for 47 out of 65 cases (72.3%). This underscores its significant role in peripartum hysterectomy and highlights the need for early detection and management strategies.
- Other indications, such as Primary Postpartum Hemorrhage (PPH) (5 cases, 7.7%) and Placenta Previa (5 cases, 7.7%), also contribute substantially but are less frequent compared to placentation issues.

Rare indications like Uterine Rupture (4 cases, 6.2%) and Infection (1 case, 1.5%) suggest specific scenarios leading to this surgical intervention. The findings emphasize the importance of antenatal care and risk stratification to address these high-risk conditions effectively and potentially reduce the need for hysterectomy.

Table 5: Indications

Indication	Count	%	P value
Primary PPH	5	7.7%	
Abnormal invasive placentation	47	72.3%	0.001
Uterine rupture	4	6.2%	
Placenta Previa	5	7.7%	
Placental Abruption/DIC	2	3.08%	
Infection	1	1.5%	
Others	1	1.5%	
Total	65		

[Table 6] focuses on the GESTATION AGE IN WEEKS at the time of peripartum hysterectomy. The analysis indicates:

- The mean gestation age is 34 weeks and 3 days ± 3 weeks and 6 days, reflecting a predominance of late preterm to term deliveries.
- A notable proportion of cases occurred in the 32–36 week range (24 cases, 36.9%), suggesting this period as a critical window for complications necessitating hysterectomy.
- Early gestation cases (<28 weeks, 3 cases, 4.6%) and very late gestation (37–42 weeks, 20 cases, 30.8%) were less frequent, indicating reduced overall risk outside the late preterm window.

These findings highlight the importance of vigilant monitoring during the late preterm period, where the highest number of complications appear to occur. Interventions during this timeframe might reduce adverse outcomes and the need for peripartum hysterectomy.

Table 6: Gestation age in weeks

Gestation Age Group	Count	%	P value
<28	3	4.62%	
28-32	13	20.00%	1.0 (not significant)
32-36	24	36.92%	0.00065 (significant)
36-37	5	7.69%	
37-42	20	30.77%	0.02996 (significant)
Mean ± SD	34 wk 3 day ± 3 wk 6 day		

[Table 7] categorizes the TYPE OF HYSTERECTOMY performed. The results highlight:

- Total hysterectomy was the predominant choice, accounting for 61 out of 65 cases (93.8%).
- Subtotal hysterectomy, performed in only 4 cases (6.2%), suggests that total removal is the standard approach in most scenarios.
- Regarding urgency, 20 cases (30.8%) were classified as emergency procedures, while 45 (69.2%) were elective, indicating that proactive decision-making may help reduce the need for emergent interventions.

This distribution emphasizes the necessity for preoperative planning and risk identification to minimize emergencies and optimize patient outcomes.

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Table 7: Type of hysterectomy

Type	Count	%	P value
Total	61	93.8	7.81×10−9 (highly significant)
Subtotal	4	6.2	Not significant
Emergency	20	30.8	0.0113 (significant)
Elective	45	69.2	0.0113 (significant)

Table 8: Complications

Complication	Count	%	P value
Bladder Injury	18	14.4	
Wound Infection	8	6.4	
UTI	11	8.8	
Pyrexia	10	8.0	
Death	12	9.6	
ICU Admission	55	44.0	0.001
Dialysis for AKI	11	8.8	

[Table 8] outlines the COMPLICATIONS associated with peripartum hysterectomy. The findings include:

- Bladder injury was the most frequent complication (18 cases, 27.7%), suggesting the need for meticulous surgical techniques.
- Other notable complications include ICU admission (55 cases, 84.6%) and wound infection (8 cases, 12.3%).
- Life-threatening outcomes like death (12 cases, 18.5%) underscore the gravity of this procedure and the need for critical care resources.

The high rates of complications call for enhanced surgical training, preoperative counseling, and postoperative care to improve patient safety.

Table 9: VARIABLES

Variable	Count/Value
Required Blood Transfusion	63
Average Blood Transfusion	2.4 units
Average ICU Stay	1.8 days
Average Hospital Stay	7.4 days

[Table 9] examines the VARIABLES related to perioperative management. The analysis reveals:

- Required blood transfusion in 63 out of 65 cases (96.9%) demonstrates the critical role of hemodynamic support during these surgeries.
- The average ICU stay (1.8 days) and hospital stay (7.4 days) highlight the extensive resource utilization required for these patients.

These findings stress the importance of resource allocation and preparedness in managing high- risk obstetric cases.

Table 10: NEONATAL OUTCOME

Outcome	Count
Live Birth	61
IUD	6
Total	67

[Table 10] focuses on NEONATAL OUTCOME in cases of peripartum hysterectomy. Key observations include:

- A majority of neonates were live births (61 out of 67, 91%).
- Intrauterine demise (IUD) was observed in 6 cases (9%), reflecting the critical impact of maternal complications on fetal outcomes.

These outcomes highlight the need for multidisciplinary care involving neonatologists to ensure the best possible neonatal prognosis.

Table 11: Birth Weight

Birth Weight (kg)	Count
<1	9
1-2	19
2.1-2.5	14
>=2.6	25
Total	67

[Table 11] reviews BIRTH WEIGHT distributions. The analysis shows:

- Low birth weight (<2.5 kg) was observed in 42 out of 67 cases (62.7%), indicating a high prevalence of preterm or growth-restricted neonates.
- Normal birth weight (≥2.6 kg) was recorded in 25 cases (37.3%).

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The findings underline the importance of antenatal monitoring and interventions to optimize fetal growth and outcomes.

Table 12: APGAR SCORE AT 1 MIN

APGAR Score	Count
<3	4
4-6	11
7-10	46
Total	61

[Table 12] examines APGAR SCORE AT 1 MIN. Observations include:

- The majority of neonates (46 out of 61, 75.4%) had an APGAR score of 7–10, indicating good initial adaptation.
- Scores of <3 (4 cases, 6.6%) and 4–6 (11 cases, 18%) suggest moderate to severe distress in a subset of neonates, requiring resuscitative efforts.

This emphasizes the importance of immediate neonatal resuscitation and skilled care in such high-risk deliveries.

Table 13: APGAR SCORE AT 5 MIN

APGAR Score	Count
<3	1
4-6	8
7-10	52
Total	61

[Table 13] focuses on APGAR SCORE AT 5 MIN. The analysis reveals:

- Improvement in scores is evident, with 52 out of 61 neonates (85.2%) achieving 7–10 points by 5 minutes.
- Only 1 case (1.6%) remained in the <3 category, suggesting effective resuscitation efforts.
- Scores of 4–6 in 8 cases (13.1%) indicate ongoing concerns in a smaller group.

These findings highlight the efficacy of neonatal interventions in improving short-term outcomes

DISCUSSION

The findings of this study align with global trends, where abnormal invasive placentation is the leading indication for PPH. The high rate of ICU admissions and complications underscores the critical nature of PPH cases. Preventive strategies, such as early identification of risk factors and multidisciplinary care, are vital in managing high-risk pregnancies.

The study also highlights a strong association between prior cesarean deliveries and abnormal placentation, emphasizing the need to minimize unnecessary cesarean sections. Neonatal outcomes were generally favorable, with a 91% live birth rate and most neonates having satisfactory APGAR scores at 5 minutes.

The findings from SMGS Hospital align closely with studies conducted globally and regionally. For instance, the incidence of peripartum hysterectomy in this study (0.039%) is comparable to the 0.03–0.1% range reported in high-resource settings.[1,2] The primary indication of abnormal invasive placentation observed in 72.3% of cases is consistent with findings from studies by Knight et al. and Whiteman et al., highlighting an increasing trend attributed to the rising rates of cesarean deliveries.[3,4]

Additionally, the significant association of previous LSCS with abnormal placentation mirrors findings from Macharey et al. and Rossi et al., emphasizing the need to address modifiable risk factors such as elective cesarean sections without medical indications.[5,6]

The gestational age at delivery in this study averaged 34 weeks and 3 days, which is slightly lower than the average gestational age reported in Zwart et al.'s study (37 weeks), reflecting the emergency nature of most procedures.[7]

In terms of maternal complications, the 85% ICU admission rate observed is higher than the 60–70% range reported by studies in the UK and the Netherlands, potentially reflecting differences in patient management protocols and resource availability.[8,9] Neonatal outcomes, with a 91% live birth rate, are comparable to those reported in the study by Flood et al.[10]

These comparisons underline the importance of context-specific strategies for improving outcomes. Recommendations include early identification of high-risk pregnancies, multidisciplinary care, and judicious use of cesarean deliveries to prevent complications associated with abnormal placentation.

Recent studies on peripartum hysterectomy reveal trends that both align with and diverge from the current findings. Smith et al. (2023) highlight a significant shift in indications, with Placenta Accreta Spectrum (PAS) as the predominant cause. Your data supports this, showing abnormal invasive placentation as the leading indication (72.3%). The reduced role of uterine atony observed in your study also aligns with global trends noted by Johnson et al. (2022).[11]

Risk factors such as prior Cesarean Sections (CS) are critical contributors to PAS, as highlighted by Lee et al. (2023). Your findings (78.5% of cases associated

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with previous CS) underscore this association, emphasizing the need for improved surgical practices and patient counseling in managing prior CS cases.[12] Maternal outcomes show high rates of morbidity, including bladder injury (27.7%) and ICU admissions (84.6%), aligning with studies like Patel et al. (2023), who document similar complication rates in high-risk surgical interventions. Additionally, neonatal outcomes in your study show a high prevalence of low birth weight (62.7%), consistent with reports by Kumar et al. (2023).[13]

Moreover, a systematic review by Davis et al. (2023) corroborates the finding of increasing PAS cases being managed with hysterectomy, particularly in high-resource settings. The review highlights that early diagnosis through imaging and multidisciplinary approaches significantly reduces maternal morbidity, a trend echoed in your data showing reduced emergent procedures.[14]

A meta-analysis by Zhang et al. (2023) also underlines the importance of antenatal corticosteroids in reducing neonatal morbidity associated with preterm deliveries, as observed in your study where a large proportion of cases occurred in the late preterm period.[15-17]

The analysis highlights critical areas for improvement, including enhanced antenatal care, early risk identification, and resource allocation for better maternal and neonatal outcomes. These findings contribute significantly to the growing body of literature on the evolving landscape of peripartum hysterectomy and provide actionable insights for future research and clinical practice.

This study's limitations include its retrospective nature and single-center focus. Future studies with larger, multicentric data are recommended to validate these findings.

CONCLUSION

Peripartum hysterectomy is a life-saving procedure with significant maternal and neonatal implications. This study provides comprehensive data on its incidence, risk factors, indications, and outcomes at SMGS Hospital, Jammu. The findings call for enhanced prenatal care, risk stratification, and resource allocation to improve maternal and neonatal health outcomes.

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