

# Risk Factors, Causes and Management of Primary Post-Partum Hemorrhage at POF Hospital Wah Cantt

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## Abstract

**Objective:** This study aimed to assess the causes, frequency, risk factors, and treatment options for primary postpartum hemorrhage (PPH) in women at POF Hospital Wah Cantt.

**Methodology:** A descriptive study was conducted in the Department of Obstetrics and Gynecology at POF Hospital from January 1st to December 31st, 2021. Both booked and unbooked patients aged 21 to 42 years were included. Data regarding risk factors, causes, and management were collected from labor ward and operation theater registers using a designed Performa.

**Results:** Among 2600 deliveries, 80 cases (3.076%) experienced primary PPH. No maternal deaths were attributed to PPH during the study period. The majority of patients were between 24 and 29 years old (50%), and 56.25% were multigravidas. Uterine atony was the primary cause of PPH (47.5%), followed by perineal trauma, cervical tears, and vaginal tears (40%). Surgical interventions included uterovaginal packing (20%) and stitching of perineal tears (40%). Manual removal of retained placenta (12.5%) and peripartum hysterectomy (5%) were also performed. Antenatal anemia affected 22.5% of cases.

**Conclusion:** Uterine atony was the prevailing cause of primary PPH, with antenatal anemia being a prominent risk factor. Identifying high-risk patients and effectively managing labor's third stage can mitigate PPH occurrences. Enhanced literacy, nutrition, iron supplementation, and accessible healthcare facilities are crucial for minimizing severe morbidity.

**Keywords:** Postpartum hemorrhage, Uterine atony, Perineal tears.

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## Introduction

Postpartum hemorrhage (PPH) stands as a significant contributor to maternal morbidity and mortality worldwide.<sup>1-6</sup> According to a comprehensive global analysis by the World Health Organization (WHO) investigating maternal mortality causes, hemorrhage accounted for 27.1% of maternal deaths, with more than two-thirds of these cases being attributed to PPH.<sup>7</sup>

PPH is delineated as the loss of blood exceeding 500 cc following a standard vaginal delivery or surpassing 1000 ml subsequent to a cesarean section.<sup>8, 9</sup> Additionally, PPH can be defined as a decline in vital signs or a reduction of 10% in hemoglobin from the baseline due to any degree of post-delivery vaginal bleeding.<sup>10</sup> In Pakistan, the approximate prevalence of PPH is 34%.

WHO reports that PPH is the most commonly occurring form of obstetrical hemorrhage, affecting around 10.5% of all delivered mothers.<sup>11</sup>

The fundamental causes of PPH are categorized into four primary processes, often referred to as the four T's: trauma to the genital tract, thrombin dysfunction involving coagulation abnormalities, uterine tone irregularities or inadequate contractions, and tissue-related factors such as retained conception products.<sup>6, 12, 13</sup> Notable risk factors for PPH encompass retained placental fragments, prior cesarean deliveries, prolonged third-stage labor duration<sup>6, 14</sup>, as well as multiple gestations, placenta previa, polyhydramnios, and abruption.<sup>15</sup>

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The management of PPH revolves around patient resuscitation and concurrent identification and treatment of the specific underlying cause.<sup>16</sup> Routine active management of the third stage of labor is essential in diminishing PPH incidence. Administering oxytocin upon delivery of the anterior shoulder of the baby has proven to be a highly effective obstetrical practice.<sup>17</sup> For addressing uterine atony, oxytocin remains the preferred treatment option, supplemented by alternatives like misoprostol, ergonovine, and carboprost.<sup>6</sup> Notably, oxytocin's efficacy coupled with fewer adverse effects renders it the primary choice. Employing a selective approach to episiotomy reduces blood loss and the risk of anal lacerations.<sup>17</sup>

The timely administration of tranexamic acid has been shown to curtail maternal mortality stemming from postpartum hemorrhage, particularly within three hours of delivery.<sup>5, 18</sup> In cases of PPH attributed to uterine atony, the therapeutic arsenal encompasses measures beyond uterine massage and medical management through uterotonic agents.<sup>6, 13</sup> Uterine tamponade, pelvic artery embolization, and surgical interventions, including hysterectomy as a last resort when bleeding cessation methods prove futile, constitute viable treatments.<sup>16</sup>

Antenatal identification of high-risk individuals, swift blood loss assessment, effective management, and a multidisciplinary team approach are of paramount significance in preserving the lives of women affected by PPH.

The study aims to contribute valuable information for better understanding and managing PPH cases, ultimately improving maternal healthcare outcomes.

## Methodology

This was a descriptive study conducted at the Department of Obstetrics and Gynecology in POF Hospital from January 1st, 2021, to December 31st, 2021. The study included both booked and unbooked patients aged between 21 and 42 years. The study aimed to assess risk factors, causes, and management approaches pertaining to postpartum hemorrhage (PPH). The inclusion criteria included all booked and unbooked patients experiencing primary PPH, irrespective of the mode of delivery (cesarean section or vaginal birth), and including cases of mild, moderate, and severe PPH. Patients experiencing secondary postpartum hemorrhage were excluded from the study. Data was meticulously recorded in a specifically designed Performa and was also gathered from labor

ward and operation theatre registers. The study focused on various outcome measures, including the frequency of primary PPH, underlying causes, risk factors, and available management options.

## Results

The study included 80 patients (3.076%) who experienced primary postpartum hemorrhage out of a total of 2600 deliveries. Among these deliveries, 1400 (53.84%) were vaginal deliveries and 1200 (46.15%) were cesarean sections. Table I presents the distribution of cases based on various risk factors. The percentages and corresponding details for each risk factor are mentioned in the table.

**Table I: Distribution of cases according to different risk factors.**

	No. of cases	Percentage
Antenatal anemia	18	22.5%
No factor	18	22.5%
Previous PPH	6	7.5%
Multiple Pregnancy	5	6.25%
Polyhydramnios and fetal macrosomia	2	2.5%
Prolong labour	2	2.5%
Malpresentation	2	2.5%
Placenta previa	3	3.75%
Augmented labour	2	2.5%
Preeclampsia	2	2.5%
Operative vaginal delivery	2	2.5%
Post term pregnancy	1	1.25%
Chorio amnionitis	1	1.25%
PROM	1	1.25%
Previous 3 cesarean section	3	3.75%
Previous 4 cesarean section	1	1.25%
Placenta accreta	1	1.25%
Multiparty, Good sized baby and macrosomia	10	12.5%

Within the group of 80 patients, mild PPH was observed in 10 individuals (12.5%), while 60 (75%) experienced moderate PPH, and another 10 patients (12.5%) faced severe PPH. Table II outlines the analysis of data factors categorized by their respective causative factors. Treatment modalities are shown in this table, and only 4 patients had peripartum hysterectomy (5%).

**Table II: Analysis of data factors according to causative factors.**

	No. of cases	Percentage
Uterine atony	38	47.5%
Retained Placenta/RPOC,s	10	12.5%
Surgical Trauma, cervical, vaginal and perineal tears	32	40%

Table III outlines the treatment options for primary postpartum hemorrhage, Additional specifics mentioned in the table.

A significant majority of the women, numbering 65 (81.25%), gave birth between the 37<sup>th</sup> and 40<sup>th</sup> weeks of gestation. A smaller proportion of patients, 15 (18.75%), delivered prematurely. Among the patient cohort, 25 were primigravida (31.25%), 45 were multigravida with a parity range of 2 to 4 (56.25%), and only 10 patients were grandmultipara (12.5%). (Table IV)

**Table III: Distribution of Treatment Options for Primary Postpartum Hemorrhage.**

Treatment option for primary PPH	No. of cases	Percentage
Medical treatment	22	27.5%
Medical treatment and uterovaginal packing	16	20%
Laceration stitching	32	40%
Manual removal of retained placenta	10	12.5%

**Table IV: Distribution of Cases Based on Age Groups.**

	No. of cases	Percentage
21-24 years	20	25%
25-28 years	25	31.25%
29-32 years	15	18.75%
33-36 years	15	18.75%
37-40 years	5	6.25%

It's noteworthy that no maternal deaths associated with postpartum hemorrhage were reported throughout the year of the study.

## Discussion

Maternal hemorrhage, defined as cumulative blood loss equal to or exceeding 1,000 mL or accompanied by signs of hypovolemia within 24 hours postpartum, remains the primary cause of global maternal mortality.<sup>19</sup> Our study found a strong awareness of uterotonic use during PPH, with 53% of patients demonstrating understanding. We observed primary PPH in 3.067%, whereas a higher rate of 13.8% was identified in the UK.<sup>20</sup> Similarly, F. Gul's 2018 study noted a PPH frequency of 3.14%.<sup>21</sup> Particularly, grand multiparity and advanced maternal age were identified as significant risk factors. In our recent study, gravidity and parity emerged as additional predictor variables. This phenomenon can be attributed to age-related changes in connective tissue, impairing the flexibility of cervical, vaginal, and perineal muscles during delivery.

Among our participants, 56.25% (n=45) were multigravidas, and 12.5% (n=10) were grand multigravidas. In Daniel's 2018 study, 43% of cases

were multigravidas.<sup>10</sup> Within our study, 50% (n=40) of patients fell in the 24-29 age range. Daniel's study reported a mean age range of 43% between 25-29 years and 29.6% between 26-30 years.<sup>10</sup> Uterine atony accounted for 47.5% (n=38) of PPH cases in our study, whereas Munir S.I. et al. found 57.6% (n=144) of cases attributed to uterine atony.<sup>22</sup> Genital tract trauma emerged as the second most common cause in Munir's study with 29.2% (n=73), whereas in our study, 40% exhibited genital tract trauma. Complicated PIH surfaced as a major risk factor in the study by Tatsuya Fukami et al.<sup>23</sup>

Our review of literature highlights the importance of active third-stage labor management, particularly the administration of uterotonic drips, in mitigating PPH risk. Uterine atony, a leading direct cause of global maternal mortality, can be addressed through active management of third-stage labor with uterotonic agents such as oxytocin and ergometrine. In our hospital, oxytocin was the primary uterotonic employed, augmented by additional agents. Additionally, we utilized misoprostol, which has proven effective against PPH. Antenatal anemia emerged as the most prevalent risk factor in 18 (22.5%) of our cases, consistent with Musarat Sultana's findings of 19% anemic cases.<sup>24</sup>

In contrast to Solwayo Ngwenya's study in 2016 where prolonged labor accounted for 17.5% of cases<sup>8</sup>, only 2 (2.5%) of our patients experienced PPH due to prolonged labor. This variance may be attributed to effective interventions, including partogram plotting, timely monitoring, and regular patient assessments to address descent and cervix dilation. Uterine atony predominated in our PPH cases, emphasizing the importance of prompt administration of uterotonic agents to curb excessive blood loss and prevent fatalities. During our study period, no PPH-related deaths occurred in our gynecology unit, and hysterectomy was only performed on 4 patients (5%), in contrast to Solwayo Nagwenya's study where no patients underwent hysterectomy.<sup>8</sup>

## Conclusion

In all the observed cases of postpartum hemorrhage, uterine atony was the most common cause and anemia was the main risk factor PPH can be avoided by identification of high risk patients and active management of third stage of labour. Improved literacy rate, good nutrition and iron supplementation can reduce severe morbidity and availability of better health facilities at the door step can reduce mortality.

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