

## An audit of primary post-partum hemorrhage at a tertiary care hospital

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### Abstract

**Objective:** To determine the frequency, causes, treatment options and the maternal outcome in women who suffered from post-partum haemorrhage in our hospital.

**Study design:** descriptive study

**Setting:** Study was conducted in department of Obstetrics & Gynecology Ziauddin University and hospital

**Duration:** one year from July 2015 to July 2016.

**Material and Methods:** All women admitted with PPH or developing PPH in hospital after vaginal delivery or cesarean section were included in the study.

**Results:** Primary PPH was observed in 100 (3.63%) patients out of 2750 deliveries. Out of 100 patients, PPH was mild in 10%, moderate in 79% and severe in 11%. Uterine atony was the main cause and most patients had no risk factors for developing PPH but multiparity and delivery by caesarean section was seen in others. Blood transfusion, admission to ICU, prolong stay in hospital were seen as consequences of PPH.

**Conclusion:** Primary post-partum hemorrhage is a common obstetric complication despite active management of third stage of labor; with multiparity as the main predisposing factor and uterine atony as the commonest cause. Timely management of PPH can reduce maternal morbidity and mortality.

**Keywords:** primary post partum Haemorrhage, morbidity, audit, multiparity, uterine atony

### Introduction:

About 830 women die due to complications in pregnancy and child-birth each day. There were about 303,000 maternal deaths globally in 2015. Up to a quarter of these deaths occur due to hemorrhage.<sup>1</sup> Post-Partum hemorrhage is a problem in 1-5% of deliveries not only in the developing but also in the developed world.<sup>2</sup> Torrential post-partum haemorrhage (PPH) is the commonest reason for maternal mortality and morbidity which contributes for approximately 130,000 deaths/year and two and a half million disabled females globally.<sup>3,4</sup> WHO reports that in approximately 10.5% of all deliveries mothers have obstetric haemorrhage with post-partum hemorrhage being the most frequently occurring out of all.<sup>5</sup> About 30% of maternal deaths in

developing world are attributed to post-partum hemorrhage.<sup>6,7</sup> with the "primary" PPH which occur in about a quarter of cases and is responsible for nearly all cases of maternal mortalities.<sup>8</sup> PPH is a life threatening, un-predictable, catastrophe and a nightmare for the obstetrician.<sup>8</sup> The estimated contribution of PPH is About 25% for maternal deaths in developing world. "The prevalence of PPH in Pakistan is 34%".<sup>6</sup> Accounting for about 8,000 deaths in a year.

Atony of the uterus is responsible for 75% of cases of PPH. Other causes include low lying placenta, abnormally invasive placenta, lacerations or tears of lower genital tract, coagulopathy, inversion and rupture of uterus. Cases that have severe haemorrhage are identified by thorough,

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clinical assessment and often reckon on altered hemodynamic status. Severe obstetric haemorrhage is a blood loss after delivery that is in excess of 1-liter. Carroli,<sup>9</sup> reported severe PPH in 1.86% of his study participants.

As PPH have serious short term and long term complications, early appreciation of risk factors for PPH and prompt referral to the health care facility with appropriate facilities is required.

Oxytocin, synto-metrine, ergo-metrine, PGF2 alpha and miso-prostol, tranexamic acid are first line agents that are used for prevention and management of PPH. The management of PPH comprises of resuscitation and assessing and managing the inherent cause. Intermediations like utilization of brace sutures, uterine and internal iliac artery ligation, uterine artery embolization and hysterectomy are some of the life saving techniques.

Among the conservative interventions the most popular are Bakri and other types of balloon tamponade<sup>10,11</sup> uterine packing, uterine compression sutures (B-Lynch),<sup>12</sup> different techniques to devascularize the uterus (uterine or hypo gastric artery ligation,<sup>13</sup> and vascular embolisation.<sup>14</sup> Failure to arrest haemorrhage with the above measures contribute to advanced procedures such as abdominal hysterectomy thus ending the hope of further child bearing in these women.

Since post-partum haemorrhage is common, un-predictable and is associated with significant maternal morbidity and mortality we conducted this study to assess the frequency, risk factors and outcome of cases with primary post-partum hemorrhage, so as to create awareness regarding the risk factors for PPH and the outcome and consequent reduction of morbidity and mortality associated with PPH. We aim to reduce the incidence of post-partum haemorrhage and different management for control of bleeding and saving the maternal life.

Objectives of this study were to determine the frequency of PPH in our hospital, causes, treat-

ment options and the maternal outcome in women who suffered from PPH in our hospital.

#### **Material and Methods:**

This was a descriptive study conducted in department of Obstetrics & Gynecology, Ziauddin University and hospital from July 2015 to July 2016.

Inclusion criteria : women admitted with PPH or developing PPH in hospital after vaginal delivery or cesarean section.

Exclusion criteria: women with history of bleeding disorders or on heparin/warfarin therapy. Secondary PPH.

Diagnosis of PPH was made on the basis of blood loss assessment through subjective and objective evaluation as per Royal College Of Gynecology guide lines. Minor PPH was taken as a blood loss of 500–1,000ml and major PPH as blood loss in excess of 1,000ml. Major PPH was divided into moderate (1,000–2,000ml) or severe (more than 2,000 ml).<sup>15</sup> A proforma was designed for data collection.

A total of 2,750 patients included in the study period and 100 patients had primary PPH. Data were recorded for age, parity, socio-economic status, booking status, place of delivery.

Details of risk factors including grand-multiparity, poly-hydraminos, multiple pregnancy, prolonged labor, chorio-amnionitis, previous history of PPH, cesarean section, precipitate labor and instrumental delivery were entered in a pre-designed performa. Assessment of general health including anemia, blood pressure, obesity, abdominal and pelvic examination and laboratory investigations including CBC were done.

The management including resuscitation, uterine massage, use of oxytocic agents, prostaglandins, minor surgical procedures and major surgical interventions were determined.

Hemoglobin estimation and number of transfusions, admission to intensive care unit (ICU), stay in ICU, length of stay in hospital and con-

Table-1: Risk factors for PPH

HISTORY	MINOR	MODERATE	SEVERE	TOTAL
None	6	53	8	68
Multiparity	5	47	7	59
APH	0	4	0	4
Placenta Previa	0	3	0	3
Previous PPH	0	4	0	4
Pre Eclampsia	0	3	0	3
Eclampsia	0	1	0	1
Severe anemia	0	3	1	4
Polyhydraminos	1	1	1	3
Multiple gestation	1	4	0	5
Obesity	0	4	1	5
Instrumental delivery	2	1	0	3
Cesarean section	2	43	3	48

Table-2: Management of PPH (n=100)

DRUGS	MINOR 10	MODERATE 79	SEVERE 11	TOTAL 100
Oxytocin	10	79	11	100
Ergometrine	0	67(84%)	7(63%)	74
Misoprostol	6(60%)	78(98%)	11(100%)	95
Prostaglandin F2	1(10%)	2(2.5%)	2(18%)	5
Transamine	6(60%)	45(56%)	8(72%)	59
Blood transfusion	2(20%)	31(39%)	8(72%)	41
FFP	0	25(31%)	8(72%)	33

Table-2: Management of PPH (n=100)

PROCEDURE	MINOR	MODERATE	SEVERE	TOTAL
Uterine packing	0	5(6.3%)	0	5
EUA	1(10%)	2(2.5%)	1(9%)	4
Cervical tear repair	1(10%)	1(1.2%)	1(9%)	3
Hysterectomy	0	2(2.5%)	1(9%)	3
Uterine artery embolization	0	1(1.2%)	2(18%)	3
Manual ROP	2(20%)	7(8.8%)	2(18%)	11

Table-3: Complications of PPH (n=100)

Complication	Mild=10	Moderate=79	Severe=11	Total
ICU Admission	8	67(84%)	8(72%)	75
DIC	0	1(1.2%)	2(18%)	3
Fever	1(10%)	4(5%)	1(9%)	6
Moderate anemia Hb 7-9	1(10%)	26(32%)	2(18%)	29
Severe anemia Hb<6	0	2(2.50%)	1(9%)	3
Blood transfusion	2(20%)	31(39%)	8(72%)	41
Prolonged stay >5 days	0	24(30%)	10(90%)	34
Sepsis	0	2(2.5%)	1(9%)	3
Deranged PT/INR	0	7(8.8%)	3(27%)	10

dition at time of discharge were also noted. Results were analyzed through computer software

program SPSS version 20 and percentages were used to describe the results.

### Results:

Total number of deliveries within study period were 2,750. Primary PPH was observed in 100(3.63%) patients. PPH was categorized into mild, moderate and severe degrees according to amount of blood loss. Out of 100 patients, PPH was mild in 10%, moderate in 79% and severe in 11%. There was no significant association between ages, socio-economic status and booking status of patients with PPH. Table-1 shows the risk factors for PPH and figure-1 summarizes the etiology of PPH in our study participants.

### Discussion:

Obstetric haemorrhage is still a major reason for morbidity and mortality in women globally. Many post-partum haemorrhages (PPHs) do not have recognizable risk factors; maternity units should therefore have obstetric haemorrhage protocols in place for all parturients as every pregnancy has the potential to be complicated by haemorrhage.<sup>16</sup> In this study uterine atony (63%) was the major cause of PPH which is comparable with other studies, genital tract trauma was the second cause. There was significant association between grand multi-parity and antenatal anaemia and severe PPH. Early diagnosis and efficient multi-disciplinary management helps in reducing morbidity and saving life of a woman with PPH. There was no maternal mortality in our patients as they were identified and managed earlier. Fast acknowledgement, resuscitation and regaining and return of circulatory blood volume and concurrent diagnosing and appropriately managing the cause along with involvement of multi-disciplinary team plays an important role in patient's survival.

Delivery in a facility with well-trained staff and adequate medical supplies avoid delay in acknowledgment of complications, delay in transportation and delay in receiving adequate, well-rounded care.<sup>17</sup> The pharmacological management was given to most patients specially with uterine atony including oxytocin ergometrine misoprostol and tranexamic acid injections

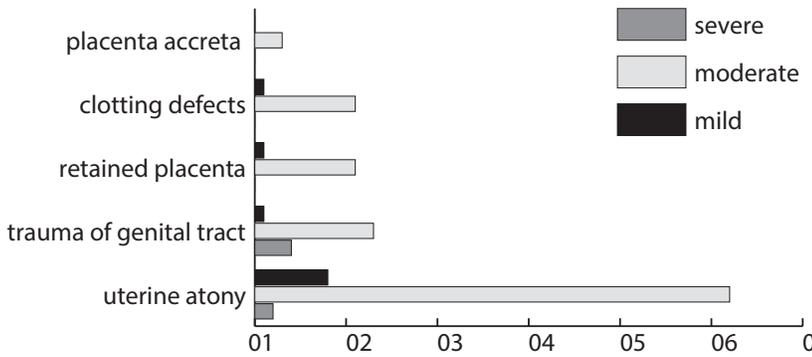


figure-1:

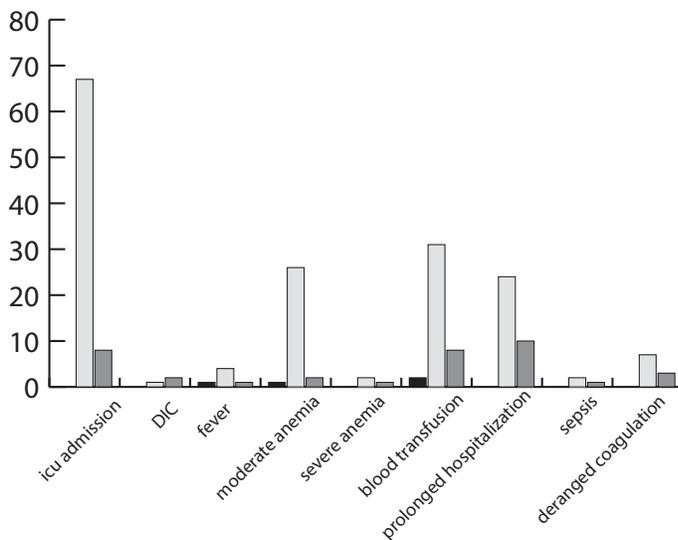


figure-1:

and were found to be effective. The surgical interventions included uterine packing, Repair of tears, uterine artery embolisation and hysterectomy. The rate of hysterectomy was low in our study as compared to other local studies. Right assessment of blood loss, adequate transfusion of blood and blood products are indispensable in the management of PPH.<sup>18</sup> The complications associated with PPH in patients were mainly morbidity with high dependency or ICU admission, blood and blood products transfusion, development of moderate anemia and prolonged hospital stay. Few patients developed fever, sepsis and disseminated intra vascular coagulation (DIC). Fortunately there was no maternal mortality in our study period.

It was noted that early resuscitation measures like fluid replacement and early transfusion of blood and blood products results in decreasing maternal morbidity and mortality as was observed in our study.

According to Royal College of Gynaecology (RCOG) guideline, the practical management of PPH involves four aspects of management including a multi-disciplinary approach, attempt to resuscitate; monitor and investigate the cause and take measures to stop the hemorrhage.<sup>15</sup> All of these were observed in most of our cases, these components were started and forwarded at the same time for provision of optimal care. It is significant to be cognizant that lesser degree of PPH can easily advance to major and even life-threatening PPH if not diagnosed and treated vigilantly. Practice drills and hands on training is a key factor in management of obstetrical emergencies specially PPH. These drills and training workshops will help in tackling the menace of PPH in our women and will help in the improvement of PPH associated deaths and morbidity in our country.

**Conclusion and recommendations:**

Primary post-partum hemorrhage is a common obstetric complication despite active management of third stage of labor; with multiparity as the main predisposing factor and uterine atony as the commonest cause. Timely management of PPH can reduce maternal morbidity and mortality, however increased risk of blood and blood product transfusions, ICU admissions and prolonged stay in hospital in patients with PPH warrants further studies on prevention of PPH.

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**Role and contribution of authors:**

Dr. Shahina Ishtiaq, concept, design and data analysis and wrote the initial write-up.

Dr. Urooj Malik, data analysis

Dr. Shazia Sultana, data collection

Dr. Aisha Jadoon, data collection

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