

# OUTCOME OF INVASIVE SECOND LINE MANAGEMENT OF PRIMARY POSTPARTUM HEMORRHAGE

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## ABSTRACT

**Objective:** To find out the outcome of surgical treatment for primary postpartum hemorrhage (PPH).

**Methodology:** It was a descriptive case series study conducted in Department of Gynecology and Obstetrics Lady Reading Hospital Peshawar from January to December 2017. Total 292 patients with primary PPH were enrolled in which 53 women had failed to improve with medical management or required invasive treatment in first instance. Those 53 patients were managed accordingly either with uterine compression suture, pelvic vessel ligation or hysterectomy. Their outcomes were measured as rate of use of specific procedure, failure of invasive therapy and reverting from one to another procedure. Data were entered and analyzed with SPSS version 17 for descriptive statistics.

**Results:** Postpartum hemorrhage was treated using second line surgical procedures in 53 patients out of 292 cases of PPH. The primary cause of PPH in these patients who underwent surgery was uterine atony in half of the patients followed by other pathologies. Most patients received conservative treatment including uterotonic therapy before undergoing 2nd line management of invasive therapy. Majority (32 patients underwent subtotal abdominal hysterectomy (STAH). Seventeen patients had b lynch uterine compression suture, 3 patients had repair of ruptured uterus while 1% had uterine artery ligation (UAL). Various morbidities were seen in these patients with massive hemorrhage, ICU admission, anemia, renal failure and septicemia.

**Conclusion:** Invasive therapy in the form of surgery including hysterectomy was effective in controlling bleeding in life threatening situations when first-line treatment fails.

**Key Words:** Postpartum hemorrhage, Hysterectomy, Invasive management

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## INTRODUCTION

Paripartum hemorrhage remains one of the major causes of maternal death in both developed and developing countries and third highest direct cause of maternal death (6.6 deaths/million maternities) according to the UK seventh report of the Confidential Enquiries into Maternal Deaths (2003–2005). Besides mortality, it is also a major cause of maternal morbidity as seen in almost all 'near miss' audits in both developed and developing countries<sup>1-4</sup>.

In Scotland, the rate of life-threatening hemorrhage, defined as, "blood loss of 2.5 litres or more or women who receive more than 5 units of blood transfusion or women who receive treatment for coagulopathy after an acute event" is estimated to be 3.7/1000 maternities<sup>5</sup>. The basic treatment for major PPH is medical

management, including uterotonic drugs like oxytocin, ergometrine and prostaglandin F<sub>2</sub> alpha. When first-line treatment fails, surgical therapies should be used for controlling bleeding and avoiding maternal death. Although the use of uterotonic drugs for PPH is usually governed by recommendations<sup>6-9</sup> the use and timing of second-line invasive therapies are less standardized and vary widely. No trials dealing with surgical techniques are identified<sup>10</sup>. Thus recommendations on treatment strategies are based largely on observational data and consensus. The rationale of this study was to document the timing, rate, and mode of use of invasive therapies for PPH.

## METHODOLOGY

This case series study was conducted at the Department of Gynecology and Obstetrics, Lady Reading Hos-

pital, Peshawar from January to December 2017. The sample population included all women with primary PPH either already hospitalized for planned delivery or referred from the peripheral areas of Peshawar. Women with PPH who failed to improve with medical management or required invasive therapy in first instance were taken as study subjects the number of which was 53.

The study protocol had been approved by Hospital Ethical Committee. Informed consent was taken from individual patients. PPH was clinically assessed by on call resident and was defined as blood loss of >500ml or decrease in peripartum hemoglobin (Hb) level of more than 2gm/dl or both. A pre designed proforma was filled at the time of admission and was completed after surgical procedure and resultant outcome of the procedure. The Proforma had demographic details of patients, pre-existing conditions, labour and mode of delivery, cause of PPH and procedure carried out as management of PPH and outcomes in case of procedure success and complications. At the time of admission, investigations for hemoglobin (Hb%), platelet count, coagulation profile and anemia were performed. Among women with clinically diagnosed PPH, we identified those who were treated with surgical intervention including uterine conserving procedures (pelvic arterial ligation and uterine compressive suture) and/or hysterectomy. Patients who underwent surgical procedure were scrutinized regarding mode of delivery (vaginal or c/section) leading to PPH and its frequency was deter-

mined. The causes and components of treatment of PPH with invasive procedures were recorded. Treatment failure was defined as the need for an additional invasive therapy to control bleeding. Rates of treatment failure and hysterectomy were calculated. Data were analyzed with SPSS 16. Descriptive statistics were calculated for measures of frequency and central tendency.

**RESULTS**

In 292 patients, 228 were referred from periphery contributing to major chunk of primary PPH. Out of them, 53 patients underwent surgical second line management procedure. Among patients who underwent surgery, 46 (86.7%) patients presented in antenatal period, delivered and developed PPH; while 7 (13.2%) patients presented with postnatal primary PPH. The mode of delivery was normal vaginal delivery (NVD) in 17 (32.1%), while 23 (43.4%) had undergone emergency cesarean section for some indication and had developed PPH thereafter. ICU admission cases were seen in patients with massive hemorrhage who needed life saving procedure like subtotal abdominal hysterectomy (STAH). Details are show in Table 1.

Anemia was found in 66.04% patients. Relative frequencies of various morbidities are shown in Table 2.

The primary cause of PPH in these patients who underwent surgery was uterine atony in 26 (49.05%) patients followed by ruptured uterus (Figure 1).

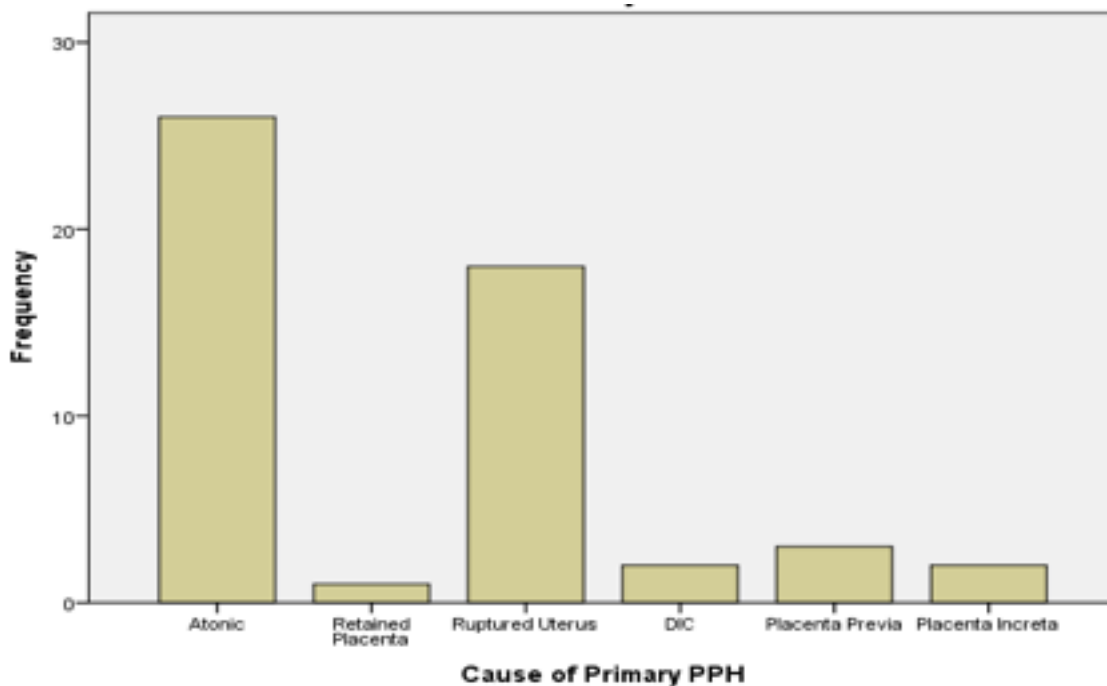
**Table 1: Surgical management according to mode of delivery and PPH**

Variable		Mode of Delivery				ICU Admission	
		NVD	Instru-mental Delivery	Caesar-ean Sec-tion	Lapara-tomy	Yes	No
Surgical Management	Uterine Artery Ligation (n=01)	0	0	1	0	1	0
	Subtotal Abdominal Hysterectomy, STAH (n=25)	9	2	9	5	10	15
	B Lynch Suture (n=17)	5	0	12	0	4	13
	Internal Iliac Artery Ligation (IIAL)+STAH (n=02)	0	1	1	0	1	1
	Ureteric Amplantation + STAH (n=01)	1	0	0	0	0	1
	Bladder Repair + STAH (n=04)	2	0	0	2	1	3
	Repair of Ruptrured Uterus (n=03)	0	0	0	3	0	3
<b>Total</b>	17	3	23	10	17	36	

**Table 2: Relative frequencies of various morbidities in study participants**

Morbidity	Frequency	Percentage
Septicemia	6	11.32
Haematoma	1	1.89
Renal Failure	7	13.21
Multiorgan Failure	4	7.54
Anaemia	35	66.04
Total	53	100

**Figure 1: Causes of primary PPH**



## DISCUSSION

Worldwide incidence of PPH is highest in low income countries ranging from 10.5% in sub-Saharan Africa to 25% in Uganda<sup>11</sup> with global prevalence of PPH of 6%<sup>12</sup>. The frequency of PPH in this study was 3.58%. Major cause of PPH in this study was uterine atony which is in consistency to 75% cases of PPH due to uterine atony in a study published by Lutomski et al<sup>13</sup>.

This study was based on the use of invasive therapies for PPH after failed medical treatment and the effectiveness of these procedures. The incidence of second line invasive management for PPH is 18.1%. Regarding our Intervention, B lynch was applied in 17 (10.4%) patients. In the updated French guidelines for PPH management published in 2014, uterine artery ligation and uterine compressive sutures are recommended as first-line surgical therapies for severe PPH<sup>14</sup>. The procedures

are simple to perform and were found to be as effective as internal iliac artery ligation with success rate of 89-100%<sup>15,16</sup>. In this study, efficacy of B lynch was 95% i.e. one patient had failed B lynch and surgery was reverted to STAH.

Emergency hysterectomy still holds a significant place in modern obstetrics because it is a life saving procedure. Besides this it requires less operative time resulting in less blood loss but due to its unplanned nature it is not without complications. STAH was estimated as 0.46 per 1000 deliveries in this study, with a range of 0.207-1.28 per 1000 deliveries in other studies<sup>17</sup>. STAH was carried out in 38 patients due to massive hemorrhage. Deranged coagulation profile leading to disseminated intravascular coagulation (DIC) was associated with the need for an additional interventional procedure to stop bleeding despite hysterectomy; and in our study, 02 patients with STAH had additional procedure of inter-

nal iliac artery ligation. Different studies have indicated that women with vaginal deliveries were considered to be low risk for PPH-related hysterectomy as compared to those who had undergone a previous caesarian section (CS)<sup>18-20</sup>. Our study also showed that the incidence of PPH-related hysterectomy was higher in women who had previously undergone CS than in women who delivered vaginally.

## CONCLUSION

Invasive therapy in the form of surgery including hysterectomy was effective in controlling bleeding in life threatening situations when first-line treatment fails. B lynch procedure was found effectiveness in majority of patients.

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### CONTRIBUTORS

FZ conceived the idea, planned the study and drafted the manuscript. SJ helped acquisition of data, did statistical analysis and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.