



## ATONIC UTERUS; RISK FACTORS AND MANAGEMENT AS A CAUSE OF PRIMARY POSTPARTUM HEMORRHAGE

Dr. Bilqees Ara<sup>1</sup>, Dr. Zaib-un-Nisa<sup>2</sup>, Dr. Firdos Ara<sup>3</sup>, Dr. Palwasha Kakar<sup>4</sup>, Dr. Abdul Salam<sup>5</sup>,  
Mahrang Aslam<sup>6</sup>

1. MCPS, FCPS  
Assitant Professor of  
Obstetrics & Gynecology  
Bolan Medical College Quetta
2. MBBS, MCPS, FCPS  
Assistant Professor  
Obstetrics & Gynecology  
Bolan Medical College, Quetta
3. MCPS, FCPS  
Assitant Professor  
Obstetrics & Gynecology  
Bolan Medical College Quetta
5. MBBS, M.Phil  
Department of Pharmacology  
Bolan Medical College Quetta

**ABSTRACT... Objective:** This study was designed to determine the frequency of uterine atony in cases of primary postpartum hemorrhage (PPH) and to point out risk factors for it and observe different ways of management for control of atonic primary (PPH). **Design:** Prospective cross sectional study. **Place and Duration of Study:** This prospective cross sectional study was conducted in Obstetrics & Gynecology Department unit-I, Bolan Medical Complex Hospital Quetta from 1<sup>st</sup> January to 31<sup>st</sup> December 2002 (one year). The study was conducted on 80 patients. **Subjects and Methods:** The study included all the pregnant women either booked or non-booked, who gave the inform consent. The sampling technique was convenience non probability. The patients were admitted through out-patient department and emergency, irrespective of age, place and mode of delivery, developing atonic primary PPH within twenty four hours and diagnosed as a case of uterine atony. All the cases of primary PPH other than due to uterine atony were excluded. Complete history, general physical examination, abdominal examination and pelvic examination was done. All the data was analyzed by SPSS version 10. **Results:** Total number of deliveries during study period was 1438. Total number of patients with PPH were 155 out of which, the cases with primary PPH were 139, contributing about 89.7%. The incidence of primary PPH was 9.6 %. Out of 139 patients, the leading cause of primary PPH was uterine atony, contributing to 57.6%. The incidence of atonic uterus was 5.6 %. The highest incidence of uterine atony (37.5%) was found in women aged 26-30 years, followed by (27.5%) women aged 21-25 years. The highest incidence of primary PPH due to uterine atony was found in para 5-8 (56.3%), 6.3 % were primigravidas, 8.7% in para 1-4 and 28.7% in patients having more than eight children. Simple management included inj. Syntometrine, Oxytocin, uterine massage controlled bleeding in 53.7% cases. Prostaglandins (PGF2-alpha & PGE2) were administered in 32 cases & successful in 22 (68.7%) cases. Uterine packing was done in 8 cases, out of it, in 5 patients bleeding controlled (62.5%). Ligation of uterine arteries was performed in 5 cases, it proved successful in 4(80%) & hysterectomy was done in 7.5% cases. **Conclusions:** Uterine atony is a major cause of primary PPH and major threat to the life of women in reproductive age. Uterine atony is more common in grand multipara, young women and in home delivery. Major risk factor for atony are previous history of primary PPH, grand multiparity, baby weight > 3.5kg & prolonged labour.

### Correspondence address:

Dr. Zaib-un-Nisa  
Assistant Professor  
Obstetrics & Gynecology  
Bolan Medical College, Quetta  
ziabunnisa.uob@gmail.com

### Article received on:

10/09/2014

### Accepted for publication:

30/09/2014

### Received after proof reading:

15/12/2014

**Key words:** Primary Postpartum hemorrhage (PPH), Uterine atony

**Article Citation:** Ara B, Zaib-un-Nisa, Ara F, Kakr P, Salam A, Aslam M. Atonic uterus; risk factors and management as a cause of primary postpartum hemorrhage. Professional Med J 2014; 21(6):1122-1127.

## INTRODUCTION

Primary postpartum hemorrhage (PPH) is defined as loss of 500ml or more blood from the genital tract or drop of hematocrit to 10% in first twenty four hours after birth of child<sup>2</sup>. The incidence of PPH varies from country to country. Over all incidences is between 4-6% of all pregnancies. It accounts for approximately 125,000 deaths each year in developing world<sup>1</sup>. It is one of the most common complications of third stage of labour. It occurs more in primiparas and grand multiparas<sup>2</sup>.

Atony of uterus contributes 50% cases of PPH, followed by genital tract trauma and retained placental tissues<sup>3</sup>.

Atonic uterus is most serious complication of third stage of labour. The retraction of uterus fails to occur and results in massive bleeding. The failure of contraction and retraction may be intrinsic myometrial dysfunction, due to rapid or protracted labour, grand multiparity, uterine overdistention (large baby, multiple pregnancy,

polyhydrominas), urinary bladder distension, infections (chorioamnionitis, endomyometritis and septicemia), fibroids, exposure to pharmacological agents (halogenated general anesthetics, oxytocin, magnesium sulfate, beta blockers, diazoxides and tocolytic agents), placenta previa, abruptio placenta, retained placental tissue and retained blood clot causes secondary relaxation of uterus. The genital tract injury occurs in 1 in 8 deliveries<sup>4</sup>. It is either spontaneous, instrumental and procedural. It usually accounts for 20% cases of primary PPH<sup>5</sup>. The management of primary PPH includes primary prevention of preventable causes and effective management of primary PPH to prevent the complications of hemorrhage.

This study was designed to determine the frequency of uterine atony in cases of primary postpartum hemorrhage and to point out risk factors for it and observe different ways of management for control of atonic primary postpartum hemorrhage. The aim is to lessen the morbidity and mortality by PPH to effectively intervene in prevention and management.

## PATIENTS & METHODS

This prospective cross sectional study was conducted in Obstetrics & Gynecology Department unit 1, Bolan Medical Complex Hospital Quetta from 1st January 2002 to 31st December (one year). The study was conducted on 80 patients. The study included all the pregnant women either booked or non-booked, who gave the informed consent. The sampling technique was convenience non probability. The patients were admitted through out-patient department and emergency, irrespective of age, place and mode of delivery, developing atonic primary PPH within twenty four hours and diagnosed as a case of uterine atony. All the cases of primary postpartum hemorrhage other than due to uterine atony were excluded.

Complete history of the patients regarding age, gravidity, parity, last menstrual period, expected date of delivery, duration of gestation, drug intake, mode & place of delivery was taken in detail from all patients. General physical examination was done.

Patients developing primary PPH were evaluated for cause. On abdominal examination state of uterus i.e. relaxed or contracted, tenderness and distention was noted. On pelvic examination external genitalia, vagina and cervix inspected for tear & lacerations. Bimanual examination was done to assess the size, mobility, position, tenderness of uterus. Visual estimation of blood loss was done.

In all cases of uterine atony relevant investigations were performed. Initially complete blood count, hemoglobin%, blood group & Rh factor, blood sugar & detail report of urine were performed in patients admitted for delivery. Patients with established case of atonic primary postpartum hemorrhage additional renal profile (urea, creatinine); serum electrolytes were done as a base line investigation. Coagulation profile was performed in those patients who required massive transfusion and undergone major surgical procedure for arrest of bleeding. All emergency management was given to the patients and observed and followed throughout their stay in hospital.

All the data was recorded on prescribed performa. The study variables were age, parity, primary PPH, secondary PPH, uterine atony, retained placenta, genital tract injury and all possible causes of uterine atony. The frequency and percentage of variables determined. The Chi square and P value of certain variables also determined by using SPSS version 10.0. The results of study compared with local and international studies.

## RESULTS

This prospective cross sectional study was conducted in Obstetrics & Gynecology Department unit 1, Bolan Medical Complex Hospital Quetta from 1st January 2002 to 31st December (one year) on 80 patients. Total number of deliveries during study period was 1438. Total number of patients with PPH were 155 out of which, the cases with primary PPH were 139, contributing about 89.7%. (Figure 1) The incidence of primary postpartum hemorrhage was 9.6%. Out of 139 patients, the leading cause of primary postpartum

hemorrhage was uterine atony, contributing to 57.6%. The incidence of atonic uterus was 5.6%. The other causes of bleeding were retained

placenta or its fragments (21.6%) and genital tract injuries in 18.7%. (Table I)

Causes of PPH	Home	Maternity Private Hospital	Govt. Hospital	Total	Percent
Uterine atony	36	16	28	80	57.6%
Genital tract injuries	14	8	4	26	18.7%
Retained placenta/pieces	21	4	5	30	21.6%
Uterine inversion	01	-	-	1	0.7%
DIC	-	1	1	2	1.4%
Total	72	29	38	139	100%

Table-I. Causes of PPH & place of delivery

Majority of the patients were non booked 92.5% and presented in emergency, only 7.5% had booked themselves at proper health facility. The highest incidence of uterine atony (37.5%) was found in women aged 26-30 years, followed by (27.5%) women aged 21-25 years. Women less than 20 years and over 35 years contributed. (Table II) The parity ranges from 0-15 (Chi Sq 10.02, P < 0.05). The highest incidence of primary PPH due to uterine atony was found in para 5-8 (56.3%), 6.3% were primigravidas, 8.7% in para 1-4 and 28.7% in patients having more than eight children.

Age in year	Frequency	%age
<20	3	3.7%
21-25	22	27.5%
26-30	30	37.5%
31-35	20	25.0%
36-40	5	6.3%

Table-II. Age distribution among patients with uterine atony

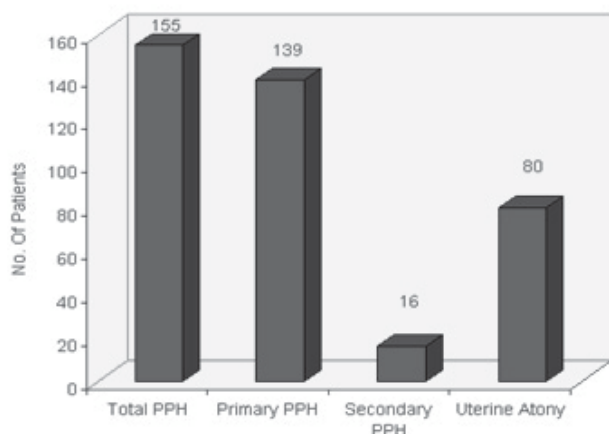
The majority of the patients who developed atonic primary PPH were delivered outside the hospital 63% at home & in health care, while 37% cases delivered at hospital. In about 93.7% cases, the uterine atony followed by vaginal delivery. Out of which 73.7% were spontaneous vertex vaginal deliveries, 11.3% cases of instrumental and 8.7% cases of assisted breech delivery. Only 6.3% women had abdominal delivery (Chi Sq 10.83, P < 0.01).

In only 18.7% cases risk factors before delivery

was identified. Grandmultiparity (50%), prolonged labour (13.7%), previous history of PPH (46.3%), abruptio placenta (8.7%), precipitate labour (11.25%), instrumental delivery (11.2%), pregnancy induced hypertension (7.5%), history of injudicious use of oxytocics (22.5%) and weight of baby more than 3.5 kg (31.4%) were major risk factors in all women who had uterine atony, irrespective of their place of delivery (Table III).

Blood loss on visual estimation was less than 1000ml in 11.2% cases, and more than 1500ml in 36.3% cases. Majority of them 52.5% cases the estimated blood loss was between 1000-1500 ml. Blood transfusion was performed in 86.6% patients, while 13.7% were not transfused blood because the blood loss was less than 1000ml and their Hb% was good enough or because the relatives refused transfusion. Simple management included inj. Syntometrine, Oxytocin, uterine massage controlled bleeding in 53.7% cases. Prostaglandins (PGF2-alpha & PGE2) were administered in 32 cases & successful in 22 (68.7%) cases. Uterine packing was done in 8 cases, out of it, in 5 patients bleeding controlled (62.5%). Ligation of uterine arteries was performed in 5 cases, it proved successful in 4 (80%) & hysterectomy was done in 7.5% cases. Acute renal failure occurred in 5% of cases, 38.7% cases become anemic in postpartum period. Disseminated intravascular coagulation & adult respiratory distress syndrome (ARDS) developed in 5% cases each. Six patients died out of 139 cases of primary PPH, 4 cases were due to uterine atony, making a case fatality rate of 5%

& contributed 19% to all maternal deaths during study period. The risk of death was calculated as 2.78 in 1000 deliveries.



**Figure-1. Frequency of Postpartum Hemorrhage and Uterine Atony**

Risk Factors	No. of Cases	Percent
Grand Multipara	40	50.0%
Previous History Of PPH	37	46.3%
Maternal Age >35	5	6.3%
History Of Injudicious Use Of Oxytocics	18	22.5%
PIH	6	7.5%
IUD	3	3.7%
Sepsis	4	5.0%
Twin Pregnancy	2	3.7%
Jaundice	1	1.3%
Prolong Labour	11	13.7%
Precipitate Labour	9	11.3%
Use of Magnesium Sulfate	3	3.7%
Use of B-mimetics In Asthmatic	1	1.3%
Abruptio Placenta	7	8.7%
Instrumental Delivery	9	11.2%
Large Baby >3.5 kg	25	31.4%
Induction Of Labour	2	2.5%
Full Bladder	8	10.0%
Primigravida	5	6.3%
Obstructed Labour	2	3.7%

**Table-III. Predisposing factors of Uterine Atony**

## DISCUSSION

Primary PPH is one of the most common complications of third stage of labour and threat to the parturient. It occurs within twenty four hours after delivery. This was also evident in our study where 139/ 155 cases were of primary PPH. In our study the incidence of primary PPH was 9.6%. It is higher than previous studies which cited 1-4%<sup>6</sup>, but near to studies where incidence of 10-20% is cited, where no oxytocin was given<sup>7,8</sup>. Sterns et al found the incidence of 3.1% at Royal Women's Hospital Family Birth Centre<sup>9</sup>. A study of postpartum hemorrhage at JPMC during 1990-1991, showed the frequency of primary PPH to 2.1%, which paralleled the results of study at Sandeman Civil Hospital Quetta, showing incidence of 2.4%<sup>6</sup>.

The uterine atony was the commonest cause of primary PPH in this study (57.6%), followed by retained placenta/ fragments (21.6%) and genital tract injuries (18.7%). These results were dissimilar to that in study of causes of primary PPH by Reed, who found uterine atony followed by genital tract disruption and then placental abnormalities. Uterine atony has been reported as single most common cause of primary PPH by many studies<sup>10</sup>. Retained placenta or tissues were more common in home delivery. The incidence of uterine atony was found to be 5.6% and it is greater than study conducted in Civil Sandmen Hospital Quetta by Quddusi H in 2000(4.2%)<sup>11</sup>.

Most of the patients (65%) in the study group were young between 21-30 years<sup>8</sup>. This is similar to Adetoro study in which most of the patients in age group 15-29 years. Increased maternal age did not seem to have an association with atonic primary postpartum hemorrhage, contrary to that was described in Ohkhchi and Zimbabwe study of Joupilla<sup>6,12,13</sup>. No association with increased age was reported in Ashraf T and Adetoro studies<sup>6,8</sup>. Majority of women (56.3%) who had uterine atony, been para<sup>5-8</sup>. This was consistent with results of Adetoro and Karim<sup>6,8,11,4</sup>. Grand multiparity was found to be major risk factor in our study which is similar to results of Ashraf T and contrary to other studies. There were only 6.3% primigravidas who



had uterine atony. It means that nulliparity is not associated with increased risk of postpartum hemorrhage, which is contrary to Adetoro study and others<sup>8,15</sup>. As the parity increase; the risk of atony becomes proportionally high. Majority of patients had atony after vaginal delivery (93.7%) which was also found in Ashraf T study<sup>6</sup>. Various studies indicate that atony was more common after vaginal birth<sup>8</sup>.

In 18.7% patients risk factors were identified before delivery. While in rest of the patients who had uterine atony the risk factors were identified at the time of arrival with the help of history and examination. The major risk factors for uterine atony were grand multiparity (50%), previous history of PPH (46.3%), history of injudicious use of oxytocin (22.5%), prolonged labour (13.7%), and delivery of baby > 3.5 kg (31.4%) and instrumental delivery (11.2%). So patients with grand multiparity and history of PPH in previous pregnancy must be admitted at hospital for delivery. This study showed that majority of the patients had blood loss of less than 1500ml (73.3%) and 36.7% patients had loss greater than 1500ml. these results are comparable to that of study by Stones<sup>16</sup>. Nearly 86.3% patients required transfusion.

It was noted that simple management which included use of oxytocin, syntometrine, uterine massage was successful in only 53.7% cases. Prostaglandins (PGF<sub>2</sub>-alpha, PGE<sub>2</sub>) were tried when simple management failed and were successful in 62.5% cases. Uterine packing stopped bleeding in 5 cases out of eight (68.7%). Uterine packing has recently reemerged as a safe, simple and quite effective procedure provided that if done properly. Jemelle also reported her experience of intrauterine packing<sup>17</sup>. It controlled bleeding in 61 out of 67 cases. Ashraf T also found successful results in 4 out of 5 patients. Sachdev PS reported success rate of 93.33%<sup>18</sup>. Bilateral uterine artery ligation was performed in 5 cases & controlled bleeding in 80% cases. In our study 6 (7.5%) patients required hysterectomy & it was similar to study at JPMC which showed hysterectomy rate of 6.5%. patients undergone

hysterectomy were grand multiparas. This result showed increase frequency of invasive procedure. It indicates lack of facility of embolization technique in our hospital.

In our study 4 patients died due to atonic primary postpartum hemorrhage out of 80 cases. Making a case fatality rate of 5%, which is much higher than that given by WHO report, showed a case fatality rate of 0.9% for primary PPH. It contributed mortality of 19.04% in all maternal deaths. During study period 1438 deliveries took place. The risk of death thus was 2.78 in 1000 deliveries.

## CONCLUSIONS

Uterine atony is a major cause of primary PPH and major threat to the life of women in reproductive age. Uterine atony is more common in grand multipara, young women and in home delivery. Major risk factor for atony are previous history of primary PPH, grand multiparity, baby weight >3.5kg & prolonged labour.

Copyright© 30 Sep, 2014.

## REFERENCES

1. SeloOjeme DO. **Primary postpartum hemorrhage.** J OstetGynaecol 2000; 22 :463-9.
2. Khan GQ, John IS, Wani S, Doherty T, Sabai BM. **Controlled cord traction versus minimal intervention technique in delivery of placenta: a randomized control trial.** Am J ObstetGynaecol 1997; 177:770-4.
3. Edmonds DK. **Third stage of labour and abnormalities.** In: Dewhurst's Textbook of Obstetrics & Gynaecology for Postgraduates, 6th ed. Blackwell Science 1999: 330-41.
4. SeloOjeme DO, Okonofua FE. **Risk factors for primary postpartum hemorrhage: A case control study.** Arch GynaecolObstet 1997; 25(4):179-87.
5. Poggi SBH, Kapernick PS. **Postpartum hemorrhage and abnormal puerperium.** In: Current Obstetrics and Gynaecology Diagnosis and Treatment Textbook, 9th ed. Appleton & Lange, 2003: 531-52.
6. Ashraf T. **Postpartum hemorrhage: An experience at Sandeman Civil Hospital, Quetta.** JCPS; 8(2): 68-71.
7. Prendville WJ et al. **The Bristol Third stage Trial: Active versus physiological management of third stage of labour.** Br Med J 1988; 297: 1295-1300
8. Adetoro OO. **Primary postpartum hemorrhage at a University Hospital in Nigeria.** West Afr J Med 1992;

- 11(3):172-8.
9. Stern et al. **Royals women's hospital family Birth Center. The first two years review.** Aus NZ J ObstetGynecol 1992; 32 (4): 291-6.
10. Adetoro OO. **Primary postpartum hemorrhage at a University Hospital in Nigeria.** West Afr J Med 1992; 11(3):172-8.
11. Quddusi H, Baloch SN. **Intrarectal prostaglandin in the management of postpartum hemorrhage.** Pak J Med Sci 2000; 16(4):242-5.
12. Joupilla P. **Postpartum hemorrhage.** CurrOpinObstetGynaecol 1995; 7:446-50.
13. Ohkhuchi A, Onagawa T, Vsui R, Koike T, Hiratsuka M, Lzumi A et al. **Effect of maternal age on the blood loss during parturition: a retrospective multivariate analysis of 10,053 cases.** J Perinat Med 2003; 31(3):209-15.
14. Karim A. **Grand multiparity, a continuing problem in developing countries.** Asia Oceana J ObstetGynecol 1989; 15(2):155-60.
15. Main MD, Main EK, Moore DH. **The relationship between age and uterine dysfunction.** Am J ObstetGynaecol 2000; 182(6):1312-20.
16. Stones RW et al. **Risk factors for major obstetric hemorrhage.** Eur J ObstetGynaecol. ReprodBiol 1993; 48:15-18.
17. Jemelle R. **Role of intrauterine packing in acute obstetric hemorrhage.** Pak J ObstetGynecol 1997; 10(1, 2).
18. Sachdev PS. **Revaluation of uterine packing for postpartum hemorrhage.** JCPSP 1997; 7(6):246-8.



Be strong  
because things will get better.  
It may be stormy now.  
But It never rains forever.

Unknown

