

## Secondary Postpartum Haemorrhage: Causes and Management In A Tertiary Care Hospital

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### Abstract

**Objective:** To find out the frequency of secondary postpartum haemorrhage (pph) as well as its causes and management in women presenting in a tertiary care hospital

**Methods:** It was a descriptive case series study conducted from 1<sup>st</sup> January 2016 to 31<sup>st</sup> December 2016 at the Department of Gynaecology and Obstetrics, Dr. Ruth K.M.Pfau Civil Hospital, Karachi. All the patients presenting with secondary postpartum haemorrhage in the specified time period were included in the study. The patient's age, parity, booking status, mode of delivery, place of delivery, cause of secondary postpartum haemorrhage and management done was noted on a predesigned proforma.

**Results:** The average age of the women was  $30.62 \pm 4.37$  years. Postpartum haemorrhage was observed in 130 patients, out of these 27 patients had secondary postpartum haemorrhage with a frequency of 20.67%. Majority of the women with secondary pph were multiparous 17 (62.96%) with 21 (77.77%) being delivered vaginally compared to 6 (22.22%) who had caesarean section. Most of the women 16 (59.25%) presented with secondary pph around 10-14 days post-delivery. Retained placental pieces was identified as the commonest cause in 19 (70.37%) women, antibiotics was given to all the patients, evacuation done in 19 (70.37%) cases, 2 (7.40%) women had obstetrical hysterectomy and 1 (3.70%) woman had repair of uterus while 5 (18.51%) cases were managed conservatively. No maternal death was recorded.

**Conclusion:** Secondary postpartum haemorrhage though less common but is found to be associated with significant maternal morbidity which require timely diagnosis and management so as to prevent life threatening complications.

**Keywords:** Primary postpartum haemorrhage, secondary postpartum haemorrhage, Retained products of conception.

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### Introduction

Postpartum haemorrhage (PPH) is an acute obstetrical emergency. It is a major cause of maternal morbidity, and one of the three most frequent causes of maternal mortality worldwide. In the developing countries postpartum haemorrhage accounts for 25% of maternal deaths<sup>1</sup>. The incidence of postpartum haemorrhage is approximately 5-20% of deliveries with the highest rates seen in develop-

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ing countries<sup>2</sup>. According to WHO the prevalence of PPH in Pakistan is 34%<sup>1</sup>. The maternal mortality resulting from PPH can also be prevented with prompt diagnosis and timely appropriate management.

Postpartum haemorrhage may be defined as "blood loss more than 500ml in vaginal and more than 1000ml in caesarean section delivery, it may also be defined as any amount of blood loss which either causes hypovolemia or a 10% drop in haematocrit, requiring blood transfusion regardless of the route of delivery<sup>3</sup>.

PPH is termed as primary when haemorrhage occur within first 24hrs, it is much more common than secondary PPH. Secondary postpartum haemorrhage is characterized as an excessive vagi-

nal blood loss or lochial discharge occurring at least 24 hours after the end of third stage of labour and 6 weeks post-delivery, by any route, following a pregnancy of at least 24 weeks' gestation, the definition of secondary PPH is subjective and require sufficient blood loss so as to prompt review by an obstetrician<sup>4</sup>. It has been observed that postpartum haemorrhage diagnosis is usually made on visual assessment and hence results in either over or underdiagnosis of the condition<sup>2</sup>.

Secondary postpartum haemorrhage is associated with maternal morbidity more compared to mortality and until now has received little attention because of its low frequency though at times severe secondary PPH can be life threatening<sup>2,3,5</sup>. Most of the time patient delay seeking medical help considering it as normal heavy postpartum bleeding and is therefore are not aware of the complications occurring as a result of this like disseminated intravascular coagulopathy and hypovolemic shock. The incidence of secondary PPH in developed countries ranges in different studies from 1% to 2%<sup>3,4,5,6</sup>. The estimated incidence of secondary PPH in India during 2006-7 was 10%<sup>5</sup> and in Pakistan during 2007-8 was found as 16.9%<sup>1</sup>.

The predisposing risk factors leading to secondary PPH in a woman are found as advanced maternal age, multiparity, multiple gestation, threatened miscarriage, antepartum haemorrhage, prolonged third stage of labour, incomplete removal of placenta and membranes at birth, primary postpartum haemorrhage, mother not breast feeding their child, and a previous history of secondary postpartum hemorrhage<sup>1,6</sup>.

The common causes of secondary PPH include retained products of conception, lower genital tract trauma either spontaneous or following instrumental deliveries, congenital coagulopathies, pre-existing uterine abnormalities (submucosal fibroid or cervical carcinoma) or infection (e.g., endometritis or dehiscence of a caesarean scar). Less frequent causes are morbidly adherent placenta like placenta accreta, increta, or percreta and subinvolution of placenta, whereas pseudo aneurysm of uterine

artery, arteriovenous malformations, choriocarcinoma<sup>4,6,7</sup> and vessel subinvolution (SVI) of the placental implantation site<sup>2</sup> are the other rare causes.

Clinical presentation of secondary postpartum haemorrhage (PPH) due to retained products of conception found to be the most common cause is bleeding with either pain, fever, or both. It is one of the commonest reasons of re-admission and referral to hospital during puerperium with an incidence of around 1% of all deliveries<sup>2</sup>. To differentiate secondary postpartum haemorrhage from heavy postpartum bleeding is a diagnostic dilemma. The patient should be carefully assessed for any delivery or post-delivery risk factors alike so as to anticipate & hence prevent the complications.

The management of secondary postpartum haemorrhage is at times multidisciplinary with the primary aim being patients' stabilization and preventing complications like disseminated intravascular coagulation and hypovolemic shock. The treatment options for secondary PPH include conservative, medical, surgical or by interventional radiology and depends upon the patient's clinical findings, the hospital standard practice and protocols and cause of secondary pph<sup>4</sup>. The two end of postpartum management spectrum include medical management with drug oxytocin which is considered as the drug of choice as it is used not only in treatment but also in prevention and surgical intervention including peripartum hysterectomy at the other end as the lifesaving procedure when other conservative measures fail.

As there are limited studies conducted on secondary postpartum haemorrhage and with frequent referrals observed lately the need was felt to find out the frequency in our population so as to ascertain the magnitude of the problem. The aim of study was to highlight a preventable cause of maternal morbidity so as to minimize the occurrence of an emergency and improvement of maternal health. The causes and management are also discussed so that standard practices can be adopted for prevention, early identification and appropriate timely intervention to improve the maternal health.

## Patients and Methods

It was a descriptive case series study conducted from 1<sup>st</sup> January 2016 till 31<sup>st</sup> December 2016 at the Department of Gynaecology and Obstetrics, Dr. Ruth K.M.Pfau Civil Hospital, Karachi. All the patients who delivered either vaginally or by caesarean section and has presented with complaint of secondary (delayed) postpartum haemorrhage using kidney tray approx (500 ml).

The inclusion criteria included all booked and non-booked patients age between 15-45 years. Parity 1 or more. Gestation age at delivery between 24-42 weeks.

The exclusion criteria were women who had primary postpartum haemorrhage managed surgically. Women who had caesarean hysterectomy due to placenta accreta, increta or percreta were excluded. Women with thyroid disorders. Women on anticoagulant therapy.

All the patients presenting with secondary postpartum haemorrhage either delivered in our hospital or delivered elsewhere were enrolled in the study after fulfilling inclusion, exclusion criteria and informed verbal consent, the clinical characteristics like presenting with heavy bleeding per vaginum or with a history of a single or repetitive episodes of irregular heavy bleeding per vaginum, with or without unstable vitals, or a drop in haemoglobin concentration or generalized ill health and on examination either uterine subinvolution is found and or cervical so is found to be opened with products felt inside the uterine cavity and or perineal or vaginal lacerations found were included. The cause and management which was done recorded on an approved proforma.

Data was entered and analysed through SPSS version 16. Frequency of secondary postpartum haemorrhage recorded and percentages were calculated for maternal age, parity, booking status, mode and place of delivery, causes and management given to the patient.

## Results

The total number of obstetrics' admission from 1<sup>st</sup> January 2016 till 31<sup>st</sup> December 2016 was 4678. Total number of patients with postpartum haemorrhage were 130 out of which 103 (79.23) had primary postpartum haemorrhage and 27 (20.76) had secondary postpartum haemorrhage.

Frequency of secondary postpartum haemorrhage in women calculated as 27 (20.76) cases. Out of these 27 women 13 (48.14) delivered in a health care facility other than our hospital, 6 (22.22) in our hospital and 8 (29.62) delivered at home. Patients were aged between 15- 45 years with 26 to 35 years of ages commonly observed in 12 (44.44) women with the average age  $30.62 \pm 4.37$  years. Booked patients were 9 (33.33) and unbooked were 18 (66.66) Table1.

Majority of the women with secondary postpartum haemorrhage were multiparous 17 (62.96) followed by grand multipara 8 (29.62) and 2 (7.40) women went in secondary postpartum haemorrhage after the delivery of their first child. Regarding mode of delivery 21 (77.77) women delivered vaginally and 6 (22.22) underwent caesarean section (Table 1).

In our study most of the women that is 16 (59.25) presented with secondary postpartum haemorrhage around 10 to 14 days post-delivery, 7 (25.92) within seven days of delivery and 4 (14.81) presented after 2 weeks of delivery. The presenting complaints in patients in addition to single or repeated episode of irregular vaginal bleeding was foul smelling lochia seen in 16 (59.25) patients, 8 (29.62) patients presented with fever, 3 women also had deep surgical site infection and 3 (11.11) presented with heavy bleeding per vaginum.

The commonest cause of secondary postpartum hemorrhage found in our patients was retained pieces of placenta 19 (70.37) out of these 19 women 4 (21.05) also had vaginal tears following spontaneous vaginal delivery and 7 (36.84%) had gaping episiotomies, 3 (11.11) women presented with secondary postpartum hemorrhage due to

**Table 1.** Clinical characteristics of study population.

Clinical Characteristics		Number n (27)	Percentage %
Age	15 - 25 Yrs	7	25.92
	26 - 35	12	44.44
	36 - 45	8	29.62
Parity	Primipara	2	7.40
	Multipara	17	62.96
	Grand multipara	8	29.62
Booking Status	Booked	9	33.33
	Non booked	18	66.66
Mode of Delivery	SVD	21	77.77
	C - Section	6	22.22
Place of Delivery	Home	8	29.62
	Health facility	13	48.14
	Tertiary Care Hosp	6	22.22

**Table 2.** Causes of Secondary PPH

CAUSE	NUMBER n ( 27 )	PERCENTAGE %
Retained placental pieces	19	70.37
Endometritis	3	11.11
Deep surgical site Infection	3	11.11
Cause not found	2	7.40

**Table 3.** Management of secondary PPH

	Number n (27)	Percentage %
Evacuation of RPOCs	19	70.73
MVA	14	73.68
Suction Evacuation	5	26.31
Repair of uterus	1	3.70
Obstetrical hysterectomy	2	7.40
conservative	5	18.51

lower uterine scar dehiscence due to infection and in 2 (7.40) women no cause was identified (Table 2).

The initial management once the patient is stabilized include speculum examination to exclude cervical or vaginal tears, ultrasound was done to exclude retained products of conception and investigations sent including complete blood count for haemoglobin estimation and total leucocyte count, C reactive proteins, high vaginal swab for culture & sensitivity. Where indicated blood culture, serum BHCG were further sent. All the patients were managed by receiving antibiotics as per departmental protocol with evacuation of remaining placental pieces was the commonest intervention performed.

All the patients received antibiotics as per departmental protocol, evacuation of retained placental pieces was carried out in 19 (70.37) with manual vacuum aspiration done in 14 patients and 5 patients had suction evacuation under general anaesthesia followed by balloon tamponade in 3 patients for controlling hemorrhage, vaginal tears and gaping episiotomy were also stitched in 7 patients and 2 (7.40) had obstetrical hysterectomies performed for lower uterine scar dehiscence and repair of uterus was done in 1 (3.70) patient whereas 5 ( 18.51 ) patients were managed conservatively (Table 3).

Blood transfusion was received by 17 (62.96) patients, 2 (7.40) patients were shifted to medical ICU as one had chronic liver disease and hepatitis C and one was a diagnosed case of hepatitis E and 3 (11.11) were shifted to surgical ICU after management. There was no maternal mortality in our study.

With respect to co morbidity 5 (18.51) patients had jaundice and hepatitis B & C, 6 (22.22) women had history of pre-eclampsia and 7 (25.92) were found to be severely anaemic with Hb concentration < 7gm/dl.

## Discussion

Secondary PPH is associated with increased immediate and delayed complications especially in respect to surgical management which may be associated with fertility impairment<sup>8</sup>. Worldwide an estimated 500,000 women annually die prematurely during pregnancy out of these haemorrhages contributes to a quarter of these mortalities<sup>8</sup>. Post partum haemorrhage may occur in 1-5% of deliveries both in developed and developing countries and is one of the most common cause of maternal morbidity and mortality<sup>9</sup>. Early diagnosis and referral is the cornerstone of effective management<sup>10,11</sup>.

As in our study, frequency of secondary postpartum hemorrhage in women was observed in 20.76% (27/130) cases. A cross sectional study conducted in Pakistan by Muzammil Edhi et al reported (30.8%) of patients had secondary Post Partum Hemorrhage<sup>12</sup>. Studies from other South

Asian countries reported prevalence of secondary postpartum hemorrhage ranging from 11% (India)<sup>13</sup> to 39% (Sri Lanka)<sup>14</sup> 32% in Nigeria<sup>15</sup> While in developed countries Boyd et al<sup>16</sup> and Ibrah Y<sup>17</sup> et al reported 0.2% of deliveries and other studies reported rates ranging from 1% - 2%.<sup>18,19</sup> the variation is reported frequency in developing countries could be explained in part as the majority of patients were found to be non-booked, had not received antenatal care and were delivered by un-skilled persons who might not have actively managed the third stage of labour leading to retained placenta and membrane in turn causing sepsis and further aggravating the maternal condition. Most of the time patient is not aware of complications arising from this as she believes she is having heavy post-delivery bleeding and consider it as normal. Patient at discharge must be counselled for postnatal follow up and also to report to hospital whenever she notices any change in bleeding pattern which is not self-limiting as normal lochia over the passage of days is going to become lighter in colour and amount and will be more like a discharge. Early diagnosis and timely management will go a long way in preventing these consequences.

Women between 26 to 35 years of age were commonly observed in our study with an average age of  $30.62 \pm 4.37$  years similar to studies by Edhi MM<sup>12</sup> and Debost A<sup>20</sup> et al who reported mean age as  $26.15 \pm 7.37$  years and  $30.4 \pm 5.7$  years respectively and showed an association between increase in maternal age with an increase in secondary pph. While the result of a Nigerian study by Ijaiya MA et al<sup>21</sup> showed mothers suffering from PPH are usually of age 35 years. Multiparity was commonly observed in our study whereas study by Debost A<sup>20</sup> and Ijaiya MA<sup>21</sup> reported majority of grand multiparous women with secondary postpartum haemorrhage.

The booking status of patients in our study was 9 (33.33) booked and 18 (66.66) non booked patients. Studies by Ajenifuja KO<sup>15</sup> and Edhi MM<sup>12</sup> reporting un-booked status as 88% and 100% respectively. The fact that most of the patients were

un-booked has led to unidentified complications resulting in acute emergencies at delivery. This higher percentage may also be in part due to lack of education, poverty and absence of patient counselling regarding importance of the antenatal care as well as post-natal follow ups.

Mode of the patients had spontaneous vaginal delivery (77.77%) followed by C-section (22.22%) in our study and was nearly the same as shown in previous studies carried out in Pakistan in 2013<sup>12</sup> with spontaneous vaginal delivery as 61.5% and 68% in an Indian study<sup>13</sup>.

In our study women with secondary postpartum hemorrhage presented mostly at 14 days of post-delivery. While in West Boyd et al<sup>16</sup> reported 18 days post-partum as the mean time for presentation. During caesarean section injury to pelvic blood vessels presents early within 24 hours whereas later presentation after 24 hours with acute abdomen suggestive of intra-abdominal bleed is due to broad ligament hematoma<sup>22</sup> similarly local infection at the uterine surgical scar eroding blood vessels and thus results in dehiscence of uterine scar.

In our study most common cause of secondary postpartum hemorrhage was retained products of conception (RPOS) in 19 (70.37) women similar to other studies which also stated RPOCs as the commonest cause of secondary PPH responsible for 72 -78.57% of causes<sup>13,15</sup> next was vaginal tear following spontaneous vaginal delivery and gaping episiotomies were 4 out of 21 SVDs and 3 women presented with secondary postpartum hemorrhage due to lower uterine scar dehiscence, 2 women had emergency caesarean sections one due to obstructed labour and the other had chorioamnionitis. In accordance with our results a cross sectional study conducted on the diagnosed patient of postpartum hemorrhage at Liaquat National hospital Karachi came to a local setup, Muzammil Edhi et al reported that frequent cause of Secondary postpartum hemorrhage was retained products of placenta which was found in 8 patients.

In our study 5 (18.51) patients had jaundice with Hepatitis C found in 2 women and Hepatitis E in 1 (3.7) patient, 6 (22.22) had pre-eclampsia, study by Edhi MM also reported hepatitis and eclampsia as co morbidity observed in 15.4% of patients another study reported postpartum haemorrhage in 8% of patients with hepatitis E<sup>23</sup>

The management of secondary postpartum hemorrhage is different from primary as the differential diagnosis of both are different<sup>24</sup>. The treatment primarily is medical using antibiotics and uterotonics and or surgical of uterine evacuation along with this blood and blood products are also required for hemodynamic stabilization of the patient.

All the patients in our study were managed by receiving antibiotics as per departmental protocol with evacuation of remaining placental pieces was the commonest intervention performed similar to the study by Edhi MM<sup>12</sup> and Nigeen et al<sup>13</sup>. Balloon tamponade was placed in 3 patients to control hemorrhage and was found to be effective as repeat curettage is associated with risk of perforation. Vaginal and gaping episiotomy tears were stitched in 4 patients and 2 obstetrical hysterectomies performed for lower uterine scar dehiscence and repair of uterus was done in one patient.

It is recommended that at discharge patient should have a complete post-natal examination. They should be counselled for regular post-natal follow up and at the same time should be taught to report to hospital earlier whenever they observe any change in bleeding pattern or have fever or develop offensive vaginal discharge.

Regular workshops on safe delivery practices and active management of third stage of labour should be conducted and the health personnel involved with delivery must be involved at all levels.

The importance of early identification of risk factors of postpartum haemorrhage should be emphasized so that preventive measures can be taken and patient can be closely monitored.

## Conclusion

Secondary postpartum hemorrhage though is less commonly encountered but is found to be associated with significant maternal morbidity which if not timely managed can be life threatening as these patients are already discharged and may fail to sought timely help. The continued number of patients referred with this complaint to a tertiary care facility further strengthens the importance of antenatal care for identification and anticipation of high-risk factors, active management of third stage of labour and emergency obstetrics care whenever the need arises. Postnatal follow up of patients should be emphasized at discharge with appropriate education and counselling so that they are able to reach the health facility in case of an emergency.

## Conflict of Interest

Authors have no conflict of interests and no grant/funding from any organization for this study.

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