Postpartum Hemorrhage After Cesarean Section In Anemic and Non Anemic Patients

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ABSTRACT

Objective *To compare the frequency of postpartum hemorrhage (PPH) in anemic and non-anemic pregnant women undergoing cesarean section.*

Study design *Cross sectional study.*

Place & Duration of study *Department of Obstetrics & Gynecology, Jinnah Postgraduate Medical Centre Karachi, from October 2020 to April 2021.*

Methodology *Patients with singleton term pregnancy and cephalic presentation who underwent cesarean section were included in this study after taking informed consent. Detail history and physical examination were done. Preoperative hemoglobin level was measured. Patients were followed after cesarean section for PPH up to 24-hours. Quantitative data was presented as mean and standard deviation and qualitative variables as frequencies and percentages. Stratification of the outcome variables were done to control effect modifiers. Post stratification Chi square test was applied taking p-value of < 0.05 as significant.*

Results *A total of 207 patients were included in the study. Mean age of the women was 34.14 ±8.49 year. A total of 152 (73.4%) were anemic. Of the total patients, 93 (44.9%) developed postpartum hemorrhage that included 57 (61.3%) anemic patients (p < 0.01).*

Conclusion *PPH was more frequent in anemic patients with greater blood loss at the time of delivery and in postpartum period. Anemic patients who were of older age, multipara, gravida >3, belonged to lower socio economic income group and less educated, more likely to develop postpartum hemorrhage when compared with non-anemic patients.*

Key words *Postpartum hemorrhage, Anemia, Cesarean Section, Morbidity, Mortality.*

INTRODUCTION:

Anemia is described as deficiency of red blood cells or their reduced ability to bind oxygen, which consequently leads to less oxygenated blood supply to body tissues. The state of body functions can be affected by increasing age and pregnancy. Pregnant women are frequently affected by anemia.[1,2] Anemia is considered as a risk factor for the development of PPH. This is responsible for 40 - 43% of maternal deaths in Asia and Africa. Anemia can affect physical and cognitive development of fetus, intra uterine growth restriction and fetal death. Anemia is considered as most important preventable cause of maternal and fetal morbidity and mortality in developing countries.[3,4]

The major causes of PPH include uterine atony, genital tract trauma, retained placenta, coagulation disorders and uterine rupture.[5] Risk factors of PPH include multi-parity, previous cesarean section scar,

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prolonged labor and PPH in previous delivery etc. Most common complications of PPH include hypovolemic shock, disseminated intravascular coagulation (DIC), renal failure and multi-organ failure etc.[6,7] Treatment of anemia is important to reduce maternal and fetal morbidity and mortality.[8,9] This study was conducted to find out the frequency of postpartum hemorrhage in anemic and non-anemic patients who underwent cesarean section and factors related to it.

METHODOLOGY:

Women who underwent cesarean section were included. This study was conducted in the Department of Obstetrics and Gynecology, Jinnah Postgraduate Medical Centre Karachi, from October 2020 to April 2021. Approval of study protocol was obtained from College of Physicians & Surgeons Pakistan. Informed consent was taken from patients.

Women with term singleton pregnancies with cephalic presentation (assessed by ultrasound) were included. Women with twin pregnancy, placenta previa, placental abruption, parity >5, diabetics, coagulation disorders, pre eclampsia, eclampsia and HELLP syndrome were excluded. Patients with serum hemoglobin less than 11gm/dl were labeled as anemic. Hemorrhage was defined as significant when around 1000 ml blood loss occurred during cesarean section. Patients were labeled as having postpartum hemorrhage if more than 1000ml blood was lost within 24-hours following cesarean section. Blood loss was estimated by measuring blood collected in suction bottle, weighing blood soaked abdominal packs, gauze pieces intraoperatively. Postoperative blood loss was measured by weighing blood soaked sanitary pads.

Detailed history and physical examination were done. Patients after cesarean section were followed for PPH. Variables collected included maternal age, parity, gravidity, occupational status, educational status, family income status, anemia status, and postpartum hemorrhage on a pre designed form.

Data were analyzed on SPSS version 20. Mean and standard deviation were calculated for the quantitative variables and frequencies and percentages for qualitative variables. Effect modifiers were controlled through stratification and the effect of these on outcome variable, the frequency of postpartum hemorrhage, was noted. Post stratification Chi squire test was applied and p = 0.05 was taken as statistically significant.

RESULTS:

A total of 207 women were enrolled. The age of the patients was between 24 - 40 years with the mean age of 34.14±8.49 year. A total of 93 (44.9%) patients developed postpartum hemorrhage. Most (n=135 - 65.2%) of the patients were between 20 –30 years, and 72 (34.8%) between 31 -40 years. Stratification for age with respect to PPH showed that 16 (17.2%) patients who were in the age group 20-30 years had PPH. In age group 31 - 40 years 77 (82.8%) had PPH ($p < 0.01$). Stratification for anemia status with respect to PPH showed that 57 (61.3%) anemic patients had PPH whereas 36 (38.7%) non anemic patients developed PPH ($p<0.01$). Details are given in table I.

A total of 110 (53.1%) patients were gravida <3. Stratification for gravida with respect to postpartum hemorrhage showed that 35 (37.6%) women who were <3 gravida group and 58 (62.4%) with >3 gravida group developed PPH ($p < 0.01$). Stratification for parity with respect to PPH showed that 35 (37.6%) patients had and 37 (32.5%) did not have PPH who were in primipara group whereas 58 (62.4%) and 77 (67.5%) patients who were in multipara group had and did not have PPH ($p=0.26$) as depicted in Table II. Family monthly income status showed that 110 (53.1%) cases belonged to lower income class; 84 (40.6%) from middle class and 13 (6.3%) from upper income class. Stratification for family monthly income status showed that patients who belonged to the lower income group, 76 (81.7%) had PPH. In patients of middle income group 15 (16.1%) developed PPH. In women who belonged to the upper income group only 2 (2.2%) had PPH ($p<0.01$).

Educational status showed that majority of the patients (n=126 - 60.9%) were not formally educated; 33 (15.9%) had primary, 38 (18.4%) secondary and 10 (4.8%) from higher education groups. Educational status stratification showed that patients who were not in formally educated group, 75 (80.6%) had PPH. Patients who belonged to the primary education group 15 (16.1%) developed PPH. In higher education group 3 (3.2%) had PPH ($p < 0.01$). Of the total 168 (81.2%) patients were unemployed. Of these 93 patients who were unemployed had PPH ($p < 0.01$).

DISCUSSION:

Obstetrics hemorrhage is still the major cause of maternal morbidity and mortality especially in developing countries.[10,11] All women giving birth are at risk of developing PPH as it can occur without any predisposing factors. In Pakistan frequency of PPH is reported between 0.5-9.5% in various studies

Table I: Postpartum Hemorrhage According To The Anemia Status

Anemia Status	Postpartum Hemorrhage		Total
	Yes	No	
Yes	57 (61.3%)	95 (83.3%)	152 (73.4%)
No	36 (38.7%)	19 (16.7%)	55 (26.6%)
Total	93 (100%)	114 (100%)	207 (100%)
P value		< 0.01	

Table II: Postpartum Hemorrhage With Respect to Demographic Characteristics (n=207)

		Postpartum Hemorrhage		Total	P value
		Yes	No		
AGE group (YEARS)	20 - 30	16 (17.2%)	56 (49.1%)	72 (34.8%)	0.01
	31 - 40	77 (82.8%)	58 (50.9%)	135 (65.2%)	
	TOTAL	93 (100%)	114 (100%)	207 (100%)	
PARITY	PRIMIPARA	35 (37.6%)	37 (32.5%)	72 (34.8%)	0.26
	MULTIPARA	58 (62.4%)	77 (67.5%)	135 (65.2%)	
	TOTAL	93 (100%)	114 (100%)	207 (100%)	
GRAVIDA	< 3	35 (37.6%)	75 (65.8%)	110 (53.1%)	0.01
	>3	58 (62.4%)	39 (34.2%)	97 (46.9%)	
	TOTAL	93 (100%)	114 (100%)	207 (100%)	

and 3.2% in a study conducted in India.[12] Uterine atony is reported as a cause in 50-70%, in other studies.[11,12] Literature search revealed that uterine muscle strength can be weakened by severe anemia. Moreover anemic patients have less resistance to infectious diseases, contributing towards the development of PPH.[13]

Mean age in our study was 34.14± 8.49 year, while in other studies mean age of the patient was from 25.31±4.17 year to 27.96±4 year.[3,14] In our study majority of the patients who developed postpartum hemorrhage belonged to the 31 - 40 years age group. Less number of patients with parity <3 developed postpartum hemorrhage when compared to para >3, which is in contrast with the findings of other studies.[15] This difference is due to uterine atony which was more common in multiparous women as cause of PPH in our study. Majority of patients who were already anemic had PPH as compared to non anemic women in indexed study. In this study 152 (73.4%) patients were already anemic. This was because of large number of unbooked, referred cases who required cesarean section at territory care hospital. Similar findings is reported in another study where 48% patients who attended antenatal clinic were found anemic.[3]

Ninety-three (44.9%) patients in index study had PPH. High frequency of PPH in our study is because of higher number of anemic unbooked patients and large number of referred cases being operated at our tertiary care hospital. Already anemic patients cannot tolerate even minor degree of blood loss thus result in early deterioration of maternal condition leading to increased morbidity and mortality.[15, 16]

CONCLUSION:

Anemia in pregnancy is one of the important risk factors for postpartum hemorrhage. Anemic patients who were of older age group, multipara, gravida >3, lower income group and less educated were more likely to develop postpartum hemorrhage when compared with non-anemia patient. Prevention and treatment of anemia in pregnancy can help us in reducing the risk of postpartum hemorrhage.

DISCLOSURE:

This is a dissertation based article.

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