PRIMARY POSTPARTUM HEMORRHAGE IN AUGMENTED LABOUR: A STUDY OF NORMAL VAGINAL DELIVERIES

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ABSTRACT

Background: One of the important and life-threatening complications encountered during labor is bleeding. This study is to estimate the frequency of Primary Postpartum Hemorrhage after augmented labor in normal vaginal delivery in our population because previously no data is available for blood loss after augmentation of labor during spontaneous delivery.

Objective: To Determine the Frequency of Primary Postpartum Hemorrhage after augmented labor in normal Vaginal delivery.

Material and Methods: Over the course of six months, a descriptive cross-sectional study was carried out at the Obstetrics and Gynecology Department of the Qazi Hussain Ahmad Medical Complex in Nowshera. All deliveries were conducted by trainee medical officers. The slow/obstructed labor was augmented by oxytocin infusion at the rate of 12ml/hour, which was titrated by 12ml/hour every 30 minutes to a max of 192ml/hour till the baby was delivered. The frequency of primary PPH was noted as per the operational definition. Data obtained was noted on the Performa.

Results: Our study shows that among 151 patients, the mean age was 27 years with SD ± 7.02. Fifty-seven (37%) patients were Primigravida, and ninety-four (62.3%) patients were multi-para. Sixty-two (41.1%) patients had POG 37-38 weeks, and Eighty-nine (59.9%) patients had POG 39-41 weeks. Eighteen (12%) patients had primary PPH after augmentation, and one hundred thirty-three (88%) patients didn't have primary PPH after augmentation.

Conclusion: This study demonstrates that the frequency of primary PPH is significantly higher than expected in augmented labour following normal vaginal deliveries.

Keywords: Primary Postpartum Hemorrhages, augmented labor, normal vaginal delivery.

INTRODUCTION

One of the important and life-threatening complications encountered during labor is bleeding. Bleeding during labor used to be labeled as Postpartum hemorrhage (PPH) when a woman losses more than five hundred mL of blood in a vaginal delivery or above one thousand mL of blood loss during cesarean delivery.

In the year 2017, the American College of Obstetrics and Gynaecology established a more comprehensive definition of postpartum haemorrhage, characterised as a cumulative blood loss exceeding one thousand milliliters accompanied by symptoms and signs of hypovolemia occurring within 24 hours of delivery, irrelevant of delivery method.[1,2] It is widely acknowledged that the extent of blood loss during delivery is frequently underestimated. However, it is standard practice to regard a blood loss exceeding 500 ml during vaginal delivery as aberrant, necessitating prompt intervention by the obstetrician. Postpartum haemorrhage is categorized into two distinct types: Primary postpartum haemorrhage—that is, bleeding within the initial 24 hours post-delivery—and secondary postpartum haemorrhage, defined as bleeding occurring from 24 hours up to twelve weeks following delivery.[3,4]

PPH is the most frequent obstetrical complication, and it occurs in 18% of the deliveries globally resulting in 35 to 55% of the peri partum maternal deaths. Postpartum haemorrhage, with a case fatality rate of 1%, is a predominant cause of maternal mortality,

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occurring in nearly 10% of all births. If we look at the statistics of the developing countries, one hundred twenty-five million kids are born yearly, one mother dies per thousand births due to PPH. Every seven minutes, PPH takes the life of one pregnant woman. In case of severe hemorrhage this may go up to 25%.[5]

There can be varied reasons for PPH. The basic causes of postpartum hemorrhage are as follows; uterine atony, retained placenta, genital tract lacerations, uterine inversion, abnormal placentation, and disorder of coagulation. Secondary postpartum hemorrhage is caused by the following; retained products of conception, infection, and inherited defects in coagulation.[6-9]

It has been a common practice to augment delayed labor when there is no or poor progression of labor. Labour augmentation is performed to enhance uterine activity by increasing the intensity, frequency, and duration of contractions following the onset of spontaneous labour. It is having been frequently observed that during the augmentation of the labour there is an increase blood loss as compared to non-augmented labor resulting in PPH in a normal vaginal delivery. In a study by Khireddine et al.[10] 50.3% of women suffered from PPH after augmented labor in normal vaginal delivery. Although it is a frequent observation that there is an increase in the chance of primary PPH when a delivery is augmented but no such data is available to support this observation in our setup.

The research was conducted to estimate the frequency of PPH after augmented labor in normal vaginal delivery in our population because previously no data was available for blood loss after augmentation of labour. The recommendations will be communicated to health authorities for future incorporation into national guidelines.

MATERIAL AND METHODS

This study which has a cross-sectional design was conducted from March to September 2023 at the Department of Obstetrics & Gynecology, Qazi Hussain Ahmad Medical Complex Nowshera. The WHO sample size calculator determined the sample size of 151 patients. Keeping 95 % confidence interval, 8% absolute precision and previously reported frequency of PPH in augmented labour as 50.3 %[10]. Consecutive nonprobability sampling techniques were used for patient selection. All women aged 18 to 40 years with history of augmentation, singleton pregnancy on ultrasound, gestational age of 37 to 41 weeks and parity of 0 to 4 were included in research. All women with medical disorders like hypertension, diabetes and bleeding problems were excluded from study. Augmented labour means when stalled (less than 3 uterine contractions per 10 minutes on ultrasound) and labour was augmented using oxytocin 12 ml/hour which was increased by 12ml/hour after every 30 mins to the max of >192ml/hour until delivery. Primary PPH, as per operational definition as an estimated blood loss of >500 ml following vaginal delivery within 24 hours.

After obtaining an approval certificate from the hospital's ethical review board, patients fulfilling the inclusion criteria were enrolled in the labor room of Qazi Hussain Ahmad Medical Complex, Nowshera. After taking demographic data, i.e. age, parity, and gestational age of the patient, written informed consent was obtained from all patients making sure that the confidentiality of the patient was not breached, and the patient was not at any risk during this study. All deliveries were conducted by trainee medical officers. The slow/obstructed labor was augmented by oxytocin infusion at the rate of 12ml/hour which was titrated by 12ml/hour after every 30 minutes to a max of 192ml/hour till the delivery of the baby. The frequency of primary PPH was noted as per the operational definition of augmented labor in normal vaginal delivery. Data obtained was noted on the Performa. Data analysis was conducted using SPSS-22. The mean and standard deviation were measured for quantitative variables such as the age of the patient and gestational age, while percentages and frequencies were determined for qualitative variables including parity and primary postpartum haemorrhage. Effect modifiers such as age, gestational age, and parity were analyzed in relation to primary postpartum haemorrhage (PPH). The post-stratification chi-square test was employed, with P value ≤0.05 set as the significance threshold.

RESULTS

The age distribution among 151 patients was analyzed, revealing that sixty-five (43%) patients were aged 18-30 years, while eighty-six (57%) patients fell within the 31–40-year age range. The mean age was 27 years, with a standard deviation of ± 7.02. Table 1. The parity distribution among 151 patients was analyzed, revealing that 57 (37%) were primipara and 94 (62.3%) were multipara. Table 2. Gestational age was analyzed among 151 patients, revealing that 62 patients (41.1%) had a period of gestation (POG) of 37-38 weeks, while 89 patients (59.9%) had a POG of 39-41 weeks.

Table 3. Primary postpartum hemorrhage among 151 patients was analyzed as Eighteen (12%) patients had primary PPH while One hundred thirty-three (88%) patients didn't have primary PPH. (table No.4) Stratification of primary postpartum hemorrhage with respect to age, period of gestation, and parity, is given in table no 5,6,7.

TABLE No. 1 AGE DISTRIBUTION (n=151)

AGE (in Groups)	FREQUENCY	PERCENTAGE
18-30 years	65	43%
31-40 years	86	57%
Total	**151**	**100%**

Mean age was 27 years with SD ± 7.02

TABLE No. 2 PARITY DISTRIBUTION (n=151)

PARITY	FREQUENCY	PERCENTAGE
Primi Para	57	37%
Multi Para	94	62.3%
Total	**151**	**100%**

TABLE No. 3 GESTATIONAL AGE (n=151)

GESTATIONAL AGE	FREQUENCY	PERCENTAGE
37-38 weeks	62	41.1%
39-41 weeks	89	59.9%
Total	**151**	**100%**

Mean gestational age was 38 weeks with SD ± 1.20

TABLE No. 4 PRIMARY POSTPARTUM HEMORRHAGE (n=151)

PRIMARY PPH	FREQUENCY	PERCENTAGE
Yes	18	12%
No	133	88%
Total	**151**	**100%**

TABLE No. 5 STRATIFICATION OF PRIMARY POSTPARTUM HEMORRHAGE W.R.T AGE (n=151)

PRIMARY PPH	18-30 years	31-40 years	Total	P Value
Yes	7(11%)	11(13%)	18	0.7042
No	58(89%)	75(87%)	133	
Total	65(100%)	86(100%)	**151**	

Chi square test was applied

TABLE No. 6 STRATIFICATION OF PRIMARY POSTPARTUM HEMORRHAGE W.R.T PARITY DISTRIBUTION (n=151)

PRIMARY PPH	PrimiPara	Multi Para	Total	P Value
Yes	6(11%)	12(13%)	18	0.6805
No	51(89%)	82(87%)	133	
Total	57(100%)	94(100%)	**151**	

Chi square test was applied

TABLE No. 7 STRATIFICATION OF PRIMARY POSTPARTUM HEMORRHAGE W.R.T GESTATIONAL AGE
(n=151)

PRIMARY PPH	37-38 weeks	39-41 weeks	Total	P Value
Yes	6(10%)	12(13%)	18	0.4777
No	56(90%)	77(87%)	133	
Total	62(100%)	89(100%)	**151**	

Chi square test was applied

DISCUSSION

One of the important and life-threatening complications encountered during labor is bleeding. Bleeding during labor used to be labelled as Postpartum hemorrhage (PPH) when a woman losses more than five hundred mL of blood in a vaginal delivery or above one thousand mL of blood loss during cesarean delivery. Our study shows that among 151 patients mean age was 27 years with SD ± 7.02. Fifty-seven (37%) patients were primi para and Ninety-Four (62.3%) patients were multi para. Sixty-Two (41.1%) patients had POG 37-38 weeks, and Eighty-Nine (59.9%) patients had POG 39-41 weeks. Eighteen (12%) patients had primary PPH after augmentation of labor and one hundred thirty-three (88%) patients didn't have primary PPH after augmentation of labor.

Similar results were shown in research carried out by Erickson EN et al (11) where the total frequency of PPH in the sample was 3.9% (n = 1,052). The duration of oxytocin administration varied from 0 hours (n = 5,824) to 107.4 hours throughout the course of labour. The average duration of oxytocin infusion was 5.6 hours, with a standard deviation of 5.5 hours.

Among the participants who commenced labour spontaneously, totaling n = 12,875 (47.6%), 65% were administered oxytocin to enhance labour, resulting in a mean duration of 3.9 hours (SD 4.2). A substantial majority of women (91%, n = 12,892) whose labours were induced were administered oxytocin, with a mean duration of administration of 6.5 hours (SD = 5.8 hours). The occurrence of PPH was more among patients who received oxytocin for labour induction (4.41%) in comparison to those who didn't receive oxytocin (3.3%) or those who were given oxytocin following spontaneous onset of labour for augmentation (3.5%; $\chi 2$ = 21.3, p <.011).

In a separate study conducted by Yasmin S et al. (12), it was reported that a total of 488 patients who underwent routine vaginal delivery at term were included in the research. The odd ratio calculated was 1.4846 which indicates nearly 1.5 times the increased risk of post-partum haemorrhage in patients who underwent augmentation of labour with oxytocin infusion.

Chad A. Grotegut (13) conducted a case-control study indicating that the regular administration of oxytocin to augment labour is associated with a considerable risk of postpartum haemorrhage resulting from uterine atony. The study revealed that patients who experienced severe postpartum haemorrhage attributable to uterine atony exhibited a markedly higher utilization of oxytocin compared to both the case and control groups (10,054 mU versus 3,762 mU, p<0.001), yielding an Odds Ratio of 1.47 [95% CI: 1.17, 1.93]. Azar Mehrabadi (14) carried out research on the British Columbian population from 2000 to 2009. Their analysis of temporal trends in atonic postpartum haemorrhage indicated that the administration of Oxytocin was associated with a 7.2% incidence of atonic postpartum haemorrhage (p<0.001). The administration of oxytocin augmentation was associated with an increased risk of severe postpartum haemorrhage, yielding an Odds Ratio of 1.35 (95% Confidence Interval: 1.10–1.65; p<0.001). (15)

Waterstone M et al. (16) conducted an evaluation of the effects of oxytocin and prostaglandin on labour induction in women categorized as low risk. Upon adjusting for bias factors, the researchers discovered that postpartum haemorrhage occurred more frequently among patients who underwent labour augmentation with oxytocin, as opposed to those who experienced spontaneous labour (Odds Ratio: 1.22, 95% Confidence Interval: 1.04–1.42). Malabarey (17) discovered that the use of oxytocin for induction was associated with a higher incidence of postpartum haemorrhage compared to prostaglandin's induction in a low-risk population. Al-Zirqi I (18) revealed that the incidence of post-partum haemorrhage was markedly elevated in the cohort subjected to augmented labour compared to those experiencing spontaneous labour (Odds Ratio: 1.71; 95% Confidence Interval, 1.56-1.88).

Maliha Sadaf (19) states that the administration of oxytocin infusion for the labour augmentation

resulted in postpartum hemorrhage in 2.40% of patients. Several studies exist that do not corroborate the positive correlation between the administration of oxytocin during labour and the incidence of postpartum haemorrhage. For instance, a study conducted across various healthcare facilities in Latin America, which included a total of 11,323 participants who received oxytocin during labour, revealed that only 211 individuals experienced severe postpartum haemorrhage. This finding led to the conclusion of a statistically insignificant association between the administration of oxytocin and the occurrence of postpartum haemorrhage. This research was carried out by Sosa et al. (20).

CONCLUSION

The research shows that postpartum hemorrhage occurs more often than anticipated whenever medical intervention through labor augmentation happens during normal vaginal deliveries. Postpartum hemorrhage shows higher occurrence rates when medical labor induction occurs while managing labor progression since this augmentation strategy seems linked to elevated hemorrhage risks. The gathered data shows that pregnant women require systematic risk evaluation and continuous labor observation together with timely treatment protocols for managing PPH effectively. The study emphasizes the necessity of creating guidelines to enhance the use of labor augmentation while reducing connected medical issues.

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