POSTPARTUM HEMORRHAGE IN SPONTANEOUS VERSUS INDUCED LABOR IN PRIMIGRAVIDA AT TERM

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ABSTRACT

Objectives: To compare the frequency of Postpartum Hemorrhage (PPH) in spontaneous Vs induced labor in Primigravidas at term.

Methods: This was a comparative cross-sectional study, conducted in the Department of Obstetrics and Gynaecology, Hayatabad Medical Complex, and Lady Reading Hospital Peshawar. A total of 134 Primigravidas, were enrolled through non probability consecutive sampling after taking informed consent. PPH was noted for individual patients, who were grouped as those undergoing spontaneous labor and those entering labor after the process of induction with Misoprostol. All the data was entered and analyzed with the help of SPSS 21.

Results: The study was conducted on 134 primigravida women subjected to either spontaneous or induced labor. The mean age of the whole study sample was 27.5 + 4.8 years. The mean BMI of the whole study sample was 22.3 + 1.7kg/m^2. The sample of 134 women, 59.7% (n=80) were having spontaneous labor while 40.3% (n=54) were induced using Misoprostol. The overall frequency of PPH was recorded in 26.9% (n=36) of the sample. When stratified with regards to the mode of labor onset, it was found that there is a significant increase in the frequency of PPH in Primigravidas with induced labour.

Conclusion: The frequency of PPH is significantly high in women who are subjected to induced labor as compared to spontaneous labor.

Keywords: Primigravidas; Induction of Labor; Postpartum Haemorrhage (PPH).

INTRODUCTION

The time of giving birth to a new life has been well known to be accompanied by many risks, including Postpartum Haemorrhage (PPH). It is defined as blood loss of more than 500 mL following a vaginal delivery or more than 1000 mL following caesarean delivery.[1] A loss of these amounts within 24 hours of delivery is termed primary PPH, whereas such losses are termed late or secondary PPH if they occur 24 hours after delivery till 12 weeks postpartum.[2] World Health Organization(WHO) statistics suggest that 25 percent of maternal death are due to PPH accounting for more than 100,000 maternal deaths per year and affecting 2% of all women giving birth.[3] In addition, to be an important contributor to maternal mortality, the survivors of this complication are sometimes left with serious morbidities like renal failure. The exact incidence of PPH is difficult to ascertain however, estimates suggests that PPH complicates around 6% of all deliveries.[4] High prevalence of anemia, lack of antenatal care, increased tendency towards home deliveries, all compound the risk of adverse sequelae of postpartum hemorrhage. These risk factors are encountered more in the lower class of the community. Hospital deliveries, though can notguaranteee absolute prevention of PPH, ensure that there is, however, availability of facilities to combat the complication, depending on the level of the hospital.

With the passage of time, as obstetric care improved, there has been an increasing trend towards early delivery under special circumstances to ensure better fetomaternal outcome. Generally 10-20 % of all pregnancies are induced.[5] Labour induction is the stimulation of regular uterine contractions before the spontaneous onset of labour, using mechanical (laminaria tents, foley's catheter) or pharmacologic methods (oxytocin, prostaglandin E1 analogues, prostaglandin E2) in order to generate progressive cervical dilation and subsequent delivery. It is commonly done in post-date pregnancy, preterm rupture of membrane, pregnancy with diabetes[5] and there is increased trend towards elective induction on maternal request, which can account upto 47% of all inductions in some hospitals.[6] Generally labour induction is indicated when benefits of delivery to the mother or fetus outweigh the potential risks of continuing the pregnancy, it should

be well justified and un-necessary induction should be avoided.

The ease of availability and safety of the methods has led to use of induction for low risk pregnant women. Such inductions of labor can lead to premature births[7] and can result in a cascade of events including PPH and interventions which could otherwise be avoided.[8] Various theories have been hypothesized for the increased risk of PPH. These include strong uterine contactions leading to muscle fatigue[9] and saturation of Oxytocin receptors.[10] Despite risks, induction of labor has become increasingly common.[11,12] Since the indications for induction are not constant among hospitals, it has led to variable rates of inductions in different hospitals.[13] In order to standardize the practice, various guidelines have been put forth by specializing authorities to bring homogeneity into the practice. These include NICE[14], ACOG[15] and WHO[16] guidelines among the many others. Our study aims to know the frequency of postpartum hemorrhage in Primigravidas and identify whether it is more in induced labour as compared to spontaneous labour in primigravida at term. This will help us in generating information in relation to PPH and induced labor in Primigravidas in particular. With this infromation in hand, further strategies can be planned regarding its prevention and timely management after early identification.

METHODOLOGY

This was a comparative cross sectional study, conducted in Obstetrics and Gynecology Departments, in 2 tertiary care hospitals of Peshawar, i.e Hayatabad Medical Complex and Lady Reading Hospital Peshawar. The duration of study was 18 months, starting from January 2019 till June 2020. The study was conducted after approval from hospital research and ethical board. Patients were enrolled through non probability consecutive sampling. Sample size was 134, keeping 6%[4] prevalence of post-partum haemorrhage in spontaneous labour with 95% confidence interval and 4% margin of error under WHO sample size calculation. Patients who were Primigravidas, and delivered vaginally by induction or spontaneous labour at term gestation were included in the study. Indications of induction were according to hospital protocol and included post dates pregnancy, IUGR, liquor volume abnormalities and medical disorders like Hypertension and Diabetes. Method of induction involved using Misoprostol in doses recommended by FIGO. Multigravidas, multiple pregnancies, cases with polyhydramnios, Intrauterine fetal demise, those patients referred from different hospitals with postpartum hemorrhage, those with bleeding disorders or on antiplatelet therapy and those having operative delivery were excluded from the study. After informed consent, patient fulfilling the criteria was enrolled in the study. Following vaginal delivery sanitary pads was used for estimation of blood loss. They was weighed beforehand and after soaked with blood, they were weighed and the difference was noted as 1gm = 1ml. All the data was entered and analyzed with the help of SPSS 21. Mean and standard deviation was calculated for numerical variables i-e age, BMI. Frequencies and percentages was calculated for qualitative variables like mode of onset of labour and Post-partum haemorrhage. Post-partum haemorrhage was stratified among BMI and mode of onset of labour i-e spontaneous/ induced. Chi-square test was applied for analysis. p value ≤ 0.05 was considered as significant.

RESULTS

The study was conducted on 134 primigravida women subjected to either spontaneous or induced labor. The mean age of the whole study sample was 27.5 $\pm$ 4.8 years. The mean BMI of the whole study sample was 22.3 $\pm$ 1.7kg/m^2. BMI of the parturients was categorized in 4 categories (Table 1). Among our sample of 134 women, 59.7% (n=80) were having spontaneous labor while 40.3% (n=54) were induced using Misoprostol. On follow up, the overall frequency of PPH was recorded in 26.9% (n=36) of the sample. Among the different BMI groups, PPH occurred in 30%, 26%, 27% and 25% respectively at BMI of <19, 19-24.9, 25-29.9 and >30. When stratified with regards to mode of labor onset (Table 2), it was found that there is significant increase in frequency of PPH in Primigravidas with induced labour, the p value came out as (X^2= 6.56) 0.0104 (significance level p≤0.05).

DISCUSSION

As against high risk women, low risk

Table 1: Distribution of body mass index in study sample (n = 134)

BMI	Frequency	Percent (%)
<19	3	2
19-24.9	83	62
25-29.9	36	27
>30	12	9

Table 2: Mode of labor onset wise stratification of Postpartum Hemorrhage

Variables		Postpartum Hemorrhage		X^2	P value
		Yes	No		
Mode of Onset of Labor	Spontaneous	15	65	6.56	0.010
		18.8%	81.2%		
	Induced	21	33		
		38.9%	61.1%		

women are expected to start labour spontaneously and proceed without the need of much interventions while anticipating good outcome for both the mother and the baby. Studies have previously been done to understand the complications that can arise with induction of labour. Increased rate of cesarian section has been identified by many in their studies.[17] Other outcomes have also been studied including the effect of induction of labor on postpartum hemorrhage. Various studies have suggested an increased rate of PPH in induced group.[18-20] However, some of these studies attribute the risk to the risk factors of the parturients including obstetric history, rather than the process of induction, that affect the risk of PPH individually in themselves.[18] One of the most important risk factor affecting the risk of PPH is prior history of PPH, with estimated nine fold increased odds in index pregnancy with such background risk.[19]

Our study revealed that the incidence of PPH was significantly higher in the induced group. Similar increase was noted generally in the induced gravidas in other studies[21] as compared to those who went into spontaneous labor. A study done in Pakistan also shows the same findings of increased risk of PPH in induced labours.[22] Another study also confirms similar findings for both induced and augmented labours as compared to spontaneous labours.[23] Looking specifically at Primigravidas, Al-Turiahi et al also noticed increased incidence of PPH after induction of labor as against spontaneous labors.[24] A possible concern is that studies have shown nulliparity as an independent risk factor for PPH[25], but this possible confounding was neutralized in our study by studying incidence of PPH in spontaneous and induced labors, both in primigravidas (with uniform baseline risk). A possible explanation for increased risk of PPH in induced labors could be different lengths of labour, between spontaneous and induced groups, however this aspect was not studied in our research, and hence needs to be studied in detail in relation to different pharmacologic agents, their efficacy in establishing labor and their associated individual risk of PPH.

CONCLUSION

Our study showed that there is higher risk of PPH in induced labors as compared with spontaneous labor in Primigravid patients. This implies that the indications for induction should be well justified, and guided by the guidelines, so as to reduce the risk of PPH and its attendant morbidities and potential mortality.

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Author's Contribution

SS conceived the idea and contributed to the data collection. NH helped in manuscript writing. NK helped in the data interpretation. MS helped in data acquisition. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interest

Authors declared no conflict of interest

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None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.