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A Comparative Study of Active Management of the Third Stage of Labor IV Methergine and IM Oxytocin

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

Postpartum haemorrhage (PPH) has been more common over the last three decades, accounting for 11% of all pregnancy-related deaths in the United States. In the third stage of labour, risk classification and active management are crucial preventative techniques. To avoid negative effects, a multidisciplinary approach to PPH patient care is required. To treat uterine atony, uterotonic medicines like oxytocin are used in combination with manipulative procedures like uterine massage and balloon tamponade. The amount of blood loss, duration of the third stage, need for MRP, incidence of PPH, need for repeated oxytocics, and its side effects were measured in Group I 100 women who were administered injection oxytocin 10 IU injection methergin 0.2 mg IV within one minute of the baby's delivery. The mean blood loss at vaginal delivery in Group I was 100-150 ml and in group I P value 0.027, which was statistically significant .In Group II was 160-200 ml with P value 0.036, which was statistically significant. The mean duration of third stag labour in Group 1 was 124.6 min and Group 2 was 144.8 min intravenous methergin is a better uterotonic when compared to intramuscular oxytocin to reduce the amount of blood loss at delivery and prevent complications like atonic PPH.

Keywords: Postpartum haemorrhage; labour; uterotonics.

1. INTRODUCTION

A common obstetrical complication, postpartum haemorrhage is one of the primary causes of maternal morbidity and mortality. It is also one of the leading causes of maternal morbidity and mortality that can be avoided. If left untreated, it occurs abruptly, is often unsuspected, and can

end in maternal mortality [1]. Around the world, severe PPH (postpartum haemorrhage) is thought to affect about 11% of women who give birth to a live baby. In developing countries, where many women lack access to a professional attendant during delivery and active management of the third stage of labour is uncommon, the rate is projected to be significantly higher. According to estimates, 14 million women lose a significant amount of blood after giving birth, with 1% of them dying as a result [2,3].

The most common cause of PPH is uterine atony. In the third stage of labour, enough uterine retraction is required for placenta separation, control of third-stage haemorrhage, and prevention of PPH. Due to atonic PPH, a protracted third stage of labour is frequently associated with an increased risk of maternal mortality and morbidity [4,5].

Modern obstetrics strongly recommends careful use of oxytocics and active treatment of the third stage of labour, especially in women who are at risk of uterine atony. The use of oxytocics on a regular basis lowers the risk of PPH by 40%. Although the use of oxytocics to abbreviate the third stage of labour has grown common, the type of oxytocin formulation, potency, and manner of delivery vary [6].

2. MATERIALS AND METHODS

A total of 200 delivering mother admitted in labour ward in Sree Balaji Medical College and Hospital in the year August 2010-September 2012 to be selected for study. Random allocation of delivering mothers by Sealed Envelope method to Methylergometrine And Oxytocin Group. 100 patients were allotted for IV Methyl ergometrine (Methergine) (0.2mg) with in a min after the delivery of the baby. Another 100 patients were allotted for Oxytocin 10 IU with in a min after delivery of the baby.

After injecting methylgine and oxytocin, data was collected on the duration of various stages of labour, blood loss, and other maternal outcomes, such as vital signs after 5, 15 and 30 mins, and at the end of one hour, abdominal pain was assessed at the end of one hour using a numerical pain scale, and the presence of nausea and vomiting was also assessed at the end of one hour. The blood loss was measured using a brass V drape, and abdominal pain was evaluated at the end of one hour using a standardized numerical pain evaluation scale, which measures the level of pain on a scale of 0 to 10.

3. RESULT

In all the two groups studied 51% of the cases are between 20- 24yrs of age 41% of the case are between 25-30yr of age, 9%ofthe case are >30yrs. The mean age distribution in group l: 24.5. The mean age distribution in group 2: 24.9 (Table 1)

In the two study groups, primi gravida constitute 47%, in group I &group ii Gravida2 consititute 29% in group I and 34% in group ii, and Gravida 3 consititute, 25% in group I and 18% in group II (Table 2).

Table 1. Age distribution

Age	Methergine	Oxytocin	Total	%
20-24yr	**50**	**51**	**101**	50.5
25-30yr	**39**	**42**	**81**	40.5
>30yr	**11**	7	**18**	9
Total	**100**	**100**	**200**	100

Table 2. Parity

Parity	Methergthte	Oxytocin	Total	%
PRIM!	46	48	94	47
GRAVIDA2	29	34	63	31.5
GRAVIDA3	25	18	43	21.5
Total	100	100	200	100

Table 3. Labour

Labour	Methergiine	Oxytocin	Total	%
Spontaneous	49	41	90	45
Augmented	44	49	93	46.5
Induced	07	10	17	8.5
Total	100	100	200	100

Table 4. Mode of delivery

Modeof Delivery	Methergine	Oxytocin	Total	%
LN	19	14	33	16.5
LN-EPI	50	52	102	51
LN-LPI	15	17	32	16
LN-LP II	16	17	33	16.5
Total	100	100	200	100

In Group 1: labour start spontaneou s in 49%, augmented in 44%cases and induced in 07%. In Group 2: labour start spontane ous in 41%, augmented in 49%cases and induced in 10% of cases (Table 3).

In the group studied, Labour natural with Episiotomy constituted above 51%, LN with LPI° and LN with LPII° constituted 16% (Table 4).

In group I, duration of third stage labour was 2-4 min in 89% of the cases. In group II duration of third stage labour was 2-4 min in 83% of the cases (Table 5).

Blood loss of 100- 150ml present in 80% of Group!, 68% of GroupII . Blood loss of 160-200ml present in 13% of c.iroupI, 30% of Group II. Mean blood loss in Group I- 124 ml
Group II - 144 ml

3.1 Amount of Blood Loss During Third Stage of Labour

P Value 0.027 Significant. There is statistical significance among the means of the two Groups pertaining to the blood loss during third stage of labour (Table 6).

When Hb % was estimated before and after delivery, the fall in Hb% was as follows; In group I, 54% of the cases had Hb difference of< 0.5 gm. In group II, 61% of the cases had Hb difference of 0.6-lgm (Table 7). Hb_b :haemoglobin before. Hb_a: haemoglobin after.

In group I, 99% had no complication but 1 % had mild atonic PPH which is because of prolonged second stage labour while, In group II , 99% had no complications, but 1 % of retained placenta was noticed in this study which was due to uterine anomaly which was noted in manuval removal of placenta (Table 8).

In group I, the incidence of nausea 6%, vomiting 83% and hypertension 7%. In group II, there were no maternal side effect was noted in this study (Table 9).

Mild atonic PPH treated medically and with blood transfusion affects 1% of people in group I. Manual placenta removal and blood transfusion for retained placenta were performed in 1% of instances in group II (Table 10).

4. DISCUSSION

In the current study, 50 instances were between the ages of 20 and 24, primi gravida made up around 47% of the cases, and booked cases made up more than 90% of the cases in both categories. In both groups, natural labour was about 19 % methergine and 14 % oxytocin, natural labour with LP I0 was 16 % methergine and 17 % oxytocin, and natural labour with episiotomy was 50 % and 52 %. A prospective non-randomized uncontrolled study was undertaken by the department of obstetrics and gynaecology of SSG hospital and medical college in Baroda, which enrolled 200 women and divided them into four groups. Misoprostol 400g per rectally, injection oxytocin 10 IU intramuscularly, injection methylergometrine 0.2 mg intravenously, and injection (0.5 mg ergometrine + 5 IU oxytocin) intramuscularly are the four uterotonics used to manage the third stage of labour.

Table 5. Duration of third stage labour

Duration of Third Stage Labourin MIN	Methergine		Oxytocin	Total	%
0-2	01		01	02	1
2-4	89		83	172	86
4-6	09		15	24	12
>6	01		01	02	
TOTAL	100		100	200	100
Groups	**N**	**Mean**	**Std. Deviation**	**P Value**	
Duration Methergine Oxytocin	100	3.3250	.85095	0.300	
	100	3.4740	1.15493		

P value 0.300 Not significant

;**Table 6. Amount of blood loss during third stage of labour**

Blood Loss	Methergine	Oxytocin	Total	%
<l00ML	06	10	16	8
100-lS0M	79	68	147	73.5
160-200ML	13	30	43	21.5
210-300ML	01	02	03	1.5
310-S00ML	0	0	0	0
>500ML	01	0	01	0.5
Total	100	100	200	100

Group	N	Mean	Std. Deviation	P Value
Blood loss Methergine	100	124.6000	31.93807	0.027*
Oxytocin	100	144.8000	84.34513	

Table 7. Haemoglobin difference

Hb level	Methergine	oxytocin	total	%
<0.5	54	38	92	46
0.6-lgm	43	61	104	52
l.1-2gm	02	01	03	1.5
>2gm	01	0	01	0.5
Total	100	100	200	100

	Groups	N	Mean	Std. Deviation	P value	Groups	Mean difference before vs After
tm,_b	Methergine	100	11.7630	.89957	0.082	Methergine	0.43
	Oxytocin	100	11.9730	.79339			
Hb_a	Methergine	100	11.3310	1.04598	0.032*	Oxytocin	0.96
	Oxytocin	100	11.0148	1.02945			

Table 8. Complication

Complication	Methergine	Oxytocin	Total	%
Nil	99	99	198	99
Mild atonic pph	01	0	01	0.5
Retained placenta	0	01	01	0.5
Total	100	100	200	100

Table 9. Side effects

Side Effects	Methergine	Oxytocin	Total	%
Nil	79	100	179	89.5
Nausea	6	-	06	3
Vomiting	8	-	08	4
Diarrhoea	-	-	-	
Shivering	-	*:',)*	-	
Jinbp	07	-	07	3.5
Total	100	100	200	100

Table 10. Treatment given

	Methergine	Oxytocin	Total	%
Nil	99	99	198	99
Medical Management	01	0	01	0.5
Manual removal of Placenta	0	01	01	0.5
Total	100	100	200	100

The average age group in this trial was 25.7 for Misoprosto, 24.1 for oxytocin, 24.8 for injection Methylergometrine, and 25.1 for the combo. In their study, the length of third stage labour in SD was 7.18 minutes with methergine and -8.94 minutes with oxytocin. In this study, the average duration of third stage labour with methergine was 3.3250 minutes and 3.4740 minutes with oxytocin. Blood loss of more than 500 mL was observed in 4% of the methergine group, 10% of the oxytocin group, 20% of the Misoprostol group, and 3% of the combination group [7].

In present study blood loss >500ml in third stage of labour was noted only in 1% of case with methergine due mild atonic pph. No such cases were noted in oxytocin group. In the above study, the incidence of extra uterotonics was 4% in the methergine group, 10% in the oxytocin group, 20% in the Misoprostol group, and 3% in the combination group. In this study, the incidence of extra uterotonics was 3% in the methergine group and 3% in the oxytocin group. In the Baroda trial, the need for postpartum blood transfusion was 2% in the methergine group, 2% in oxytocin, 14% in misoprostol, and 4% in the combination group [8].

The need for blood transfusion was 1% in both groups in the current investigation. Shivering 2, nausea 10, vomiting 9, and hypertension 5 were all reported in the methergine group in the study. Shivering 3, nausea 1, vomiting, and hypertension 1 were observed in the oxytocin group. The incidence of nausea, vomiting, and an elevation in blood pressure were all seen solely in studies involving ergot preparations. In this study, nausea was reported in 6% of cases, vomiting in 8% of cases, and a rise in blood pressure in 7% of cases. In the oxytocin group, no such negative effects were seen. When comparing oxytocin with syntometrin [9]. Trials employing oxytocin alone revealed a lower rate of manual placenta removal, whereas those using ergot preparations showed a higher rate. The results of the solitary experiment that utilised ergot iv were fully responsible for the small increase in manual placenta removal noted in the Cochrane meta-analysis. In the current trial, the incidence of a retained placenta needing manual removal was 1% in the oxytocin group only, due to uterine abnormalities discovered during manual removal. Because it is as effective as or more effective than ergot alkaloids or prostaglandins and has fewer side effects, oxytocin is the first line of defence against PPH. Because of its equivalent advantages and fewer side effects, oxytocin is favoured over ergometrine for the prevention of PPH in all women. Misoprostol should be evaluated for inclusion in the AMSTL protocol in instances when oxytocin or ergometrine are not consistently available and used appropriately throughout the third stage of labour [10].

CONCLUSION

Because two-thirds of women who get PPH have no risk indicators, it's hard to predict who will develop PPH based on risk factors. Provide iron and folate supplements, as well as nutritional recommendations on iron and folic acid-rich foods, during pregnancy. Ergometrine has been associated to a higher incidence of retained

placenta as well as unpleasant side effects such nausea, vomiting, and hypertension when used as part of active treatment. The cold chain for the medicine must be maintained, and its use is restricted. Oxytocin is the first line of defense for PPH prophylaxis since it is more heat and light stable, does not require refrigeration, and is as effective as or even more effective than ergot alkaloids. There are fewer side effects as well, with none observed in this trial.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline Patient's consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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