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Original Article

Acomparative study of efficacy of intrmuscular oxytocin with controlled cord traction vs per rectal misoprost in the manegement of third stage of labour

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ABSTRACT

Pregnancy and child birth involves significant health risk even for women with no pre-existing health problems. Third stage of labour is the time from delivery of the baby until delivery of the placenta and is the most crucial stage of labour. Post partum hemorrhage complicates approximately 4% of vaginal deliveries and estimates are that it causes significant morbidity and 25% of all the child birth related maternal deaths (1).The purpose of this study was to compare the efficacy of 10 units oxytocin intramuscular with controlled cord traction vs 400 micrograms of misoprost per rectally in reducing blood loss in third stage of labour ,effect on haemoglobin of the patient ,need of oxytocics or blood transfusion and associated side effects and complications. A prospective non-randomised uncontrolled study enrolling 200 women divided into 2 groups was carried out. It was observed that there was significantly lower average blood loss in oxytocin group (152.34 ml) when compared with Misoprost group (237.48ml) .The duration of third stage of labour was also considerably lower in oxytocin group when compared to that in the misoprost group . it can be concluded that oxytocin is more potent uterotonic with rapid onset of action, and minimal side effects.

1. Introduction

Pregnancy and child birth involves risk even for women with no pre-existing health problems.. PPH occurs in approximately 4% of vaginal deliveries .The WHO defines PPH as 500 ml or more blood loss in first 24 h post partum (2). Post partum hemorrhagic are caused by uterine atony and occur in the immediate post partum period and hence the need for uterotonic drugs. In developing countries, large number of patients suffer from anemia due to poor diet, lack of absorption of iron from the bowel because of chronic amoebiasis, hookworm infestation , repeated child birth etc. In these women, even normal amount of blood loss can put them in danger(3). So effective oxytocic drugs and their judicial use is very important for routine management of third stage of labour and prevention of maternal morbidity and mortality. Prevention of post partum hemorrhage in developing countries is an important clinical goal. Active management is aimed at promptly initiating the uterine contraction to compress these spiral arteries as they run among uterine smooth muscle fibers. This study was designed to evaluate the efficacy of IM oxytocin with controlled cord traction VS per-rectal misoprost in the management of third stage of labour when administered after delivery of anterior shoulder of the baby.

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2. Material and Method

A prospective non-randomized uncontrolled clinical trial was carried out on patients attending the labour room emergency of the Department of Obstetrics and Gynecology , Patna Medical College and Hospital for delivery from may 2006 to September 2008. A total of 200 patients were selected from those pregnant women who were in labour and were admitted. Patients were divided into two groups, group 1 (oxytocin group) and group 2(misoprost group). Each group comprised of 100 patients.

INCLUSION CRITERIA: Age of the patients: 19-40 yrs, Parity: Primigrivida to 5th gravid ,Period of gestation : 37- 40 weeks, Mode of delivery : spontaneous vaginal delivery with or without episiotomy, Hemoglobin % : 9-12 gram %

EXCLUSION CRITERIA

Obstetric All traumatic cases of PPH, gestational age < 36 weeks, Antepartum hemorrhage, pregnancy induced hypertension, multiple pregnancy ,parity 6 and above, operative deliveries ,intra uterine fetal death, pregnancy with Rh incompatibility, handled outside (those who were received after receiving any uterotonic), scarred uterus

Non- obstetric

History of liver disease, renal disease ,essential Hypertension , heart diseases, coagulation disorders, anemia.

METHODS

In both groups of patients after hospitalization, a detailed history was taken which included general, systemic and obstetric examination. A complete blood count was also sent to the dept. of pathology in all cases.

Procedure :

· All the patients in labour were properly assigned to one of the two study groups . Bladder was emptied – patients either evacuated themselves or plain catheter was used for emptying the bladder.

· All the patients were delivered in dorsal position with legs slightly flexed and with proper exposure of perineum under good light.

· Pulse and blood pressure were taken just before the conduct of labour.

· In group 1 patients, 10 IU of oxytocin was given I.M. after delivery of anterior shoulder of baby and controlled cord traction was performed after delivery of the baby.

· In group 2 patients , two tablets of misoprost of 200 µgm, total 400 µgm was given per-rectally after delivery of anterior shoulder of baby, placenta was allowed to separate by itself .When signs of separation appeared then placenta was removed from vagina.

· Immediately after delivery of baby, a sterile tray was placed at the perineum pressed against the buttocks of the patients, so that all the blood could be collected in the tray. Cord was clamped and cut immediately and baby handed over to the paediatrician.

· Duration of third stage of labour was recorded in minutes.

· Placenta and membranes were examined as a routine for their completeness.

· The blood collected in the tray was immediately measured carefully in clean graduated cylinder in millilitre.

· In those patients who had primary post partum hemorrhage i.e. third stage bleeding 10 IU of oxytocin was added in intravenous drip and blood transfusion was given if required. Duration of third stage of labour was recorded in minutes.

· Very few patients developed retained placenta which was removed manually under general anesthesia.

· Size of clots was expressed in number of fist and one fist amounts was considered to be 500 ml of blood loss.

· General examination was done in all patients. Pulse and blood pressure were measured 10-15 minutes after the delivery of placenta.

· Patients were observed for 24 hours following delivery of placenta and any complaints like nausea, vomiting, shivering, fever, diarrhoea, headache made by the patient was recorded.

· Difference in pre and post partum hemoglobin were calculated in each group.

Results

Both groups were comparable as regards their age, parity and weeks of gestation.

Table- I. Amount of blood loss in third stage of labour

Blood Loss(ml)	(Oxytocin) Group-1		(Misoprost) Group-2	
	No.of Cases	Percentage	No.of Cases	Percentage
50-100	32	32	4	4
101-200	60	60	42	42
201-300	2	2	36	36
301-400	-	-	8	8
401-500	-	-	2	2
501-600	6	6	8	8
TOTAL	100	100	100	100

In oxytocin group, 32% patients had less than 100ml blood loss, where maximum number of patients (60%) had blood loss between 101-200 ml. Only 2% of the patients of this group had blood loss between 201-300ml.There was postpartum hemorrhage in 6% of the patients ,mainly due to retained placenta with blood loss between 501-600ml.

In misoprost group, blood loss of less than 100 ml was observed only in 4% of patients while maximum number of patients i.e. 42% had blood loss between 201-300 ml and in 38% of patients blood loss was between 101-200ml.In this group blood loss of more than 300 ml was observed in 8% patients .Only 2% had blood loss between 400-500 ml. Post partum hemorrhage was observed in 8% of patients.

In the present study in group 2 the incidence of postpartum hemorrhage was 8% .

Average blood loss was 152.34 ml in oxytocin group and was 237.48 ml in misoprost group. Oxytocin group had less blood loss .It is statistical significant when compared with misoprost ($p<0.001$)

In oxytocin group, the duration of third stage in maximum number of patients 38% was 4-6 minutes .In 12% patients had duration of third stage 2-4 min .Among these 27% patients had third stage duration between 6-8 min.15% of the patients took 8-10 min during their third stage .6%cases in this group developed retained placenta.

In misoprost group, no patients had third stage duration less than 4 min.Maximum number of patients 30% had their third stage of labour between 6-8 min,26%took 8-10 minutes during this stage,24% had duration of third stage 10-12 min.14% had duration between 4-6 min.2% took 12-14 min and 8% had retained placenta.

In oxytocin group duration of third stage of labour was 5.09 min and in misoprost group it was found to be 9.09 min.There is significant difference between the two group($p<0.001$)

In oxytocin group additional oxytocic in the form of 10 IU of oxytocin in i.v. drip needed in 6% of the patients .Retained placenta found in 6% of the patients in this group. Post partum hemorrhage seen in 6% of cases

In misoprost group ,additional oxytocics were required in 10% of cases and retained placenta seen in 4% of cases. Post partum hemorrhage seen in 8% of patients.

In oxytocin group 6% of the patient had loss >500ml and required blood transfusion. In misoprost group 8% patients had blood loss >500ml and needed transfusion.

TABLE II. Average amount of blood loss in relation with duration of third of stage of labour

Duration of third stage of labour (min)	Blood loss in ml (Oxytocin) group-1 Mean	S.D.	(Misoprost) group-2 Mean	S.D.
2-4	275.55	216.52	___	___
4-6	132.63	42.28	177.86	54.11
6-8	145.19	45.82	189	57.69
8-10	164.00	34.08	239.29	98.41
10-12	190	0.0	312.92	135.94
12-14	__	___	225	105
>30	383.3	___	550	0

In oxytocin group, maximum blood loss occurred during first 2-4 minutes. Minimum amount i.e.132.63ml of blood loss was seen during 4-6 minutes duration.164ml loss seen during 6-8 minutes duration and still higher amount 190 ml seen during 8-10 minutes duration. No loss seen during 12-14 minutes. In >30 minutes duration 383.3 ml loss seen.

In misoprost group-maximum loss seen during >30 minutes duration 550 ml. 312ml loss seen during 10-12 minutes duration. 225 ml loss was seen during 12-14 minutes duration. Minimum amount of loss was seen during 4-6 minutes duration. No loss seen during 2-4minutes.

Average fall in Hb level was 0.47 g/dl in oxytocin group whereas in misoprost group it was 0.65 g/dl .Parson et.al(12) compared rectal misoprost 800 microgram versus oxytocin 10 IU intramuscular with delivery .The results were comparable in both the groups.

In oxytocin group, none of the patients developed nausea ,vomiting,diarrhea and abdominal cramps. Only 1 patient developed shivering and pyrexia. In misoprost group -2 patients had nausea and vomiting,4 had shivering 2 had pyrexia .One patient had diarrhea and abdominal cramps.

Conclusion

Use of both oxytocin and misoprost has been found to be effective in reducing the blood loss and duration of third stage.

From the present study it can be concluded that oxytocin is more potent uterotonic with rapid onset of action, less side effects or almost no side effects. It can be administered safely to any group of patient. Though it requires storage facility (within 2-80C), it is more effective drug in preventing postpartum hemorrhage in low risk cases. Misoprost should be recommended in developing countries where cold chain cannot be maintained to store oxytocin . Rectal Misoprost is less effective in controlling post partum hemorrhage in third stage of labour when compared to oxytocin, but it can be valuable in ,rural setting where storage facilities are not available and trained nurses are not available to give intramuscular injections.It is most relevant in our country with high incidence of HIV infections and were disposable needles are questionable. Misoprost being a cheap drug with shelf life of 3 years, can be a life saving drug in rural set-up when other options are not available for management of bleeding in third stage. It is an important drug especially for midwives and Trained Birth attendants (TBAS) who work in the periphery of developing countries because it does not require skill and experience for rectal administration and also it has no life threatening complications or side effects. It can safely be given through various routes during third stage of labour apart from rectal use. Other routes of administration during this stage of labour are oral, vaginal and sublingual. In conditions when other drugs are contraindicated it can also be applied in rectum when patient is not able to swallow the drug. So misoprost should be promoted as an important drug in reducing maternal mortality due to bleeding in third stage and postpartum hemorrhage in developing countries where most of the deaths occur in rural setups.Since in most centers, even in our PHC trained nurses are available , oxytocin should be used as first line drug in labour as it is found to be more effective in reducing the duration of third stage and blood loss following delivery. Thus routine use oxytocin to prevent post partum hemorrhage can go a long way in reducing maternal mortality and morbidity.

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