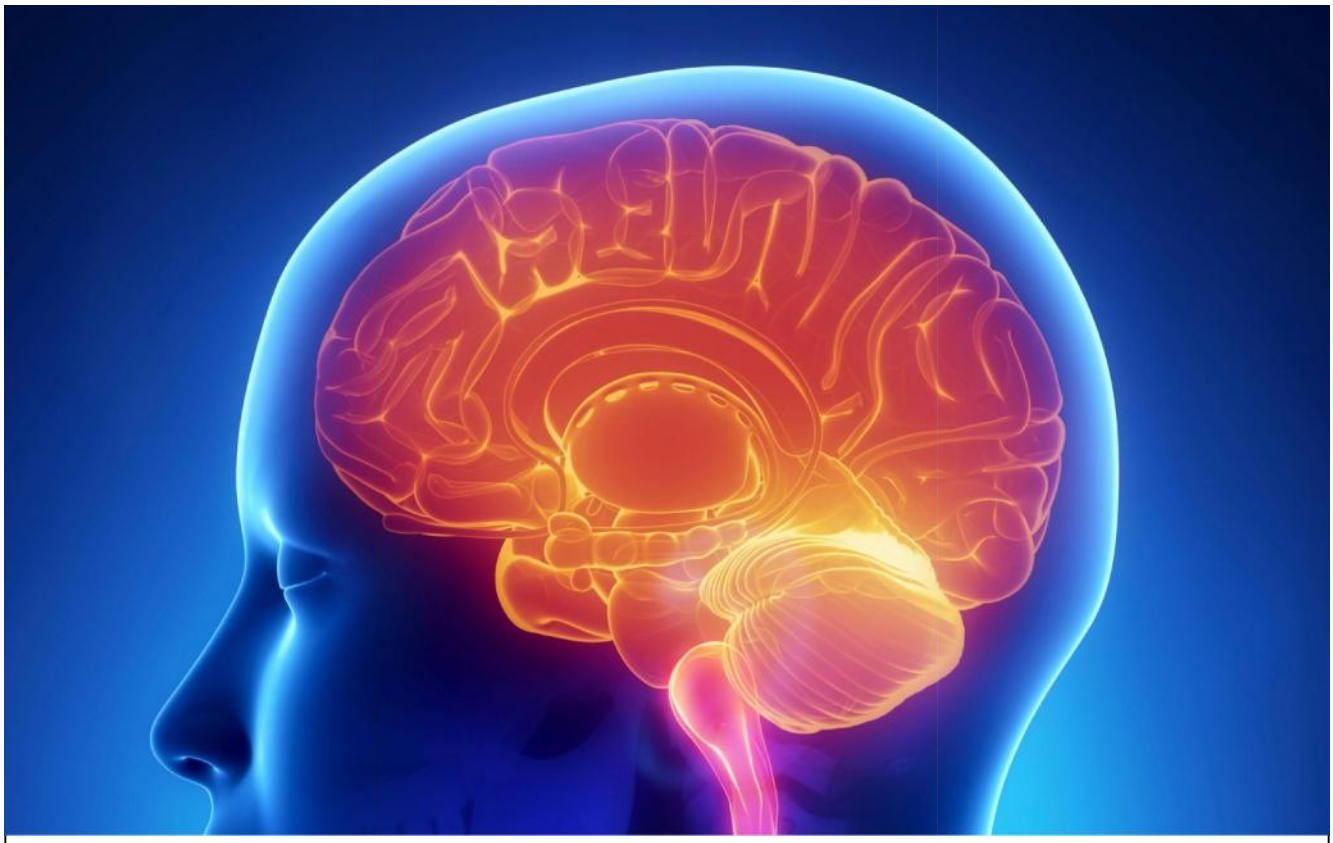

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RESEARCH ARTICLE

INTRAUTERINE ADMINISTRATION OF MISOPROSTOL DURING CAESAREAN SECTION FOR THE PREVENTION AND TREATMENT OF ATONIC POSTPARTUM HAEMORRHAGE

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ABSTRACT

Aims & Objectives: Postpartum haemorrhage is defined as loss of 500ml or more of blood after the delivery of the child vaginally. The aims of the present study includes, the prevention and treatment of atonic postpartum haemorrhage by administering the intrauterine route during caesarean section. Whether to know any benefits because of the patient position need not be changed as per rectal administration, and also early administration of the drug even before the completion of surgery has got any advantage.

Materials & Methods: The efficacy of intrauterine misoprostol in the dose of 600µg for the prevention and treatment of atonic postpartum haemorrhage was studied between May 2008 to November 2010 in the Department of Obstetrics and Gynaecology, Guntur Medical College, Government General Hospital, Guntur. Patients informed consent was obtained and Ethical clearance from the Hospital ethical committee.

Results: Study of haemoglobin difference of antenatal mothers, Study of packed cell volume difference, Study of amount of bleeding during delivery and up to 24 hours after delivery, Study of side effects observed in antenatal mothers, Study of complications observed in the antenatal mothers, Comparision of all parameters of our study was done for both group I and group II by using student t test.

Conclusion: The intrauterine misoprostol of 600 µg is effective for the prevention and treatment of atonic postpartum haemorrhage during caesarean section. It can be easily administered during caesarean section because the patient position need not be changed as for per rectal administration. Administration of the drug even before the completion of surgery is advantageous. Misoprostol because of its thermo stability and ease of administration can be a good alternative to traditional oxytocics in low risk cases of caesarean sections as well as normal vaginal deliveries. As our study shows that there are no serious side effects with intrauterine misoprostol in low risk cases of caesarean sections, it has a good scope for use in high risk pregnancies.

INTRODUCTION

Postpartum haemorrhage is defined as loss of 500ml or more of blood after the delivery of the child vaginally. It includes third stage bleeding also, that is bleeding occurring after the birth of the child but prior to the expulsion of placenta. During the caesarean delivery, loss of blood of 1000ml or more is termed as postpartum haemorrhage. In many women, even losses much less than 500ml lead to deterioration of their general condition as shown by the drop in blood pressure and rise in pulse rate. Patients with anaemia cannot afford to lose even the normal amount of blood. The average amount of blood loss in normal labour is between 115 and 230ml.By administering syntocinon at the end of second stage or the beginning of the third stage of labour, the blood loss may be reduced to 60-90ml.

Causes of postpartum haemorrhage are broadly categorized into Atonic and Traumatic. Atonic accounts for nearly 80% of cases of postpartum haemorrhage. Atonic postpartum haemorrhage is from the placental site and is due to the failure of the uterus to adequately contract and retract. It can occur with or without a predisposing factors such as, Multiparity, Over distension of the uterus as in multiple pregnancy,

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macrosomia and polyhydramnios, fibroids of the uterus, Generalmalnutrition, Antepartumheamorrhage, Prolongedlabour leading to uterine exhaustion, Deepanaesthesia or heavy sedation, Precipitatelabour, Previous history of post partumhaemorrhage, Mismanagement of the third stage of labour. Where as Traumatic is due to maternal injuries sustained in labour which accounts for 5 to 15% of cases of postpartum haemorrhage. Causes were Instrumental deliveries,

Perineallacerations, Episiotomywounds, Cervicallacerations, Vaginallacerations, Clitoraltears, Vestibular tears.

The incidence of post partumhaemorrhage varies from 5% to 10%, of which atonic postpartum haemorrhage accounts for 80% and traumatic post partumhaemorrhage accounts for 5% to 15%., Postpartumhaemorrhage complicates 4 % of vaginal deliveries and 6% of caesarean deliveries., Maternal Mortality rate in India – 300 per 100000 live births, Maternal Mortality rate in USA, UK is 8, 7 per 100000 live births respectively. Therefore in our country, maternal mortality rate is 40 times more., Postpartum hemorrhage accounts for 25 % of maternal deaths in Latin America and Caribbean countries. It is 30.8% in Asian Countries and 40% in African continent., In India, postpartum haemorrhage is responsible for 15.15% of maternal deaths.

The primary aim of the obstetrician in the management of postpartum haemorrhage should be prediction and prevention. Women at high risk for postpartum hemorrhage should be identified and high- lightened during antepartum and intrapartum care. The routine use of oxytocics in the third stage of labour reduces the risk of postpartum haemorrhage. The various ***oxytocic*** drugs available to us are, Oxytocin, Methylergometrine, Carboprost Tromethamine(15 methyl PGF2α), Misoprostol, Dinoprostone.

Misoprostol has great utility in obstetric practice. It is a PGE_1 analogue which is derivative of prostanoic acid. It can be administered by oral, sublingual, per rectal and vaginal routes. In addition, it needs no refrigeration, has a long shelf life, is cheap and carries no deterrent side effects like causing hypertension. We can administer the misoprostol by intrauterine route during caesarean section for the prevention and treatment of atonic post partumhaemorrhage.

The aims of the present study includes, the prevention and treatment of atonic postpartum haemorrhage, and also to know the ease of administration by intrauterine route during caesarean section compared to rectal administration, and to know the advantageous of drug as it is administered even before the completion of surgery.

MATERIALS AND METHODS

The efficacy of intrauterine misoprostol in the dose of 600µg for the prevention and treatment of atonic postpartum haemorrhage was studied between May 2008 to November 2010 in the Department of Obstetrics and Gynaecology, Guntur Medical College, Government General Hospital, Guntur. Patients informed consent was obtained and Ethical clearance from the Hospital ethical committee.

Total 100 cases divided into, Control group (Group A) and Study group(Group B) with 50 each. Pre operatively the following investigations are done for all cases.

Blood investigationsinclude, Blood grouping and Rh typing, Haemoglobin percentage, Packed cell volume, Random blood sugar, HIV screening after counseling, HbsAgtest, Test for VDRL, Urine investigation likes Urine for Albumin, Sugar, Microscopy and Ultrasonography is done for gestational age, placental location, liquor status, fetal well being, fetal anomalies.

Inclusion criteria: The cases with low risk for postpartumhaemorrhage are included in our study. Women who have completed 37 weeks of Gestational age,Both primary as well as repeat elective caesarean sections,Cases with cephalic presentation.

Exclusion criteria: The cases with high risk for postpartum haemorrhage are excluded from our study. If intrauterine Misoprostol proves to be effective in low risk pregnancies we can have a scope for use in high risk cases. Multiple pregnancy, Malpresentations, Medical disorders complicating pregnancy, Sensitivity to prostaglandins, Antepartumhaemorrhage.

Group A: In this group, injection oxytocin 10 units in 500ml of Ringer lactate infusion were given after the delivery of the baby. Injection Methergine 0.2mg was given intravenously after the delivery of the placenta., Amount of blood loss during caesarean section was estimated by collecting blood clots, wet mops, and weighing them. Dry mops were weighed preoperatively. By deducting dry mop weight from wet mop weight, blood loss was calculated in grams. The blood collected in the suction apparatus was also measured.

The patient was given preweighed sterile sanitary pads and each pad was collected after complete wetting and weighed. This procedure was repeated until for first 24 hours after delivery. By deducting dry pad weight from wet pad weight, blood loss was calculated in grams. Total blood loss from the delivery of the baby to first 24 hours of delivery was noted and recorded in the proforma. Postoperatively, Haemoglobin Percent and packed cell volume were estimated after 24 hours of delivery.

Group B**:** During caesarean section, 300µg of Misoprostol (total 600µg) after wetting in normal saline were placed at both the cornual ends of the uterus after the delivery of the baby and the placenta. Uterus was closed. Haemostasis was secured. In this group Injection Oxytocin and Injection methergine were not given., Total amount of blood loss during caesarean section and with infirst 24 hours after delivery was calculated basing on the procedure mentioned in the control group. Post operatively, Hemoglobin percentage and packed cell volume were estimated after 24 hours of delivery.

In our study primary output measured was drop in the haemoglobin concentration and drop in the haematocrit value that is the difference in the values estimated before and after delivery. Secondary outcome measured was need for additional oxytocic drugs, need for blood transfusion, and side effects.

RESULTS

Study of Haemoglobin Difference of Antenatal Mothers **Table 1**

Haemoglobin difference in g/dl	Control Group Group-A		Study Group Group-A	
	No. of cases	Percent	No. of cases	Percent
0.4-0.9	3	06	5	10
1.0-1.4	22	44	23	46
1.5-1.9	20	40	18	36
2.0-2.4	05	10	04	08

Study of packed cell volume difference, **Table 2**

Packed cell volume difference in volume percent	Control Group Group-A		Study Group Group-B	
	No. of cases	percent	No. of cases	percent
01-2.0	03	06	04	08
2.1-3.0	13	26	14	28
3.1-4.0	11	22	10	20
4.1-5.0	15	30	15	30
5.1-6.0	08	16	07	14

Study of amount of bleeding during delivery and up to 24 hours after delivery **Table: 3**

Bleeding in ml	Control Group Group-A		Study Group Group-B	
	No. of cases	percent	No. of cases	percent
201-300	01	02	02	04
301-400	14	28	16	32
401-500	22	44	21	42
501-600	04	08	04	08
601-700	08	16	07	14
>700	01	02	00	00

Study of side effects observed in antenatal mothers**Table: 4**

Side effects	Control Group Group-A		Study Group Group-B	
	No. of cases	Percent	No. of cases	Percent
Pyrexia (>100°F)	00	00	02	04
Chills and rigors	01	02	01`	02
Nausea	04	08	02	04
Vomittings	02	04	04	08
Diarrhoea	01	02	02	04

Study of complications observed in the antenatal mothers **Table 5**

Complications	Control Group Group-A		Study Group Group-B	
	No. of cases	Percent	No. of cases	Percent
Need for additional oxytocics	10	20	08	16
Need for blood trans fusion	00	00	00	00

Comparision of all parameters of our study: **Table: 6**

Parameters	Controlgroup-Group a	Study group-Group B
1. Average of the Haemoglobin difference in g/dl	1.38	1.36
2. Average of the Packed cell volume difference in volume percent	4.12	4.08
3. Mean blood loss in ml	465.5	459.5
4. Need for additional oxytocics in percentage	20	16

DISCUSSION

Approximately 5,29,000 women die each year from the complications of pregnancy and child birth and an estimated 95 percent of these deaths occur in Asia and sub-Saharan Africa. Haemorrhage is thought to be the largest single cause of maternal deaths, accounting for about 25 percent of the total deaths and claiming an estimated 1,50,000 deaths annually. Most of these deaths are due to postpartumhaemorrhage resulting from atonic uterus. The International confederation of mid wives and International federation of obstetricians and gynaecologistsrecommended that all women should receive active management of third stage of labour. The injectable oxytocicsrequiresafe administration and special storage facilities to maintain the stability. Advantage of misoprostol over inject able oxytocicsisits ease of administration and its thermo stability. This controlled trial is carried out to evaluate the efficacy of intrauterine misoprostol of 600 micrograms during caesarean section for the prevention and treatment of atonic postpartum haemorrhagecompared with the management by standardoxytocics, that is injection oxytocin 10 units in 500 ml of ringer lactate infusion and 0.2 mg of injection Methergine intravenously.

The effect of intrauterine misoprostol is studied

1. By estimating the haemoglobin difference [that is by deducting postoperative haemoglobin value estimated at 24hours after delivery from preoperative haemoglobin value]
2. By estimating the haematocrit (Packed cell Volume) difference [that is by deducting haematocrit estimated at 24hours after delivery from preoperative haematocrit].
3. By measuring blood loss [that is blood loss during caesarean section and up to 24hours after delivery]

If the uterus is not retracted and there is more amount of bleeding per vaginum even after the closure of the uterine incision, additional oxytocics are given for the control of bleeding. In our study, in control group, 10 cases that is 20 percent of cases required additional oxytocics for the control of bleeding during caesarean section. In study group, 8 cases that is 16 percent of cases required additional oxytocics for the control of bleeding during caesarean section. Blood transfusion is not required for any case in our study.

The average of the haemoglobin difference in control group is 1.38 g/dl and in study group is 1.36 g/dl. The average of the packed cell volume difference in control group is 4.12 volume percent and in study group is 4.08 volume percent. Mean blood loss in control group is 465.5 ml and in study group is 459.5 ml The need for additional oxytocics in control group is 20 percent and in study group is 16 percent.

Comparison of our study with Quiroga Diaz R et al study

The haemoglobin loss of less than 3g/dl is seen in 100 percent of cases in study group compared to 97 percent of cases in Quiroga Diaz R *et al* study group. The Haematocrit loss of more than 10 volume percent is not recorded in our study compared to 1 percent of cases in Quiroga Diaz R *et al* study

group. The Haematocrit loss of less than 10 volume percent is seen in 100 percent of cases in the study group of our study compared to study 99 percent of cases In Quiroga Diaz R *et al* study group.

They used 800µg of intrauterine misoprostol, but we used 600 µg of intrauterine misoprostol. Our results are almost equal to their results.

In our study, The average of the haemoglobin difference in study group is 1.36 g/dl.16 percent of cases in study group required additional oxytocics. Nausea is observed in 4 percent of study group. Vomiting is observed in 4 percent of study group. Pyrexia is observed in 4 percent of study group. Chills and rigors are observed in 2 percent of study group. Diarrhoea is observed in 4 percent of study group.

In previous study of per rectal misoprostol conducted at Guntur Medical College/ Government General Hospital, Guntur during the period April 2003 to March 2005. The average of the haemoglobin difference in study group was 0.81 g/dl. The need for additional oxytocics in study group was 0 percent. Need for blood transfusion in study group was 2 percent. Nausea, Vomiting and Diarrhoea was not observed in study group. Pyrexia was observed in 2 percent of study group. Chills and rigors are observed in 12 percent of study group.

The present study is compared with the study conducted by *Amant, F.et al.* which was done using 600µg of oral misoprostol in one group and 0.2mg of injection Methergine in another group for the control of postpartum heamorrhage during normal vaginal delivery.

Comparison of side effects and complications with Amant.F.et al study: Nausea and vomittings are observed in 12 percent of cases in both the groups of present study where as these side effects are not observed in Amant, F. *et al*. study. Pyrexia is less in our study that is 4 percent of cases in control group compared to 34 percent of cases in study group of Amant F., *et al* study and 3 percent of cases in control group of Amant F., *et al* study. Chills and rigors are less in present study that is 2 percent of cases in both the study group and control group compared to 42 percent of cases in study group of Amant F., *et al* study and 8.5 percent of cases in control group of Amant F., *et al* study. Need for additional oxytocics in our present study is seen in 16 percent of cases in study group and 20 percent of cases in control group compared to 12.8 percent of cases in study group of Amant F., *et al* study and 4.4 percent of cases in control group of Amant F., *et al* study. Need for blood transfusion is not observed in present study compared to 1 percent of cases in both the groups of Amant F., *et al* study.

The present study is compared with the study conducted by *Diab, K.M. et al* which was done using 400µg of misoprostol per rectally in study group and 5 units of oxytocin and 0.2mg of Methergine in control group during normal vaginal delivery.

Comparison of side effects and complications with Diab K.M. et al study: Nausea and vomittings are observed in 12 percent of cases in the present study group compared to 11.4 percent of cases in study group of Diab. K.M.*et al* study. Diarrhoea is observed in 4 percent of cases in study group compared to 11.4 percent of cases in study group of DiabK.M.*et al* study. Chills and rigors are observed in 2 percent of cases in the present study group compared to 7.1 percent of cases in study group of DiabK.M. *et al* study. The need for additional oxytocics is seen in 16 percent of cases of study group compared to 5.7 percent of cases in study group of Diab- K.M.*et al* study.

Great efforts are taken to carefully instruct all the participating team in our operation theatre of Government General Hospital, Guntur regarding the precise technique of collecting the blood loss during caesarean section.

Constant monitoring was under taken. But the measurements remain open to inaccuracies due to inclusion of some amniotic fluid and omission of some blood that can spread on drapes and gowns. This can especially effect the measurement of amount of blood loss. However the measurement error should be random and will therefore reduce power but not bias result.

Summary

The effect of intrauterine misoprostol is studied, The average of the haemoglobin difference is almost equal in both the groups. The average of the haematocrit difference is almost equal in both the groups. The mean blood loss is almost equal in both the groups. The need for additional oxytocics in intrauterine misoprostol group is seen in 16 percent of cases. The need for additional oxytocics is less in the intrauterine misoprostol group compared with the oxytocin and Metherginegroup. Blood transfusion is not required in both the groups of our study.

Results of our study are almost equal to the *Quiroga DiaZ R et al study* that is intrauterine misoprostol of 800µg during caesarean section, when compared with *Amant F., et al study* (oral misoprostol of 600 µg during normal vaginal delivery) shows that the side effects like pyrexia, chills and rigors are less in our study, and when compared with *Diab. K. M. et al study* shows that the side effects like chills and rigors, diarrhoea are less in our study.

CONCLUSION

The intrauterine misoprostol of 600 µg is effective for the prevention and treatment of atonic postpartum haemorrhage during caesarean section. It can be easily administered during caesarean section because the patient position need not be changed as for per rectal administration. Administration of the drug even before the completion of surgery is advantageous.

Misoprostol because of its thermo stability and ease of administration can be a good alternative to traditional oxytocics in low risk cases of caesarean sections as well as normal vaginal deliveries. As our study shows that there are no serious side effects with intrauterine misoprostol in low risk cases of caesarean sections, it has a good scope for use in high risk

pregnancies. Therefore this drug needs further studies with this regard.

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