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Original Research Article

A study for the efficacy of Amr's cervical traction maneuver along with AMTSL in prevention of postpartum hemorrhage

Rekha Rani, Monica Golani*, Shikha Singh, Urvashi, Asha

Department of Obstetrics and Gynecology, S. N. Medical College, Agra, Uttar Pradesh, India

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***Correspondence:**

Dr. Monica Golani,

E-mail: drmonicagolani1997@gmail.com

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ABSTRACT

Background: Postpartum hemorrhage (PPH) contributes to 25% maternal mortality worldwide (WHO, 2007). In poor resource settings where facility of refrigeration is not available uterotonics may not prove to be useful in prevention of PPH. The aim of this study is to find out the efficacy and acceptability of Amr's cervical traction maneuver in prevention of PPH in such set up.

Methods: This interventional observational study was conducted among 220 patients coming in labour eligible for vaginal delivery in Department of Obstetrics and Gynaecology, S. N. Medical College, Agra between December 2020 to May 2022. Patients were divided into two groups: study group (110 patients) where Amr's maneuver along with AMTSL is done and control group: where AMTSL is done alone.

Results: The mean age of participants in study group was 23.76 years and control group was 23.75 years. In both groups, 59.5% were primigravidae. Mean BMI in both group was 25.02 kg/m². Almost 61% had spontaneous labour. Nearly 92% delivered normally without instruments. In study group 66% patients had blood loss less than 400ml. Average blood loss was 255.23 ml in study group and 300.25 ml in control group. The difference is clinically significant. The mean blood loss in PPH patients in study group was 603.75 ml, and in control group it is 753.25 ml, which is clinically significant.

Conclusions: Amr's maneuver is a simple maneuver when done in combination with AMTSL results in reducing the incidence of PPH and amount of blood loss post-delivery to a great extent.

Keywords: Amr's maneuver, PPH, Spontaneous labour

INTRODUCTION

Postpartum hemorrhage (PPH) is the most important cause of maternal mortality worldwide with a global rate ranged from 6 to 10.8%.^{1,2} PPH contributes more than 30% of all maternal deaths in Africa and Asia.³

PPH is a substantial contributor to severe morbidity and long-term disability.⁴⁻⁶ A vast range of morbidities which includes severe anemia, complications due to blood products, admission in intensive care unit, infection, further operative interference and prolonged

hospitalization are experienced by women who survive PPH.⁷ In developing countries major factors contributing to maternal mortality because of PPH are handling of delivery by unprofessional workers like dais in more than 50% of cases, deficiency of sufficient staff and treatment in health facilities and the difficulty in identifying women vulnerable for PPH as considerable number of women land into postpartum hemorrhage in absence of any associated risk factors.⁸⁻¹¹

Prophylactic measures for prevention of postpartum hemorrhage should be followed after every birth in all

deliveries. Women should be counselled during antenatal period to have institutional deliveries. However in low resource settings uterotonic used in prevention of PPH may not serve any purpose because they needed facility of refrigeration and/or experienced health staff.¹²

In 2014, Hamdy Amr introduced his new maneuver in which sustained cervical traction was applied for the prevention of PPH. His maneuver proved to be effective when added to AMSTL in decreasing the amount of postpartum blood loss.

The aim of this study was to determine the applicability and effectiveness of a new simple Amr's cervical traction maneuver done along with AMSTL in curtailing the rate of postpartum hemorrhage and the quantity of blood loss in PPH.

METHODS

This study was conducted among 220 patients coming in labour in Department of Obstetrics and Gynaecology, S N Medical College, Agra between December 2020 to May 2022. It was a type of Interventional observational study. Group A was those patients who received AMSTL along with Amr's maneuver after placental delivery (study group) and Group B was those patients who received AMSTL only (control group).

Inclusion criteria

Pregnant women in labour, Age between 18years-35years, single intrauterine pregnancy were included.

Exclusion criteria

Antepartum haemorrhage in this pregnancy, gestational hypertension or pre-eclampsia, multiple pregnancy, anaemia with hemoglobin <8gm%, history of postpartum haemorrhage, preexisting hemorrhagic conditions like factor 8 or 9 deficiency or Von Willebrand disease in mother were excluded from study.

Routine AMSTL is performed in patients of control group. In study group after delivery of placenta the new maneuver was done by constant traction of anterior and posterior lips of cervix downward and posteriorly by 2 ovum forceps for duration of 90 seconds along with AMSTL.

In every case the following parameters are observed height, weight and BMI, systolic and diastolic blood pressure, Hb before and 24 hrs post-delivery, labour spontaneous or induced, weight of baby, episiotomy (yes or no), perineal tears (present or absent) and blood loss amount.

Mechanism of action

Ferguson reflex can best explain the maneuver described in our study as it is based on phenomenon of oxytocin

release due to continuous stimulus to stretch receptors of cervix. This leads to contraction of the uterine muscle fibers and huge reduction of excessive blood loss after placental delivery. Another way by which this maneuver reduces the amount of postpartum blood loss, is that it leads to kinking of the redundant uterine arteries decreasing further blood flow. This permits more appropriate conditions for clotting and formation of thrombin.

Measurement of blood loss

The evaluation of blood loss is done after AMSTL in control group and removal of forceps in study group. Visual estimation which is done at present is shown to miscalculate blood loss. Therefore, it is substituted by some objective measurement. A sterile calibrated under buttock drape was put under the buttocks of woman immediately following the delivery of placenta.

A funneled and calibrated collecting pouch was attached to a plastic sheet. All patients were followed up for 6 hours after delivery. The rate of PPH, hemoglobin level before and after delivery were observed in each group. All participants were followed up for 24 hours post-delivery for any related complications.



Figure 1: Sustained cervical traction (Amr's maneuver).



Figure 2: Sterile calibrated under buttock drape.

Statistical analysis

All statistical tests were done using a significance level of 95%. A p value of <0.05 was considered as significant. Mean and standard deviation was used for continuous variables and percentage was used for categorical variables. Comparison was done using unpaired student's t-test for continuous variables and chi square test for categorical variables.

RESULTS

As per data in Table 1, age group of patients comprises of 18 to 35 years in this study.

Table 1: Baseline characteristics of participants.

Characteristics	Study group (n=110)	Control group (n=110)	P value
Age (years)	23.76	23.75	0.982
BMI (kg/m ²)	24.95	25.09	0.704
Parity			0.684
Primiparous	52	49	
Multiparous	58	61	
Induction of labour	41	43	0.781
Episiotomy	59	57	0.787
Perineal tears	18	19	0.857
Uterine tone	3	6	0.307
Instrumental delivery	8	9	0.801
Haemoglobin level <11g/dl	94	98	0.843

Most of the participants were from the age group 21-25 years. Parity-wise both groups have similar distribution. Multigravidae were more in number in comparison to primigravida. The study group has 52.73% multigravida and 47.27% primigravida. Postpartum blood loss was remarkably decreased in primigravida when Amr's maneuver was done in study group in comparison to control group. Most of the patients included in the study have BMI in normal range, i.e., <25kg/m². The distribution of BMI was similar in both groups. In Amr Hamdy's study, majority of patients were overweight (BMI with 25-29.99kg/m²). This may be due to difference in race of the population included in study. Majority of the patients had spontaneous labour progression. There was a large decrement in blood loss after delivery in patients when Amr's maneuver was used in labour induced patients. In the study, majority of the patients delivered naturally

(without any use of instruments). 92.7% patients in study group and 91.8% in control group delivered without any use of instruments. 7.2% patients in study group and 8.2% patients in control group had instrumental vaginal delivery. There was a huge reduction in blood loss postdelivery in patients who underwent spontaneous labour when AMR'S maneuver was done.

PPH

PPH rate was significantly reduced when AMR'S maneuver with AMSTL is done in study group when compared to control group. In study group average blood loss is 255.23 ml and 300.25 ml in control group. In study group patients experience significantly lesser quantity of blood loss in comparison to control group. The mean blood loss in patients not having PPH in study group is 255.23 ml which was close to Amr Hamdy study where approximately 278.6 ml blood loss was observed in no PPH group. Blood loss >1000ml did not occur in any patient. In study group four patients underwent PPH while 12 patients in control group land into PPH. The mean blood loss in PPH patients in study group was 603.75 ml, and in control group it is 753.25 ml. Therefore, the incidence of PPH and the amount of blood loss in PPH patients is significantly reduced in study group in comparison to control group. Hence, the impact of AMR'S maneuver in reducing PPH is very well seen (Table 2).

Table 2: Blood loss.

Blood loss (ml)	Study group (Amr's maneuver +AMTSL)	Control group (AMTSL only)
Mean blood loss(ml)+SD	255.23±100.53	300.25±105.52
p-value	0.001(very significant)	

With respect to anemia, approximately 78% of patients were mildly anemic in both groups. Moderate and severe anemia patients were not included in the study. The postdelivery blood loss in anemic patients was significantly reduced in study group in comparison to control group. Moreover, the reduction in hemoglobin level was observed in both groups, but the reduction in haemoglobin after delivery was significant in control group when compared to study group. Patients with episiotomy and no perineal tears had significant reduction in postpartum blood loss in study group when AMR'S maneuver was used along with AMTSL in comparison to control group (Figure 3 and Table 3).

Table 3: Pre-delivery Hb.

Pre-delivery Hb (g/dl)	Study group		Control group		p-value
	Mean blood loss (ml)	SD	Mean blood loss (ml)	SD	
<11	260.75	86.99	290.60	89.90	0.020
≥11	246.50	123.7	277.80	126.72	0.517

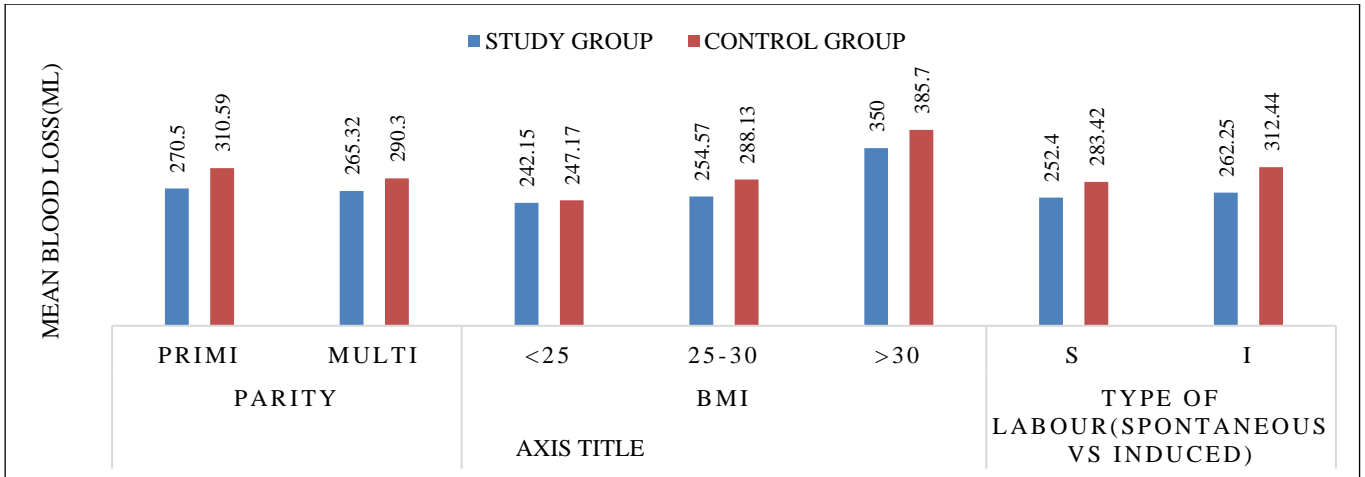


Figure 3: Comparison of postpartum blood loss in various categories.

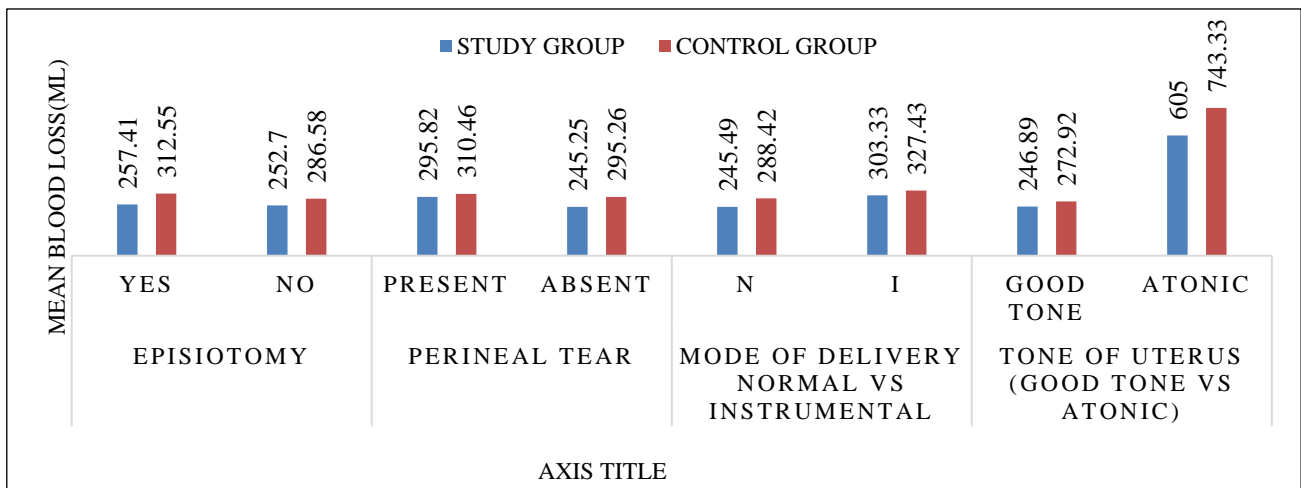


Figure 4: Comparison of postpartum blood loss in various categories.

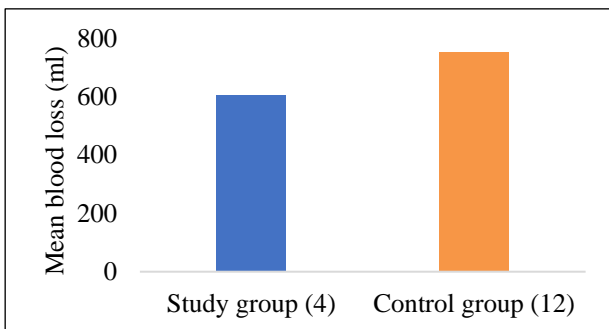


Figure 5: Blood loss comparison in patients with PPH.

DISCUSSION

Postpartum haemorrhage was effectively controlled by combination of Amr’s maneuver with AMTSL than routine AMTSL alone. Mean blood loss in present study in study group is 255.23ml and in control group is 300.25 ml. The mean blood loss in study group is significantly lower than in control group. Mean blood loss in Amr Hamdy case series study is 278.6ml.¹³ In study by Subramaniyam et al

mean blood loss in study group is 263.22ml which is significantly lower than in control group.¹⁴ In study by Hamdy et al (RCT) mean blood loss in study group is 153.35 ml while mean blood loss in control group is 331.79ml.¹⁵ In study by Dr Sujatha B.S et al conducted at Manipal, mean blood loss in study group is 207 ml which is significantly lesser than mean blood loss in control group which is 340 ml.¹⁶

In Hamdy study, 8 patients had PPH which is 2% of study population.¹³ The mean blood loss in patients with PPH was 575 ml. Comparable to Hamdy observational study, in present study, study group comprises of 4 PPH patients which is 3.7%. The mean blood loss in study group patients was 603.75 ml. In study by Subramaniyam et al, 8 out of 500 patients had PPH which is 3.2%. The mean blood loss in PPH Patients in study group is 615 ml which is significantly lower than that of control group which is 713.3 ml.¹⁴ In study by Dr Sujatha B.S et al 2% patients had PPH in study group which is same as that of Amr Hamdy randomized control trial where 5% patients had PPH in control group.^{15,16}

AMR'S maneuver when performed with AMSTL decreases blood loss postdelivery more efficiently than routine AMSTL. AMR'S maneuver when done with AMSTL significantly reduces the quantity of blood loss in PPH patients thereby decreasing maternal morbidity. AMR'S maneuver was highly efficacious in reduction of postpartum blood loss in primigravida, patients who had delivered naturally, patients with episiotomy and those without perineal tears. The reduction in postpartum blood loss was much relevant in anemic patients when Amr's cervical traction maneuver was performed. The reduction in haemoglobin level after delivery is well observed when Amr's maneuver was done along with AMSTL. Thus, further deterioration in condition of anaemic patients after delivery can be prevented by Amr's maneuver. Hence by this study, it is established that the new Amr's cervical traction maneuver is an efficient method in reduction of PPH in low resource settings.

CONCLUSION

AMR'S maneuver when done together with routine AMSTL is successful in control of postpartum hemorrhage. It decreases the quantity of blood loss even when there is a potential for developing PPH. It is a simple and non-pharmacological maneuver. A pair of ovum holding forceps is just needed in the delivery kit along with training of the available healthstaff. Therefore, this method is highly acceptable in settings with lack of resources where requirement of low temperature for uterotonics cannot be fulfilled. This new maneuver might be a promising and lifesaving intervention in developing countries in coming days which does not require high resource settings. It was tolerable, easy to learn, easy to perform, and had no adverse effect.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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