



A COMPARATIVE STUDY OF EFFICACY AND SAFETY OF INTRAMUSCULAR CARBOPROST AND INTRAVAGINAL MISOPROSTOL FOR CERVICAL PRIMING PRIOR TO FIRST TRIMESTER SURGICAL ABORTION

Obstetrics & Gynaecology

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ABSTRACT

Introduction: The legal definition of abortion is the ending of a pregnancy before viability. Approximately 28 out of every 1000 women decide to undergo an abortion on a voluntary basis each year. 49 percent of these abortions pose a risk. Cervical dilatation is perhaps the most important step in the process, coming before suction evacuation. **Methods:** The present study was a prospective randomized experimental study including pregnant women upto 12 weeks of gestation opting for medical termination of pregnancy conducted on 100 patients selected from patients registered in department of Gynecology and Obstetrics in tertiary care center over a one year. **Results:** In group A none of the women had blood loss more than 60ml, 52% of women had blood loss 21-30 ml while in group B 20% of women had blood loss more than 60ml. 42% of the cases had blood loss of 21-30ml. There was no statistical significance difference between both groups ($P=0.883$). In group A the most common adverse event was Nausea and vomiting (30%) followed by Loose stool (26%), and abdominal cramps (28%) while in group B maximum women (66%) had no adverse events. There was a statistically significant difference between both groups ($P<0.001$). **Conclusion:** Though its usage is statistically substantially associated with increased blood loss when compared to intramuscular carboprost, intravaginal misoprostol is the medicine of choice for cervical priming prior to surgical abortion in terms of both efficacy and safety.

KEYWORDS

Multigravida, Prostaglandin, Primigravida

INTRODUCTION

Abortion is defined by law as the termination of a pregnancy before viability. Every year, about 28 out of every 1000 women choose to have an elective abortion. Of these abortions, 49% are risky.¹ Preceding suction evacuation, cervical dilatation is arguably the most crucial stage in the process.² There is a chance that mechanical cervical dilatation during the first trimester will cause cervical damage and cervix incompetence, which could lead to early labor and spontaneous abortion.

In recent years, a number of chemical agents have been employed in an attempt to avert this accident. Prostaglandins have completely changed how abortions are treated. Misoprostol (PGE1) was initially developed to prevent stomach ulcers, but it gained popularity due to its ability to promote cervical ripening as well as other benefits like fewer cervical injuries, less intraoperative blood loss, a decreased need for general anesthesia, and availability in a variety of dosage forms.³ Misoprostol can be administered orally, vaginally, sublingually, buccally or rectally. Pharmacokinetics studies comparing oral and vaginal administration have shown that vaginal misoprostol is associated with slower absorption, lower peak plasma levels and slower clearance, similar to an oral extended-release preparation.^{4,5}

Additionally, there is a correlation between vaginal misoprostol and increased cervix and uterine effects, area under the curve (AUC), and total drug exposure.⁵ The synthetic equivalent of PGF2 α is called arborist. It affects the myometrium directly. This substance stimulates the gravid uterus; typically, contractions are enough to cause an abortion. Despite being successful when administered intramuscularly for cervical priming, this medication has an excessive number of adverse effects.⁶ The present study was aimed to evaluate the efficacy and safety of intramuscular carboprost and intravaginal misoprostol for cervical priming prior to first trimester surgical abortion.

Methods

The present study was a prospective randomized experimental study including pregnant women upto 12 weeks of gestation opting for medical termination of pregnancy conducted on 100 patients selected from patients registered in department of Gynecology and Obstetrics in tertiary care center over a one year. Primigravida/multigravida with pregnancy of 12 weeks or below opting for MTP, primigravida/multigravida with Missed abortion or abnormal fetus upto 12 weeks gestation were included.

Random allotment to group A or B, receiving 250 micrograms of Carboprost 1M45 minutes prior or 400 micrograms of misoprostol intravaginally in the posterior fornix 4hours prior to procedure respectively. The procedure of MVA was done under I.V administration of atropine sulfate and 30mg pentazocine. Data was collected from department of Gynecology and Obstetrics in tertiary

care center.

Statistical Analysis

The data were analyzed by using SPSS version 20. The data was analyzed by simple proportions and percentages. The association and relation between different parameters were analyzed using chi-square test.

RESULTS

Baseline Characteristics

In our study, in group A, the most common age group was 26-39 years (50%) followed by ≤ 20 years (4%), 21-25 years (20%), 31-35 years (16%), and >35 years (10%) while 26-30 years (54%) was the most common age followed by ≤ 20 years (6%), 21-25 years (26%), 31-35 years (10%), and >35 years (4%). There was no statistical significance difference between both groups ($P=0.618$). In group A 18% cases had gestational age of 6-8 weeks, 60% cases had 8-10weeks of gestational age and 22% cases had 10-12weeks of gestational age while in group B 16% cases had gestational age of 6-8 weeks, 55% cases had 8-10weeks of gestational age and 30% cases had 10-12weeks of gestational age. There was no statistical significance difference between both groups ($P=0.659$; Table 1).

Cause For Termination Of Pregnancy.

In group A, out of 50 cases 8% of patients were blighted ovum, 32% of patients were missed abortion and rest of the 60% of cases wanted MTP while in group B 6% were blighted ovum, 24% of cases were missed abortion and rest of the 70% of cases wanted MTP. There was no statistical significance difference between both groups ($P=0.577$; Table 2).

Blood Loss In Cases

In group A none of the women had blood loss more than 60ml, 52% of women had blood loss 21-30 ml while in group B 20% of women had blood loss more than 60ml. 42% of the cases had blood loss of 21-30ml. There was no statistical significance difference between both groups ($P=0.883$; Table 3).

Comparison Of Adverse Events In Cases

In group A the most common adverse event was Nausea and vomiting (30%) followed by Loose stool (26%), and abdominal cramps (28%) while in group B maximum women (66%) had no adverse events. There was a statistically significant difference between the both groups ($P<0.001$) (Table 4)

DISCUSSION

Although suction evacuation is a rapid and relatively safe method for the termination of pregnancy in the first trimester, the frequency of complications increases with increasing pregnancy duration.⁷ Some of these complications e.g. cervical injury and uterine perforation are

directly related to the mechanical dilatation necessary for the procedure whereas other complications e.g. hemorrhaged and incomplete evacuation of pregnancy material may be due to insufficient or difficult dilatation.⁸

In group A, the most common age group was 26-39 years (50%) followed by ≤ 20 years (4%), 21-25 years (20%), 31-35 years (16%), and >35 years (10%) while 26-30 years (54%) was the most common age followed by ≤ 20 years (6%), 21-25 years (26%), 31-35 years (10%), and >35 years (4%). There was no statistical significance difference between both groups ($P=0.618$). In group A 18% cases had gestational age of 6-8 weeks, 60% cases had 8-10 weeks of gestational age and 22% cases had 10-12 weeks of gestational age while in group B 16% cases had gestational age of 6-8 weeks, 55% cases had 8-10 weeks of gestational age and 30% cases had 10-12 weeks of gestational age. There was no statistical significance difference between both groups ($P=0.659$). In a study by Aleem et al there were no significant differences between the two groups in age, parity or duration of gestation.⁹ In a study by Mathuriya et al most of the patients age is between 21-25 years in both groups. Mean age of women in present study is 24.23 years. p value in our study is 0.598 which is statistically not significant. In group A 11 cases had gestational age of 6-8 weeks, 61 cases had 8-10 weeks of gestational age and 28 cases had 10-12 weeks of gestational age while in group B 16 cases had gestational age of 6-8 weeks, 53 cases had 8-10 weeks of gestational age and 31 cases had 10-12 weeks of gestational age. p value is 0.44 which is statistically not significant.¹⁰

In group A, out of 50 cases 8% of patients were blighted ovum, 32% of patients were missed abortion and rest of the 60% of cases wanted MTP while in group B 6% were blighted ovum, 24% of cases were missed abortion and rest of the 70% of cases wanted MTP. There was no statistical significance difference between both groups ($P=0.577$). In group A none of the women had blood loss more than 60ml, 52% of women had blood loss 21-30 ml while in group B 20% of women had blood loss more than 60ml. 42% of the cases had blood loss of 21-30ml. There was no statistical significance difference between both groups ($P=0.883$). In group A the most common adverse event was Nausea and vomiting (30%) followed by Loose stool (26%), and abdominal cramps (28%) while in group B maximum women (66%) had no adverse events. There was a statistically significant difference between both groups ($P<0.001$). In a study by Prabhu et al the side effects including nausea (30%/17.5%), vomiting (27.5%/2.5%), and abdominal cramps (42.5%/20%) were more in Carboprost group as compared to Misoprostol group respectively. No patient had diarrhea in Misoprostol group as against 32.5% in Carboprost ($P<0.0001$).⁶ In a study by Vimala et al preoperative adverse effects, including vaginal bleeding, abdominal pain, nausea, and vomiting, were significantly increased in the 15-M-PG F2a group ($P<0.05$; Table 3). No major adverse effects such as excessive hemorrhage, uterine perforation, or incomplete abortion were seen in either group. The acceptability rates were 76.6% in the 15-M-PG F2a group and 93.3% in the sublingual misoprostol group.¹¹

Table 1: Baseline Characteristics

Baseline Characteristics	Group		
	Group A (n=50)	Group B (n=50)	
Age group (Years)			0.618
≤ 20	2 (4%)	3 (6%)	
21-25	10 (20%)	13 (26%)	
26-30	25 (50%)	27 (54%)	
31-35	8 (16%)	5 (10%)	
>35	5 (10%)	2 (4%)	
Gestational Age			0.659
6-8 weeks	9 (18%)	8 (16%)	
9-10 weeks	30 (60%)	27 (54%)	
11-12 weeks	11 (22%)	15 (30%)	

Table 2: Cause For Termination Of Pregnancy.

Termination of pregnancy.	Group		P Value
	Group A (n=50)	Group B (n=50)	
MTP	30 (60%)	35 (70%)	0.577
Missed abortion	16 (32%)	12 (24%)	
Blighted ovum	4 (8%)	3 (6%)	

Table 3 Blood Loss In Cases

Blood loss in cases	Group		P Value
	Group A (n=50)	Group B (n=50)	

≤ 20 ml	8 (16%)	8 (16%)	0.883
21-30 ml	26 (52%)	21 (42%)	
31-40 ml	7 (14%)	3 (6%)	
41-50 ml	6 (12%)	6 (12%)	
51-60 ml	3 (6%)	2 (4%)	
>60 ml	0	10 (20%)	

Table 4: Comparison Of Adverse Events In Cases

Comparison of adverse events	Group		P Value
	Group A (n=50)	Group B (n=50)	
Nausea and vomiting	15	4	<0.001
Loose stools	13	6	
Abdominal cramps	14	7	
No side effect	8	33	

CONCLUSION

The drug of choice for cervical priming prior to surgical abortion in terms of both efficacy and safety is intravaginal misoprostol, despite the fact that its use is statistically significantly associated with higher blood loss when compared to intramuscular carboprost. However, intravaginal misoprostol achieves more cervical dilatation and causes fewer adverse events than intramuscular carboprost.

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