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**ORIGINAL RESEARCH**

# Intra-cervical Carboprost as a cervical ripening agent in first trimester abortion- A prospective randomised study

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## ABSTRACT

**Background:** Mechanical cervical dilatation in first trimester has been associated with some risk of cervical injury and incompetence of cervix resulting in premature labour and spontaneous abortion in subsequent pregnancies. The present study compared efficacy of Intra-cervical Carboprost as a cervical ripening agent as compared to Intravaginal Misoprost in first trimester abortion. **Materials & Methods:** Sixty patients with first trimester abortion/MTP were taken into the study and divided into two groups. In 30 patients, pre-operative ripening of cervix was attempted using Intra-cervical Carboprost under aseptic conditions and direct vision; and in the rest 30 using Intra-vaginal Misoprost. Pre-operative cervical dilatation was recorded. In the first group, under direct vision using Cusco's / Sim's Speculum Carboprost injection was given at 4 and 8 o'clock on the cervix after cleaning the cervix using sterile gauze with normal saline. In the second group, under aseptic precautions, 800 ug Intravaginal Misoprostol was inserted after moistening with normal saline. After 30 minutes dilatation of cervix was checked. **Results:** In group I, there were 18 patients with age <30 years and 12 with age >30 years. Parity was 11 with Primi and 19 multi. In group II, there were 20 patients with age <30 years and 10 with age >30 years. Parity was 13 with Primi and 17 multi. In group I, Mean dilatation of 10mm was reached after 3-4 hours, vaginal bleeding was present in 26 patients, 23 had pain, 4 had fever and 4 had nausea and vomiting. In group II, mean dilatation of 10 mm was reached after 40 mins, vaginal bleeding was present in 16 patients, 11 had pain, and 3 had nausea and vomiting. **Conclusion:** Intra-cervical Carboprost seems to be an exquisite armamentarium to the Obstetrician as it takes lesser time for cervical dilatation, hence useful when in emergency and when quality of life of pregnant female is hampered by longer induction to abortion interval. It has better efficacy as it is site specific. It is more tolerated by the patient as it has lesser systematic side-effects as compared to Misoprostol and Intra-muscular Carboprost like bronchospasm, diarrhoea, nausea, vomiting etc.

**Keywords:** Abortion, Carboprost, Misoprost



## INTRODUCTION

Abortion is the interruption of pregnancy before viability. Worldwide, around 28 per 1000 women opt for elective abortions annually. 49% of these abortions are unsafe. Cervical dilatation before suction evacuation is probably the most critical step of the procedure.[1] Mechanical cervical dilatation in the first trimester has been associated with some risk of cervical injury and incompetence of the cervix resulting in premature labor and spontaneous abortion. Several chemical agents have been used in trying to prevent this mishap in the last few years.[2]

Mechanical cervical dilatation in first trimester has been associated with some risk of cervical injury and incompetence of cervix resulting in premature labour and spontaneous abortion in subsequent pregnancies.[3] Advantage of prostaglandins for cervical dilatation is natural cervical softening and prevention of instrumental perforation and late hemorrhage due to a soft uterus. They also preclude a risk of coagulation that may occur after instrumental dilatation. The side-effects were minimal and tolerated by the patient. Blood loss was also reduced in these patients while using prostaglandins.[4]

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.[5] Carboprost is a synthetic analogue of PGF2alfa. It acts directly on the myometrium. This agent stimulates the gravid uterus, contractions are usually sufficient to induce abortion.[6] The present study compared efficacy of Intra-cervical Carboprost as a cervical ripening agent as compared to

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Intravaginal Misoprost in first trimester abortion.

## MATERIALS & METHODS

This study was done during January 2023 to December 2023 at NMCH, Patna after prior consent from patients and clearance from the ethical committee. Sixty patients with first trimester abortion/MTP were taken into the study and divided into two groups. In 30 patients, pre-operative ripening of cervix was attempted using Intra-cervical Carboprost under aseptic conditions and direct vision; and in the rest 30 using Intra-vaginal Misoprost. Pre-operative cervical dilatation was recorded using serial Hegar's Dilators, after giving local anaesthesia at 10 & 2 o'clock.

In the first group, under direct vision using Cusco's / Sim's Speculum Carboprost injection was given at 4 and 8 o'clock on the cervix after cleaning the cervix using sterile gauze with normal saline. In the second group, under aseptic precautions, 800 ug Intravaginal Misoprostol was inserted after moistening with normal saline. After 30 minutes dilatation of cervix was checked. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

## RESULTS

**Table I Demographic Data**

| STUDY GROUP | AGE | PARTY |
|---|---|---|
| Intra-cervical Carboprost | <30 years : 18<br>>30 years : 12 | Primi : 11<br>Multi : 19 |
| Intra-vaginal Misoprost | <30 years : 20<br>>30 years : 10 | Primi : 13<br>Multi : 17 |

Table I shows that in group I, there were 18 patients with age <30 years and 12 with age >30 years. Parity was 11 with Primi and 19 multi. In group II, there were 20 patients with age <30 years and 10 with age >30 years. Parity was 13 with Primi and 17 multi.

**Table II Comparison of parameters**

| Study | Gestational Age | Results | Vaginal bleeding | Pain | Fever | Nausea & Vomiting |
|---|---|---|---|---|---|---|
| Intravaginal Misoprostol | <14 weeks | Mean dilatation of 10mm was reached after 3-4 h | Present in 26 out of 30 | 23 out of 30 | 4 in 30 | 4 in 30 |
| Intracervical Carboprostol | <14 weeks | Mean dilatation of 10 mm was reached after 40mins | Present in 16 out of 30 | 11 out of 30 | Not reported | 3 in 30 |

Table II shows that in group I, Mean dilatation of 10mm was reached after 3-4 hours, vaginal bleeding was present in 26 patients, 23 had pain, 4 had fever and 4 had nausea and vomiting. In group II, mean dilatation of 10 mm was reached after 40 mins, vaginal bleeding was present in 16 patients, 11 had pain, and 3 had nausea and vomiting.

## DISCUSSION

Prostaglandins have completely changed how abortions are treated.

Misoprostol (PGE1) was initially prescribed to prevent stomach ulcers, but it gained popularity due to its effect on cervical ripening as well as other benefits like fewer cervical injuries, less blood loss during surgery, a decreased need for general anesthesia, and availability in various dosage forms.[7,8] PGF2alfa has a synthetic equivalent called carboprost.[9] It affects the myometrium directly. When the gravid uterus is stimulated by this substance, contractions alone can often result in an abortion. Despite being successful when administered intramuscularly for cervical priming, this medication has an excessive number of adverse effects.[10]

We found that in group I, there were 18 patients with age <30 years and 12 with age >30 years. Parity was 11 with Primi and 19 multi. In group II, there were 20 patients with age <30 years and 10 with age >30 years. Parity was 13 with Primi and 17 multi. In a study by Marrs et al[11], forty patients were given vaginal suppositories containing (15S)-15-methyl prostaglandin F2 alpha methyl ester in an attempt to cause an early abortion. Each subject had not gone more than 49 days without a menstrual cycle. Ten participants received a 3-mg suppository and a 1-mg suppository three hours later; ten participants received a 1-mg suppository and a 3-mg suppository three hours later; and twenty participants received a 3-mg suppository and a 1-mg suppository one hour later. Using the two vaginal prostaglandin suppository regimen, twenty-four individuals (or 60%) were able to successfully terminate their pregnancy. Seven to twenty-two days following therapy, the beta-hCG levels of all participants who aborted were at least 10% of their pretreatment values. Thirteen individuals (or 40%) chose not to abort. Due to gastrointestinal side effects and uterine cramps after the injection of the 1-mg suppository, one of the treatment-naive patients declined the second suppository. A second participant experienced a partial abortion and

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moderate endometritis. A total of sixteen participants reported experiencing nausea, vomiting, diarrhea, analgesic-requiring uterine cramps, restlessness, shakiness, and light headedness as adverse effects. This specific prostaglandin analogue was included in the second vaginal suppository, however this did not considerably boost the method's overall abortifacient activity.

We found that in group I, Mean dilatation of 10mm was reached after 3-4 hours, vaginal bleeding was present in 26 patients, 23 had pain, 4 had fever and 4 had nausea and vomiting. In group II, mean dilatation of 10 mm was reached after 40 mins, vaginal bleeding was present in 16 patients, 11 had pain, and 3 had nausea and vomiting. Scher et al[12] found that pregnancy termination was successful in all but 1 patient. Vaginal bleeding persisted for at least 14 days in 8 cases; 2 of these patients necessitated curettage at 4 weeks and 9 weeks after the procedure. The failed case was an obese woman whose pregnancy persisted. HCG levels declined below the arbitrary limit of 1 I.U./ml within 2 weeks after therapy in 36% of the cases. Plasma progesterone levels declined below the baseline level of 5 ng/ml within 2 weeks. A wide range of values was observed at 4 and 8 hours. The 1 failure case had an initial value of 72 pg/ml at 4 and 8 hours; all cases with undetectable levels at 8 hours had initial values over 138 pg/ml. In patients with prolonged bleeding, serum HCG and progesterone showed a significantly slower decline than in patients with an uneventful abortion. Diarrhea occurred in 86% of the cases and vomiting in 36%. The study illustrates the effectiveness of administration of 1 vaginal suppository containing 3.0 mg of PGF2alpha methyl ester in 1st trimester abortion.

## CONCLUSION

Authors found that intra-cervical Carboprost seems to be an exquisite armamentarium to the Obstetrician as it takes lesser time for cervical dilatation, hence useful when in emergency and when quality of life of pregnant female is hampered by longer induction to abortion interval. It has better efficacy as it is site specific. It is more tolerated by the patient as it has lesser systematic side-effects as compared to Misoprostol and Intra-muscular Carboprost like bronchospasm, diarrhoea, nausea, vomiting etc.

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