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Original Research Article

A Comparative Study of Sublingual, Vaginal and Oral Misoprostol in Cervical Ripening For First Trimester Abortions

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Abstract: Medical abortion has been investigated as a non invasive option for early abortions as it avoids the risk of anaesthesia and surgical trauma to the cervix, uterus and other organs. The main objective of the study was to compare the efficacy of misoprostol as a cervical ripening agent in first trimester through three different routes of administration before surgical evacuation. It was a prospective longitudinal study conducted in Department of Obstetrics and Gynaecology, Guru Gobind Singh Medical College, Faridkot, Punjab from Jan 2019 to Dec 2019 on 60 women seeking first trimester abortions who were given misoprostol 400 µg by sublingual, vaginal and oral routes for cervical ripening prior to surgical evacuation. It was found that cervical dilatation was better in sublingual group as compared to oral or vaginal group and the mean duration of surgery was also less in sublingual group than in vaginal or oral group. So it was concluded that sublingual misoprostol is more effective than vaginal or oral route for pre-operative cervical ripening in first trimester abortion.

Keywords: Misoprostol, abortion, cervical ripening, efficacy, first trimester, sublingual, vaginal.

INTRODUCTION

An abortion is termination of pregnancy either spontaneously or intentionally before the fetus develops sufficiently to survive independently. Various prostaglandins E_1(PGE_1) analogue can be used but misoprostol (15-deoxy-16-hydroxy 16-methyl PGE_1) is cheap easily stored and is associated with fewer side effects (el-Refaey H *et al.,* 1994) . For those patients who later on require surgical evacuation, the risk of surgery related complications and short term complications is also less (Chung TKH *et al.,* 1995).

Various studies have been carried out comparing sublingual, vaginal and oral misoprostol for cervical ripening in different parts of the world but the data is insufficient in Indian population.

The sublingual route appears as effective as vaginal or oral route and requires less time for priming but is associated with more side effects(Saxena P *et al.,* 2003). For misoprostol to be effective, it should be administered 3-4 hours prior to procedure(Allen RH & Goldberg AB, 2007).

So the present study was carried out to compare the effectiveness of 400 µg of misoprostol through the three routes for cervical ripening in the first trimester prior to surgical evacuation. This study also evaluates side effects, operative ease and patient acceptability of various routes of administration.

MATERIALS AND METHODS

The present study was conducted in the Department of Obstetrics and Gynaecology, Guru Gobind Singh Medical College, Faridkot, Punjab from Jan 2019 to Dec 2019.

60 women seeking first trimester abortions were randomised into sublingual group (group A), vaginal group (group B) and oral group (group C).

They were given 400 µg misoprostol via these routes 3 hours prior to surgical evacuation. The patients and the attendants were explained about the procedure and informed consent was obtained.

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INCLUSION CRITERIA

- Young healthy women with period of gestation up to 12 weeks.
- Singleton pregnancy.

EXCLUSION CRITERIA

- Patients with history of previous uterine surgery.
- Allergy or contraindication to prostaglandin.
- Patient with infections.
- Intrauterine contraceptive devices in situ.
- Uterine anomaly.
- Chronic maternal illness.

METHOD

In all the three groups, women were admitted on the morning of the procedure and misoprostol 400 µg was administrated by sublingual, vaginal or oral route depending upon the group allocation by Obstetricians other than those assessing the treatment outcome.

Their pulse rate, blood pressure , temperature and other side effects associated with misoprostol including pain, nausea, vomiting, diarrhea, fever, shivering, and bleeding per vaginum were recorded.

The assessment of abdominal pain as experienced by the patient was done by scoring.

- Score 1- No pain
- Score 2- Mild pain
- Score3- Severe pain

Pre-operative vaginal bleeding was measured as

- Score 1-Spotting
- Score 2- Bleeding similar to menstrual blood
- Score 3- Heavy bleeding with clots

The suction evacuation was carried out under short general anaesthesia.

Outcome measures assessed were cervical dilatation, duration of procedure, intra-operative blood loss and pre-operative side effects.

Intra-operative, the cervical dilatation was measured using Hegar's dilator. They were passed in descending order. The duration of surgery was measured from start of dilatation till the end of curettage. Intra-operative blood loss was measured by graduated cylinder. Any cervical or uterine injuries ranging from superficial cervical laceration, cervical tear, uterine perforation, injury to any other intra-abdominal organs was noted.

Following the procedure the subjects were kept in the hospital for 3-4 hours and discharged as a routine. All patients received analgesics for two days and antibiotics for 5 days. Follow up was done twice, first after 7-10 days and subsequently after one month or first menstrual period.

RESULTS

Table 1: Showing comparison of cervical dilatation in group A, B and C

Cervical dilatation (mm)	Sublingual (group A)		Vaginal (group B)		Oral (group C)	
	Number	%age	Number	%age	Number	%age
6	---	---	1	5	1	5
7	2	10	10	50	8	40
8	8	40	4	20	6	30
9	7	35	4	20	3	15
10	3	15	1	5	2	10
Total	20	100%	20	100%	20	100%

Table 2: Showing comparative duration of procedure in the three groups

Duration of procedure (minutes)	Sublingual (group A)		Vaginal (group B)		Oral (group C)	
	Number	%age	Number	%age	Number	%age
1-2	2	10	1	5	1	5
2-3	13	65	6	30	7	35
3-4	4	20	10	50	10	50
4-5	1	5	3	15	2	10
Total	20	100%	20	100%	20	100%

Table 3: Comparison of intra-operative blood loss in the three groups

Blood loss (ml)	Sublingual (group A)		Vaginal (group B)		Oral (group C)	
	Number	%age	Number	%age	Number	%age
< 20	2	10	4	20	3	15
21-40	15	75	13	65	14	70
41-60	3	15	3	15	3	15
Total	20	100%	20	100%	20	100%

Table 4: Comparison of side effects in the three groups

Side effects	Sublingual (group A)	Vaginal (group B)	Oral (group C)
Pain	7	3	2
Bleeding	5	2	2
Nausea	6	---	1
Shivering	2	1	---
Fever	---	2	2
Diarrhoea	1	---	1

Table 1 shows that cervical dilatation was better in sublingual(40%)group as compared to vaginal(20%) or oral(30%) group. For the operating surgeon ease was greater in the sublingual group than in the vaginal or oral group.

Table 2 shows that the mean duration of surgery was less in sublingual group than in the vaginal or oral group.
Table 3 show that the average blood loss was almost the same in all the three groups.

Table 4 shows that pain, bleeding, nausea was slightly more in sublingual group than in the vaginal or oral group and only one patient in the sublingual group had fever. During follow up at 7-10 days or after one month, none of these patients had any major complaint and then pelvic examination revealed no abnormality?

DISCUSSION

Cervical dilatation is the most critical step in surgical evacuation as most cervical and uterine injuries are due to forceful dilatation of cervix. Pre-operative dilatation decrease pain and duration of surgery and increases operative ease. Previously laminaria tent, gemeprost and PGE2 gel were being used for cervical ripening (el -Refaey H, 1994).

These days misoprostol, a synthetic PGE_1 analogue has become popular for its effectiveness and for other advantages like less cervical injuries, minimal intra-operative blood loss.

The present study observed that cervical dilatation achieved with misoprostol was favorable among sublingual group as compared to vaginal or oral group. The difference could be because of different absorption kinetics and subsequent more systemic bioavailability .This is in comparison to results of Saxena P *et al.,* 2008, Parveen S *et al.,* 2011, Tang OS *et al.,* 2002 and Carbonell EJL *et al.,* 2006.

Patients in the sublingual group had more pre-operative side effects than in the vaginal or oral group. This can be explained because of higher bioavailability of sublingual misoprostol (Tang OS *et al.,* 2002).

CONCLUSION

The sublingual route of misoprostol is preferable because of high systemic concentration resulting in many beneficial effects and at the same time gastrointestinal side effects were reduced to some extent compared with oral administration (el -Refaey H, 1994). The operation time is also decreased and has good patient acceptability.

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