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Cervical Ripening For First Trimester Abortion: A Comparative Study between Misoprostol and Carboprost 125 Micrograms.

Singh Shashi Bala [1], Shrivastava Priyanka [2]
[1].*Associate Professor,* [2]*. Senior Resident ,*
Dept. of Obstetrics & Gynaecology, RIMS -834009, Jharkhand, India .

Abstract: *Cervical dilatation before suction evacuation is probably the most critical step of the procedure. Various drugs have been used to achieve cervical ripening.This study compares the efficacy and complications of misoprostol and carboprost (125 microgram) in cervical ripening for first trimester abortion. Carboprost 250 micrograms is known to cause good cervical dilation but with severe gastrointestinal side effects .This study shows that low dose carboprost achieves comparable results but with very few sibe effects. When compared to misoprostol cervical dilation was more with less induction to abortion time and less blood loss.*

I. Introduction

The legal definition for 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.(1) Cervical dilatation before suction evacuation is probably the most critical step of the procedure(2) Mechanical cervical dilation 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. Prostaglandins (PGs) have revolutionized the treatment of abortions.(3)Although misoprostol (PGE_1) was first introduced as a gastric ulcer protective agent, it became popular for its effect on cervical ripening and other advantages like less cervical injuries, minimal intra operative blood loss, reduced requirement of general anesthetics, and availability in different dosage forms.(3)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.(4)This drug is known for its severe gastrointestinal side effects but low dose of carboprost achieves similar results with less side effects. . Carboprost (125 mcg) doesn't cause the undesirable side effects usually associated with the drug, if used in the lower dosage.(5).Availability of low dose carboprost with possibility of minimizing the side effects motivated us to perform the aforesaid study.

II. Materials And Methods

This prospective randomized study was carried out at the gynaecological department of Rajendra Institute of Medical Sciences , Ranchi from May 2015 to May 2017.Total hundred pregnant women requesting pregnancy termination under MTP act 1972 who reported to OPD were included in the study after written informed consent. Pregnancy duration was determined by menstrual history, bimanual examination and confirmed with trans-abdominal ultrasound examination in all cases. Women with active cardiac, pulmonary, renal or hepatic disease, bronchial asthma or known hypersensitivity to prostaglandins were excluded from the study. Routine investigations like Hemoglobin estimation, ABO and Rh typing and urine examination was performed. Wo:menwith gestational age from 6 weeks to 12 weeks were included in the study.. They were randomly divided intotwo groups Group I who received 400 µg of vaginal Misoprostol or Group II, which received an intramuscular injection of 125 µg of Carboprost, . Suction evacuation was performed in all the women by the same surgeon to reduce the individual variability.The side effects associated with Misoprostol and Carboprost including nausea, vomiting, abdominal pain, cramps and diarrhea were recorded. Patients when complained of lower abdominal discomfort, or pain and/ or slight vaginal bleeding was shifted for evacuation. Time interval between the drug given and the initiation of procedure was noted.The procedures were done under intravenous analgesia. The amount of baseline cervical dilatation before performing suction evacuation was measured using Hegar's dilators. The dilators were passed through the cervix in descending order starting with size 12. The largest Hegar's dilator passing through the internal os without resistance was regarded as the baseline dilatation achieved and if additional mechanical dilatation of cervix required was also noted. Electric suction evacuation was done using appropriate size of Karman's cannula. This was followed by check curettage. All women in both groups had the procedure performed while under general anesthetic agent. Blood loss was measured. Any intraoperative complication was noted.

OBSERVATION

Table 1 Showing Age Distribution

AGE IN YEARS	NO.OF CASES (GROUP I)	NO.OF CASES (GROUP II)
16-20	03	O4
21-25	17	18
26-30	21	20
31-35	4	7
>35	3	1

Table 2 : Showing Distribution Of Cases According To Parity

Parity	No.Of Cases (Group I)	No.Of Cases (Group II)
0	5	3
1	10	12
2	12	10
3	13	17
4	8	7
5 AND ABOVE	2	3

Table 3: Showing Distribution Acoording To Time Taken For Cervical Ripening In Minutes

GESTATIONAL AGE IN WEEKS	TIME INTERVAL IN MIN(GROUP I)	TIME INTERVAL IN MIN(GROUP II)
6-8WEEKS	164	94.6
8-10 WEEKS	172.4	100.5
10-12 WEEKS	183.2	120.33

The mean time interval for group I (misoprostol) was 173.2 min with a standard deviation of 9.62 and the mean time interval of group II (carboprost) was 105.14min with a standard reviation of 13.48.
The two tailed P value is <0.001, statistically significant

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Table 4: Showing Mean Cervical Dilatation (In Mm) According To Gestational Age

GESTATIONAL AGE IN WEEKS	MEAN CERVICAL DILATION (GROUPI)	MEAN CERVICAL DILATION (GROUP II)
6	7.2	7.17
7	8	8.75
8	8.43	9.23
9	8.8	9.56
10	9.83	10.6
11	9.8	11.17
12	10.33	11.33

The mean cervical dilation in group I (misoprostol) was 8.91mm with a standard deviation of 1.29 and the mean cervical dilation in group II (carboprost) was 9.69 mm with a standard deviation of 1.48. the calculated p value is 0.006.

Table5 Showing Distribution According To Mean Blood Loss In Ml

Gestational age in weeks	Mean blood loss in ml group I	Mean blood loss in ml group II
6	48.3	28.4
7	50.2	46.2
8	64.6	48.1
9	83.3	48.6
10	84	49.2
11	88.2	50.2
12	96.2	65.5

The mean blood loss in ml in group I (misoprostol) was 73.54 ml with a standard deviation of 19.12 and the mean blood loss in group II (carboprost) was 48.03 ml with a standard deviation of 10.80.The calculated p value is <0.001, statistically significant.

Table 6: Showing Distribution According To Complications

complications	Group I in %	Group II in %	P value
pyrexia	10	0	o.0225
Nausea/ vomiting	4	4	1
diarrohea	nil	2	0.32

III. 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.(6) Some of these complications e.g. cervical injury and uterine perforation are directly related to the mechanical dilatation necessary for the procedure,(7) where as other complications e.g. haemorrhage and incomplete evacuation of pregnancy material may be due to insufficient or difficult dilatation. However these complications can be avoided by a method that allows a natural and slow dilatation of the cervix.. Several studies have assessed the efficacy of prostaglandins (PGs) with or without mifepristone.(8,9). This study compares the efficacy and complications of misoprostol and carboprost (125 microgram) in cervical ripening for first trimester abortion.

The maximum number of patients were in the age group 26- 30 years in both groups which is similar to study of Prabhu S et al in which the mean age in both group was 29- 30 years.(10) In both groups the average parity was 3 as patients often seek termination after the family is complete. The mean cervical dilation with misoprostol was 8.91mm compared to 9.69mm with carboprost , p value 0.006(statistically significant). Study by Jayasheela m et al also found greater vcervical dilation with carboprost compared to misoprostol.(11) Similarly Natrajan PK found satisfactory cervical dilation with carboprost(12).

The mean time interval for ripening with misoprostol was 173.2 minutes compared to 105.14 with carboprost, p value 0.0001(statistically significant) Thus admission to abortion time interval was significantly reduced with carboprost. Given intramuscularly, carboprost causes an almost immediate and sustained uterine contraction(13) and so acts faster.

The mean blood loss with carboprost was significantly reduced when compared tp misoprostol(p value <0.001) Sustained uterine contractions decrease the blood loss with carboprost. Study by Bansal R showed less blood loss with carboprost.(14) Carboprost is known for its severe gatrointertinal side effects, but this study shows tha low dose carboprost achieves comparable results with 250 micrograms carboprost with minimal side effects.Only 2% patients had diarrhea. . Carboprost (125 mcg) doesn't cause the undesirable side effects usually associated with the drug, if used in the lower dosage(4) Study by Singh and Megh with 125 microgram had lesser side effects.(15)

IV. Conclusion

Low dose carboprost achieves good results for cervical ripening in first trimester abortion with minimal side effects.

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