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Misoprostol (PGE_1) VersusDinoprostone (PGE_2) in Termination of Second Trimester Pregnancy

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Summary

In a search for effective, safe and cheap prostaglandin as abortifacient, we tried Misoprostol (PGE_1) intravaginally in the doses of 100g every three hourly and compared it with conventional Dinoprostone (PGE_2) intracervical gel (marketed worldwide as inducing agent) 0.5mg every 12 hourly. Eighty patients were randomized in two groups requiring abortion between 14 and 28 weeks of gestation. Group A received PGE_1 and group B received PGE_2.

Patients, who received PGE_1, had significant ($P<0.001$) shorter induction abortion interval with lesser requirement of oxytocin. Side-effects were minimal in the form of nausea, vomiting, diarrhea etc and comparable between the two groups. Cost of PGE_1 was1.25% of PGE_2. As tablets of PGE_1 do not require refrigeration, they can be used in the remote areas of India. Thus, PGE_1 turned out to be a very effective and cheap abortifacient which is technically easy to administer and does not need refrigeration, and has a wide scope of use in Indian population.

Midtrimester termination carried out from 14th to 28th week can be physically and psychologically traumatic for the patient (Iles, 1989). Various agents ranging from intra-and extra-amniotic hypertonic saline, ethacrynic acid, prostaglandins, oxytocins and foreign bodies in the form of catheters etc. have been tried from time to time. A high degree of patients involvement is required and can be stressful. To improve the safety of procedure and expedite expulsion, prostaglandins are considered to be the best. Only dinoprostone (PGE_2) is available in the market for this purpose. We explored the possibility of using misoprostol (PGE_1) which is very cheap and does not require refrigeration. A comparative evaluation of their efficacy and safety was done in this study.

Material and Methods

Eighty patients requiring midtrimester abortion who had intact membranes, Bishop Score ≤ 4 and gestational age between 14-28 weeks were recruited in this trial. Those with heart disease, asthma, ruptured membranes and unexplained vaginal bleedings were excluded from the trial. Using sealed envelop technique, patients were randomized either to receive 100g misoprostol emulsion or 0.5mg of dinoprostone gel. Misoprostol emulsion was applied in the post vaginal fornix every three hourly (Group A), whereas dinoprostone gel was applied intracervically every 12 hours (Group B). All patients were monitored for uterine contraction and cervical changes. Whenever needed

oxytocin supplementation was done in patients of both groups.

Observations

Age, parity and gestation between the two groups were comparable. Commonest indication of abortion was social followed by intrauterine death and congenital anomalies (Table I).

Misoprostol proved more effective in terms of induction abortion interval, it was shorter by 11 hours for misoprostol. PGE_1 achieved more abortions within first 12 hours (40%) as compared to PGE_2 (25%). With PGE_1 requirement of oxytocin was also significantly less compared to PGE_2 (Table II).

Table III gives the efficacy of misoprostol at different gestational ages. The efficacy does not vary with duration of gestation.

Between the two prostaglandins used in this study, no significant difference was noted in the maternal side-effects like nausea, vomiting, diarrhea, fever and vaginal discomfort (Table IV). The side-effects were of mild nature.

Discussion

PGE_1 is not marketed as abortifacient in India. But it is uterotonic and provides an effective alternative to other methods of midtrimester termination (Del-Valle et al, 1996). It offers many advantages such as being more

Table I: Indications for termination

	Misoprostol (N=40)	Dinoprostone (N=40)
MTP (social reasons)*	18 (45%)	15 (37.5%)
Intrauterine death (IUD) Pregnancies between and 28 weeks	10 (25%)	11 (27.5%)
Severe eclampsia pregnancies between and 28 weeks	7 (17.5%)	7 (17.5%)
Congenital anomalies pregnancies between and 28 weeks	5 (12.5%)	4 (10%)
Patients on chemotherapy pregnancies between and 28 weeks	0 (0%)	3 (7.5%)

Data presented as number and percentage
* Included pregnancies between > 14 weeks but < 20 weeks
Differences not significant

Table II: Various parameters following induction of abortion by PGE_1 and PGE_2

	Misoprostol (N=40)	Dinoprostone (N=40)	P Values
Insertion to abortion (min.)	862.75 + 195.45	1540 + 348.78	$P < 0.001$
Abortions in 12 hrs	16 (40%)	10 (25%)	$P < 0.001$
Abortions in 24 hrs	36 (90%)	32 (80%)	NS
Failed abortions	4 (10%)	8 (20%)	$P < 0.001$
Patients requiring oxytocin	10 (25%)	26 (65%)	$P < 0.001$
Doses of drug used	4.8 + 1.3	2.0 + 1.0	$P < 0.001$

Data presented as number and percentage; Based on log transformed data.
NS: Not significant

Table III
Efficacy of misoprostol and duration of pregnancy

Gestational Age (weeks)	Induction to Absorption interval (mins.)	Failure of termination (%)	Oxytocin supplement (%)
≥ 12-16	900 ± 125	0	5
17-20	859 ± 152	5	10
21-24	899 ± 105	0	5
25-28	901 ± 123	5	5

No significant difference in various parameters of different groups

Table IV: Maternal outcomes and side effects

	Misoprostol (N=40)	Dinoprostol (N=40)	Significance
Nausea	1 (2.5%)	1 (2.5%)	NS
Vomiting	1 (2.5%)	0 (0%)	NS
Diarrhoea	3 (7.5%)	0 (0%)	NS
Fever	2 (5%)	1 (2.5%)	NS
Vaginal discomfort	1 (2.5%)	0 (0%)	NS
Retained products of conception	19 (47.5%)	22 (55%)	NS

Data presented as number and percentage.
Routine check curettage was performed in all patients.
NS: Not significant

effective with shorter induction abortion interval. It required lesser supplementation with oxytocin as compared to PGE_2 which is the only licensed cervical ripening agent available in the market.

PGE_1 application is technically easy as it is put in the vagina and not intracervically (Mundle and Young, 1996). Another big advantage of PGE_1 was its low cost (1.25% of that of PGE_2), and lack of need for refrigeration.

Since decentralization of obstetrical services to the rural areas is a high priority, its easy applicability can be of great value in rural settings, where paramedical staff can easily be trained for such a procedure.

Various doses and frequencies of application need to be evaluated in future studies to arrive at an optimum regimen.

Reference

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