# EFFECT OF PRE-INDUCTION CERVICAL RIPENING WITH $PGE_2$ GEL (CERVIPRIM) ON PROSTAGLANDIN (I.M. $PGF_2\alpha$) INDUCED SECOND TRIMESTER PREGNANCY TERMINATIONS

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## SUMMARY

**A randomized trial on second trimester prostaglandin induced MTP was carried out on 100 women. These women were divided into study group (N=75) were $PGE_2$ gel (Cerviprim) was used for pre-induction cervical ripening in combination with I.M. injection of $PGF_2\alpha$ (Prostodin) and control group (N=25) where only I.M. injection of $PGF_2\alpha$ were used. A significant increase in efficacy and safety was noted in the combined method as demonstrated by a success rate of 97.3% in 24 hours with mean induction abortion interval of 7.2 hours and less number of injection (2.6 injection per patient) required to induce abortion. In the control group, success rate was 80% in 24 hours, mean induction abortion interval was 14.5 hours and mean number of injections required per patient was 5.7. Incomplete abortion occurred in 12% and 44% in study group and control group respectively. In study group no cervical/uterine injury was noted, whereas in control group cervical injury occurred in 8% cases. This combined regime has improved the efficacy and safety of prostaglandin induced second trimester M.T.P.**


## *INTRODUCTION*

Since the legalization of abortion as a method of contraception, the incidence of second Trimester M.T.P. has increased. None of the existing methods of performing second trimester MTP, are 100% reliable and safe, hence there is a constant search for an ideal method of induction of second

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trimester abortion. Prostaglandins have made a great contribution in this respect by improving the success rate and reducing the induction abortion interval over the traditional methods such as intra-amniotic use of hypertonic saline/urea and extra-amniotic use of ethacridine lactate (Rajan & Usha - 1979, Allahbadia-1992 & Yadav et al - 1993). But the great disadvantage of prostaglandin use is their high cost and high incidence of complications (Cameron et al - 1987). To overcome the disadvantages associated with prostaglandin use, various mechanical methods such as Laminaria tent/dilapan (Karim and Ratnam-1982, Bygdeman and Christensen - 1983 and Blementhal & Ramanuskas - 1990) and pharmacological agents such as oral Mifepristone (Rodger and Baird - 1990, HO and Ma - 1993 and Thong & Baird - 1993) and intravaginal prostaglandin pessaries/gel (Banerjee et al - 1988) have been used for pre-induction cervical ripening. The use of laminaria although, has improved the efficacy of prostaglandins, but there is a possibility of introducing intrauterine infection. Whereas the disadvantage with mifepristone is that it is not available in our country.

The present study was undertaken to investigate the usefulness of the concomitant use of intracervical $PGE_2$ Gel as a cervical ripening agent with I.M. injections of $PGF_2\alpha$ to perform second trimester medical termination of pregnancy.

## *MATERIAL AND METHODS*

In this prospective study one hundred women underwent second trimester MTP over a period of 6 months, from Oct. '1993 to March '1994 in Safdarjung Hospital, New Delhi. the period of gestation ranged from 12 weeks to 20 weeks. The age of the women ranged from 16 years to 40 years. It included both nulliparous and multiparous women. These women were randomly divided into two groups. Study group included 75 women and control group consisted of 25 women. All these cases were clinicaly evaluated for fitness to undergo abortion and to exclude any contra-indication for prostaglandin use. Routine laboratory tests done were haemoglobin estimation and routine urine analysis. All these women were admitted in the hospital and written consent for MTP was obtained.

The treatment protocol used for study group consisted of intracervical instillation of $PGE_2$ Gel (Cervipim) containing 0.5 mgms of Dinoprostone. One hour later injection $PFG_2\alpha$ (prostodin) 250 $\mu$g I.M. was started 3 hourly till abortion occurred or to a maximum of 10 doses. In control group 250 $\mu$g of $PGF_2\alpha$ was administered I.M. 3 hourly till abortion occurred or to maximum of 10 doses. Half an hour prior to first injection, two tablets of lomotil (anti-diarrhoeal) and 5 mg of stemetil (anti-emetic) were given and subsequently repeated as and when it was required. The patients were monitored regularly for vital signs, vaginal bleeding, expulsion of products of conception and side effects. Pelvic examination was performed after expulsion of the products of conception to ascertain the completeness of abortion. If abortion was incomplete, D & C was done. In cases with retained placenta, IV oxytocin drip was started and D & C was done. All these cases remained ambulatory and no analgesia was used during the treatment

period. The induction-abortion-interval was taken from the time of first prostodin injection to the time of occurrence of abortion. Pelvic examination was performed at follow up 15 days after the abortion to exclude incomplete abortion and pelvic infection.

The results in the two groups were analysed and compared in regard to the success rate, induction-abortion-interval (IAI), number of injections required per patient, adjuvant therapy used and the complication rate.

## *RESULTS*

Majority of the cases belonged to low socio-economic status. All except II cases were parous women. MTP was performed as a family planning measure in 85 cases, on social grounds in 9(8 unmarried and 1 divorce) and on medical grounds in 6 cases. As shown in table 1, the patients

**Table I**

**Showing Clinical Profile**

| Characteristics | Study group (N=75) | Control Group (N = 25) | Total No. of cases (%) |
|---|---|---|---|
| Age in years | No. of cases (%) | No of cases (%) | |
| < 20 | 9 (12) | 1 (4) | 10 (10) |
| 20-25 | 30 (40) | 8 (32) | 38 (38) |
| 26-30 | 28 (37.33) | 13 (52) | 41 (41) |
| 31-35 | 8 (10.66) | 0 (0) | 8 (8) |
| >35 | 0 (0) | 3 (12) | 3 (3) |
| Parity | | | |
| 0 | 8 (10.66) | 3 (12) | 11 (11) |
| 1-2 | 35 (46.66) | 15 (60) | 50 (50) |
| 3-4 | 25 (33.33) | 3 (12) | 28 (28) |
| ≥ 5 | 7 (9.33) | 4 (16) | 11 (11) |
| Gestational age (weeks) | | | |
| 12-14 | 40 (53.33) | 9 (36) | 49 (49) |
| 14-16 | 24 (32) | 10 (40) | 34 (34) |
| 16-18 | 6 (9) | 4 (16) | 10 (10) |
| 18-20 | 5 (6.66) | 2 (8) | 7 (7) |

**Table II**

**Showing Abortion Success and the Complications**

| | | Study graph (N=75) No. of cases (%) | Control Group (N=25) No. of cases (%) |
|---|---|---|---|
| 1. | Abortion | 73 (97.3) | 23 (92) |
| | * Complete Abortion | 64 (85.3) | 12 (48) |
| | * Incomplete Abortion | 9 (12) | 11 (44) |
| 2. | Failure | 2 (2.7) | 2 (8) |
| 3. | Complications | | |
| | * GIT | 1 (1.33) | 10 (40) |
| | * Pyrexia | 0 | 1 (4) |
| | * Excessive bleeding | 1 (1.33) | 3 (12) |
| | * Cervical tear | 0 | 2 (8) |
| 4. | Syntocinon augmentation | 2 (2.7) | 6 (24) |

in both the groups were comparable in respect to age parity and period of gestation. Majority cases were of 20-30 years of age and either para 1 or para 2.

As shown in table 2, in study group success rate was seen in 73 (97.3%) with complete abortions occurring in 64(85.3%) women. Whereas in control group, the success rate was seen in 23 (92%) cases, and abortion was complete only in 12 (48%) cases. The incidence of complications was higher in control group than in study group. No cervical tears were noted in study group, whereas in control group cervical injury occurred in 2(8%) cases which were repaired vaginally. For excessive bleeding, blood transfusion was given in 1 (1.33%) and 3 (12%) cases in study group and control group respectively. Oxytocin supplementation had to be done in 6 (24%) cases in control group and in 2 (2.7%) cases in study group. Curettage for incomplete abortion was done in 9(12%) and 11(44%) cases in study group and control group respectively. I.V. Fluid therapy was used for excessive vomiting and diarrhoea in one case of study group.

As shown in table-3, in study group 65(85.5%) aborted within 12 hours and 72(96%) aborted in 18 hours. In contrast, in control group, only 3(12%) aborted in 12 hours and 13 (52%) cases aborted within

**Table III**

**Showing induction-abortion-interval (IAI) in cases with successful abortion**

| IAI (Hours) | Study Group (N=75) No. of cases (%) | Control Group (N=25) No. of cases (%) |
|---|---|---|
| < 6 | 19 (25.3) | 0 (0) |
| 6 -12 | 46 (61.4) | 3 (12) |
| 13-18 | 7 (9.3) | 10 (40) |
| 19-24 | 1 (1.3) | 7 (28) |
| >24 | 0 | 3 (12) |
| Total | 73 (97.3) | 23 (92) |

**Table IV**

**Showing No. of $PGF_2\alpha$ injection used per patient in cases of successful abortion**

| No. of injections (1 M) | Study Group (N=75) No. of cases (%) | Control Group (N=25) No. of cases (%) |
|---|---|---|
| 0 | 5 (6.7) | 0 (0) |
| 1 - 2 | 23 (30.7) | 0 (0) |
| 3 - 4 | 31 (41.3) | 7 (28) |
| 5 - 6 | 14 (18.6) | 12 (48) |
| 7 - 8 | 0 (0) | 2 (8) |
| 9 - 10 | 0 (0) | 2 (8) |
| Total | 73 (97.3) | 23 (92) |

18 hours. The mean IAI was 7.2 hours and 14.5 hours in study and control groups respectively. The mean number of injections required groups respectively. the mean number of injections required per patient was 2.6 injections in study group and 5.7 injections in control group. In study group 54(72%) cases required 1-4 injections each case, whereas in control group 17 (68%) cases required 3-8 injection in each case (table-4).

In study group 2 (2.7%) cases failed

to abort. The abortion in one woman with 14 weeks gestation was completed by performing suction evacuation and curettage and in the second case IV oxytocin drip was given to complete the abortion process. In control group 2 cases with failure, in one patient abortion was performed with the I.V. Oxytocin drip and in the second case hysterotomy was done.

## *DISCUSSION*

It is a well documented fact that a ripe cervix predicts a successful induction of labour (Zanini et al 1990). Various mechanical and pharmacological methods have been used for pre-induction cervical ripening to improve the success rate of prostaglandin induced second trimester abortions. In this study, a success rate of 97.3% achieved, is comparable with success rate of 98% and 100% reported by Bygdeman and Christensen (1983) and Karim & Ratnam (1982) respectively. In their series, they had used laminaria for 8 hours prior to intramuscular administration of $PGF_2\alpha$ for pre-induction cervical ripening. Similarly, Banerjee et al (1988) also achieved a 100% success rate by using intravaginal $PGE_2$ gel for pre-induction cervical ripening in cases of second trimester abortions.

The mean induction abortion interval of 7.2 hours noted with the present regime, shows an improvement over the mean induction abortion interval of 10 hours reported byB ygdeman and Christensen (1983) and 10.4 hours reported by Karim and Ratnam (1982), where they had used laminaria for pre-induction cervical ripening. The other advantage with the present regime over laminaria is that, there is no danger of introducing intrauterine infection or injury to the low lying placenta. although the use of laminaria and mifepristone has reduced the induction abortion interval, the total abortion time is significantly more as compared to the present regime. The laminaria has to be used for 8-12 hours and mifepristone 36 hours prior to the administration of prostaglandin injection (Karim & Ratnam-1982 and Thong & Baird-1993). Enhanced effectivity of the present regime is quiet evident as shown by the less no. of injections (2.6 injection) required per patient. The less amount of drug required to induce abortions had made this regime more cost-effective and safer as the incidence of prostaglandin associated side effects has been significantly reduced. The improved efficacy might have been due to the additive effect and synergistic action of $PGF_2$ and $PGE_2\alpha$ gel in the stimulatory effect on uterine musculature and cervical dilatation.

A significant reduction in complications rate seen in this study is comparable with the low incidence of complications reported by Karim and Ratnam (1982), Bygdeman and Christensen (1983) and Thong and Baird (1983), when they combined pre-induction cervical ripening in prostaglandin induced second trimester abortions. There is no cervical resistance for the expulsion of products of conception, when pre-induction cervical ripening is achieved and hence no cervical injuries.

## *CONCLUSION*

From this study it can be concluded that concomitent use of intracervical $PGE_2$ gel and intramuscular $PGF_2\alpha$ injections, to induce second trimester abortions, is

a significant advancement in prostaglandin induced second trimester abortions. This is evident from the improved clinical efficacy & safety of the procedure. Other advantages noted with this method are, it is technically simple, cost effective and has minimal prostaglandin associated side effects.

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