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**SERIAL INTRAMUSCULAR INJECTION OF 15 (S)-15 METHYL PGF₂
ALPHA FOR SECOND TRIMESTER ABORTION USING
LAMINARIA TENTS**

**BY
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SERIAL INTRAMUSCULAR INJECTION OF 15 (S)-15 METHYL PGF₂ ALPHA FOR SECOND TRIMESTER ABORTION USING LAMINARIA TENTS

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SUMMARY

Second trimester abortions were induced in 65 cases giving serial intramuscular injections of 15 (s) methyl PGF₂ Alpha (CARBOPROST TROMETHAMINE). Laminaria tents were inserted 12-16 hours before starting of 15 methyl PGF₂ Alpha injections. By using laminaria tents the induction to abortion (I-A) interval was reduced to a mean of 9.50 hours and abortion was complete in all cases (100%). Side effects like nausea, vomiting, diarrhoea etc. were reduced considerably.

Introduction

The significant abortifacient properties of prostaglandins are now well established. Since more than a decade, prostaglandins have been extensively studied and evaluated for termination of human pregnancy at various gestational ages.

No satisfactory method is available for termination in the 13-15th week of pregnancy. Frequently patients are advised to return at 16 weeks when it is possible to perform amniocentesis. This delay in termination results in an increased incidence of complications and psycho-social problems to the patients.

Initially we used 15-methyl PGF₂ alpha without use of laminaria tents with a mean induction to abortion interval of 18 hours and complete abortion in 95% cases. Many reports of use of 15 methyl

PGF₂ alpha intra-amniotically with laminaria tents (Stubblefield *et al* 1974, Robins *et al* 1976) and thereby reducing the I-A interval led us to the use of the laminaria tents along with intramuscular route. Using laminaria prior to PG intra-amniotic injection, Stubblefield *et al* (1974) were able to reduce I-A interval to 17, 10.5 and 3.5 hours by using 1, 2 and 3 laminaria, respectively.

15-methyl PGF₂ alpha is now available in India with a trade name of Carboprost Tromethamine for institutional use. But its high cost has made its use limited. We tried to bring down the cost effectiveness by reducing the hospital stay (24-30 hours) and by reducing the number of injections given to patients with the use of laminaria tents.

Material and Methods

This paper presents the results of a clinical trial of 65 cases of Second Trimester abortions, induced with serial in-

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tramuscular injections of 15 methyl PGF₂ alpha using laminaria tents.

Two laminaria tents were inserted in the cervix around 12-16 hours before admission. Patients were admitted next-day morning at 7 A.M. Each patient was given two tablets of Lomotil (Diphenoxylate hydrochloride 2.5 mg and atropine sulphate 0.025 mg) and one ampoule of Reglan (Metoclopramide Monohydrochloride 10 mg) intramuscularly. A test dose of 125 micrograms (0.5 c.c.) of 15-methyl PGF₂ alpha was administered by deep intramuscular injection and the patient was watched for one hour for side effects. Subsequent doses of 250 micrograms (1 cc) were administered at one to two hours intervals depending on uterine response. If required the dose was increased gradually to 2 cc every 2-3 hourly. The injections were continued till the products were expelled or till 5 mgm (20 cc) of the drug was injected. Any single dose did not exceed 500 micrograms. Patients suffering from cardiac disease, hypertension, renal disease, bronchial asthma, hepatic disease, anaemia, diabetes, epilepsy were excluded from the study. Any case was taken as failure, if the patient did not abort within 30 hours. Abortion was taken to be incomplete if delivery of placenta did not occur within one hour following the expulsion of foetus.

Results

Table I shows the distribution of these cases according to age, marital status and

gravidity. Thirty five (53.85%) cases were between the age group of 21 to 30 years. Out of 22 cases in age group 14 to 20, six were below 15. Forty two (64.61%) patients were unmarried and 45 (69.23%) were pregnant for the first time.

Table II depicts the distribution of cases according to gestation period. Forty two (64.61%) cases were between 13 to 16 weeks of gestation. The mean gestation period was 16.18 weeks.

TABLE II
Gestation Weeks

Gestation in weeks	No. of cases	Percentage
13	4	6.15
14	12	18.46
15	20	30.77
16	6	9.23
18	12	18.46
20	11	16.93

Table III shows I-A interval of the patients. The induction-abortion interval was the time from first injection to the time of expulsion of the foetus. The observation time as per WHO protocol for prostaglandins was 30 hours. Sixty cases (92.3%) aborted within 12 hours and all cases aborted within 24 hours with a mean I-A interval of 9.50 hours. The average induction-onset interval was 1.8 hours. No definite relationship between induction-abortion interval, parity and duration of pregnancy could be made out.

TABLE I
Age, Marital Status and Gravida

Age (Year)	No. of cases	Marital Status	No. of cases	Gravida	No. of cases
14 to 20	22	Single	42	Primi	45
21 to 30	35	Married	21	IIInd	14
Above 30	8	Widow	2	IIIrd & above	6

TABLE III
Induction — Abortion Interval

Induction abortion interval—hours	No. of cases	Percentage
3	2	3.07
6	5	7.70
8	32	49.23
10	14	21.54
12	7	10.77
18	3	4.62
24	2	3.07

The average total dose required for inducing abortion was 1.38 mg. The minimum dose required was 0.375 mg and maximum was 4.5 mg (18 cc). The quickest abortion occurred within 3 hours.

Commonest side effects experienced by the patients were nausea, vomiting and diarrhoea. Nausea was experienced by 14 (21.5%) cases. Vomiting was experienced by 48 (73.8%) cases and diarrhoea occurred in 55 (84.6%) of cases. The mean episodes of vomiting per patient was 2.30 and mean episodes of diarrhoea was 3.41. Table IV shows number of episodes of vomiting and diarrhoea that occurred in the patients. None of the patients developed dehydration.

TABLE IV
Side Effects

No. of episodes	Vomits (No. of patients)	Loose motions (No. of patients)
Nil	17	10
1-3	32	23
4-6	14	28
7-10	2	3
12	—	1

Abortion was complete in all cases. Blood loss was mild to moderate. No cases required blood transfusion. Head-

ache occurred in 1 case (1.53%). Chill with rise of temperature was experienced by 2 cases (3.07%). Complications like cervical tear, uterine perforation, blurring of vision, hiccough, wheezing, dizziness, vertigo, injection site pain or abscess were not seen in any of our cases.

Check curettage was performed on the same-day evening in 53 (81.5%) of cases and they were discharged on next day morning (within 24 hours). In the remaining 12 cases (18.5%) check curettage was done on next-day morning and they were discharged within 36 hours of admission.

Discussion

The success rate in case of intramuscular administration of 15 methyl PGF₂ alpha, as reported by different investigators varies from 88% to 100%. Bygdeman *et al* (1974) and Lauersen and Wilson (1975) reported a success rate of 100% with mean I-A interval of 16.1 hours and 16.0 hours respectively. Purandare *et al* (1975) and Hingorani *et al* (1976) reported a success rate of 97.8% and 88% respectively. The major side effect with prostaglandins is high incidence of incomplete abortion. Bygdeman *et al* (1974), Purandare *et al* (1975) and Brenner (1975) reported incomplete abortion in 69%, 48.8% and 29% respec-

In our series by using laminaria tents the I-A interval was reduced to almost half (9.5 hours) with a success rate of 100%. The abortion was complete in all cases without any major side effects. The incidence of vomiting and diarrhoea was also reduced to a great extent.

According to Bieniarz, the insertion of laminaria prior to prostaglandin injection:

- * decreases the number of uterine contractions needed to expel the foetus by facilitating cervical dilatation;

* reduces the instillation to abortion time by one half;

* hastens the expulsion of placenta.

The use of laminaria insertion thus permits, the use of smaller doses of 15-methyl PGF₂ alpha with lesser side effects.

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The success rate in cases of intra-uterine abortion of 15 methyl PGF₂ alpha was reported by different investigators. Bygdeman et al (1974) and Lauersen and Wilson (1975) reported a success rate of 100% with mean 1.4 interval of 16.1 hours and 16.6 hours respectively. Bergstrom et al (1974) reported a success rate of 95.5% and 92% respectively. The mean interval was 1.5 hours and 1.6 hours respectively. Kamdar et al (1975) reported a success rate of 100% in 28% and 33% respectively. In our series by using laminaria a mean interval of 1.4 hours was achieved in almost all (95.5%) with a success rate of 100%. The abortion was complete in all cases without any major side effects. The incidence of vomiting and diarrhoea was also reduced to a great extent. According to Bennett the insertion of laminaria may be particularly useful in cases of incomplete abortion. The success rate in all cases was 100% and the mean interval was 1.4 hours. The incidence of vomiting and diarrhoea was also reduced to a great extent. According to Bennett the insertion of laminaria may be particularly useful in cases of incomplete abortion.

Common side effects experienced by the patients were nausea vomiting and diarrhoea. Nausea was experienced by 11 (31.5%) cases. Vomiting was experienced by 18 (52.3%) cases and diarrhoea occurred in 25 (73.5%) of cases. The mean episodes of vomiting per patient was 2.30 and mean episodes of diarrhoea was 3.11. Table IV shows number of patients of vomiting and diarrhoea that occurred in the patients. None of the patients developed dehydration.

TABLE IV
Side Effects

Side Effect	No. of Patients	% of Total
Vomiting	11	31.5
Diarrhoea	25	73.5
Nausea	18	52.3
Total	54	100

Abortion was complete in all cases. Blood loss was mild to moderate. The mean reported blood transfusion was