

A COMBINED TECHNIC OF ARTIFICIAL ABORTION IN MIDTRIMESTER OF PREGNANCY

by

R. RAJAN,* M.B.,B.S., M.D., D.G.O.

and

K. R. USHA,** M.B.,B.S.

It has been widely recognised and has been clearly shown in the recent ICMR report (1978) that midtrimester abortions are associated with a greater morbidity and mortality rate as compared to first trimester abortions. Cates *et al* (1977) have reported a mortality rate for midtrimester abortions which is very similar to the maternal mortality. Therefore the ideal situation would be for limiting the abortion procedures to the first trimester. Unfortunately it appears unlikely that the percentage of midtrimester abortions in our country will decrease to 3 per cent as reported from Denmark and Japan (Teitze and Murstein, 1975) In a country like ours there are potentially many reasons for abortions being delayed until the second trimester. And till the time we are able to educate our people to undergo abortions as early as possible we have to employ safer methods to abort them in the midtrimester.

In the search for a safe, effective and economical method for midtrimester abortion, many technics have been developed. Intraamniotic injections of various agents such as hypertonic urea and prostaglandins are the widely recommended procedures which have attracted

the attention of research workers and practitioners alike. One potentially improved technic recently practised is combined intraamniotic administration of hypertonic urea and Prostaglandin F₂ alpha (King *et al*, 1974; Wellman and Jacobson 1976; and King *et al*, 1977). Craft (1973) has shown that combination of urea and prostaglandin offers some advantages over either of these agents alone. Nevertheless, all these intraamniotic procedures have the potentiality for certain serious complications, in addition to the risks inherent in amniocentesis. Clinically significant coagulopathy associated with urea abortions (Burkman *et al*, 1977), uterine injuries following intraamniotic injection of urea (Parmley *et al*, 1976) and prostaglandin F₂ alpha (Propping *et al*, 1977) are the certain rare but dangerous complications.

In view of these complications, mechanical stimulation of the uterus by extra-ovular procedures advocated by Manabe (1969), appears to be a safer method of midtrimester abortion. Rajan *et al* (1978) have found extra-ovular administration of rivanol (Unacredil) as a safe method of induction of midtrimester abortion. Just like the bougie method, extra-ovular placement of rubber tube has been advocated by George (1978) as an effective method of midtrimester abortion. However, the prolonged abortion time is a

*Department of Obstetrics and Gynaecology.

**Senior Research Fellow, I.C.M.R.

Medical College Hospital, Gandhi Nagar, Kottayam-606 008, Kerala.

major concern of all these methods. Hence, in our present study we elected to induce abortion by extra-ovular placement of rubber catheter, the abortifacient efficacy of which was augmented by serial intramuscular administration of a small dose of 15 methyl analogue of prostaglandin F_2 alpha. Our experience with this combined technic in 75 subjects is detailed in this presentation.

Material and Methods

Beginning in March 1978, over a period of 3 months, 75 consecutive physically healthy gravidas, 18 to 39 years of age, and 13 to 20 weeks' gestation were induced by this combined technic. Patients were admitted to the hospital in the morning of the day on which abortion was scheduled. After thorough disinfection of the vagina, the sterilised rubber catheter (No. 12 size) was inserted through the cervical canal between the uterine wall and the foetal membranes until its tip reached the fundus of the uterus. The outer tip of the catheter was left 3 cms outside the cervical os and was wrapped with gauze. Insertion of the catheter was usually easy, and if necessary the cervical canal was slightly dilated with Hegar's dilators. Occasionally there was resistance or bleeding when the catheter was inserted, and then the catheter was withdrawn at once and a resistance-free area was found without much difficulty.

All the subjects were treated with 0.5 ml (125 μ gm) of 15 methyl prostaglandin F_2 alpha, injected deeply into the gluteus muscle every 3 hours till the patient aborted. The injection was started immediately after the insertion of the catheter. Thirty minutes prior to the initial PG dose the patients received 5 mgms of Siquil (Triflupromazine hydro-

chloride) intramuscularly and 2 tablets of Lomotil (diphynodylate hydrochloride, 2.5 mg/tablet, and atropine sulphate, 0.025 mg/tablet) orally. Thereafter each patient ingested 2 tablets of Lomotil every 3 hours for 2 more doses.

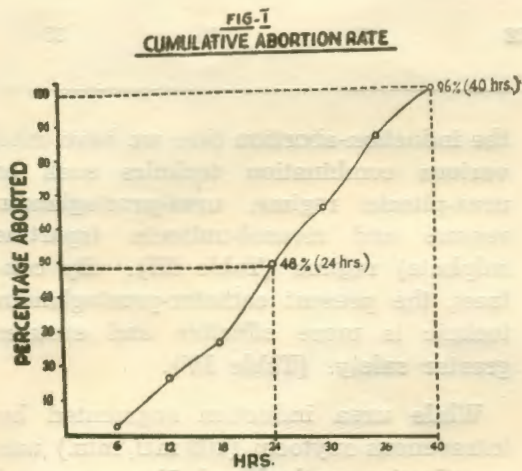
If strong uterine contractions were not established within 20 hours, intravenous oxytocin was administered at a rate of 100 mU/minute. The catheter was not removed until labour was well established, and usually the catheter was spontaneously expelled along with the products.

Abortion was defined as 'complete' when both the placenta and foetus were completely expelled, 'incomplete' when the foetus alone was expelled with the placenta retained, and 'failure' when neither the foetus nor the placenta was expelled within 48 hours of insertion of the catheter. Abortion time was calculated as the interval between the insertion of the catheter and expulsion of the foetus. If the placenta was not expelled spontaneously within one hour of expulsion of the foetus, surgical removal of the placenta was carried out. Routinely, after completion of abortion, the cervix was examined, to determine whether cervical laceration had occurred. Antimicrobials were administered only if there were signs of pelvic infection.

Results

Nintysix per cent of the patients aborted successfully within 40 hours by the effect of the combined treatment with extra-ovular catheter and intramuscular 15-me-PG F_2 alpha. The mean induction-abortion interval was 24.15 hours, with a range of 5 hours to 39 hours. Thirty six patients aborted within 24 hours (48 per cent). Among the 3 patients who had not aborted within 40 hours, 2 had spontaneous abortion within 72

hours and the third patient (a multiparous woman who was 14 weeks pregnant) had adequate cervical dilatation at 72 hours enabling easy surgical evacuation. The cumulative abortion rate of the successfully aborted patients is given in Fig. 1.



The procedure was found to be comparatively safe with no untoward complications such as haemorrhage or uterine rupture. Cervical injuries occurring in 2 nulliparous women of 16 to 20 weeks' gestational age were the only complications experienced in this series. There was no excessive blood loss in these patients and the cervical tears were sutured promptly. The patient who had failed to abort developed uterine sepsis which was effectively controlled by anti-

microbials. In 31 patients (42%) labour was accelerated by intravenous oxytocic infusion, and in 15 patients (20%) placenta was removed surgically.

The quantity of prostaglandin administered ranged from 1 ml (250 μ gm) to 7 ml (1.75 mgm), with a mean of 3.5 ml (875 μ gm). Since the average quantity of PG administered was less than 1 mgm, the gastrointestinal symptoms were very mild. Six patients had no more than 3 bouts of vomiting, and 45 patients had diarrhoea of whom only 2 had more than 3 attacks. None required intravenous fluid therapy.

Effect of Gestation Age: There was no difficulty in inserting the catheter in the patients who were 13 to 15 weeks pregnant. Of the 9 patients in this group, 8 aborted with a mean induction-abortion interval of 28.50 hours. However, the time taken was obviously more than the time taken (23.75 hours) by the patients who were 16 to 20 weeks pregnant (Table I).

Effect of Parity: The mean abortion time for the 18 nulliparous women did not differ significantly from the mean abortion time for the 57 parous women (Table II). Nevertheless, while 50 per cent of the parous women aborted within 24 hours, only 41 per cent of the nulliparous women did so within that period.

TABLE I
Effect of Gestational Age

Duration of pregnancy	No. of patients	Mean abortion time	Abortion in 24 hours	Abortion in 40 hours	Pitocin acceleration	Incomplete abortion
13-15 weeks	9	28.50 hrs.	3	8	6	1
16-20 weeks	66	23.75 hrs.	33	64	25	14

TABLE II
Effect of Parity

Parity	No. of patients	Mean abortion time	Abortion in 24 hours	Abortion in 48 hours	Pitocin acceleration	Incomplete abortion
Nulliparous	18	24.75 hrs.	8	18	11	nil
Parous	58	24.00 hrs.	28	54	20	15

Discussion

This study demonstrates that utilisation of catheter method combined with intramuscular administration of 125 μ gm of 15-me-PG F₂ alpha every 3 hours is very promising. Within 24 hours 48 per cent and within 40 hours 96 per cent were aborted without the risk of any serious complications. Moreover the inherent problems of amniocentesis could be averted, and this method appeared to be ideally suited for women with pregnancy ranging from 13 to 15 weeks.

To achieve a meaningful reduction in

the induction-abortion time we have tried various combination technics such as urea-pitocin regime, urea-prostaglandin regime and rivanol-unitocin (spartine sulphate) regime (Table III). By contrast, the present catheter-prostaglandin technic is more effective and ensures greater safety. (Table IV).

While urea induction augmented by intravenous oxytocin (100 mU/min.) was an effective method and 50 per cent of patients were aborted within 24 hours, it was associated with certain dangerous complications including uterine rupture

TABLE III
Combined Method of Induction of Abortion

Combined method	Mean abortion time	Abortion in 24 hrs. (%)	Abortion in 48 hrs. (%)
Urea and Pitocin	26 hrs. 58 mts.	69.48	83.31
Urea and Prostaglandin	25 hrs. 15 mts.	66.00	82.00
Rivanol and Unitocin	38 hrs. 20 mts.	37.00	70.40
Catheter and Prostaglandin	24 hrs. 10 mts.	48.00	96.00

TABLE IV
Complications of Different Methods

Combined method	No. of cases	Haemorrhage %	Uterine rupture %	Cervical rupture %
Urea and Pitocin	109	3.60	0.90	1.90
Urea and Prostaglandin	50	2.00	nil	4.00
Rivanol and Unitocin	50	nil	nil	2.00
Catheter and Prostaglandin	75	nil	nil	2.70

(Rajan, 1978). Similarly the urea-prostaglandin combination, eventhough effective and quick, was associated with a high incidence of cervical ruptures in addition to the inherent problems of amniocentesis (Rajan *et al*, 1978). Moreover, since both these regimes involve amniocentesis they could not be practised in women who were in the 13 to 15 weeks pregnancy group. In this respect, extra-ovular rivanol through foley's catheter was found to be suitable for all gestational ages. Eventhough effective and safe, this method was associated with a prolonged induction-abortion time, which could not be improved by the combined administration of unitocin (Rajan *et al*, 1978). Compared to all these methods the catheter-prostaglandin combination offers quicker induction and greater safety.

The inconvenience produced by the repeated intramuscular injection of prostaglandin is offset by some of the advantages of this method. Since prompt response could be obtained by the synergistic action of a small dose of 15 mg PG F₂ alpha, the gastro-intestinal side effects were very mild. Likewise, with more number of patients aborting in a shorter period of time, the incidence of infection was also low in this series. Another real value of the combined use of catheter and prostaglandin was that it was highly economical. Use of smaller dose of PG and quick induction allowing for a short hospital stay were the factors which have made the procedure less costly.

Summary

This study on midtrimester abortion employing extra-ovular catheter combined with serial intramuscular administration of 125/ μ gm of 15 methyl prostaglandin F₂ alpha every 3 hours appears to fulfil the criteria of being a safe,

effective, quick and economic method. This method is far superior to many of the combined methods of induction practised. Since abortion is induced by mechanical stimulation of the uterus augmented by the oxytocic effect of prostaglandin, the procedure is more physiological.

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References

1. Burkman, R. T., Bell, W. R., Atienza, M. F. and King, T. M.: *Am. J. Obstet. & Gynec.* 127: 533, 1977.
2. Cates, W., Grimes, D. A., Haber, R. J. and Tyler, C. W.: *J. Am. Med. Assoc.* 237: 452, 1977.
3. Craft, I.: *Prostaglandin.* 4: 775, 1973.
4. George, S.: Bougie method of midtrimester abortion, presented at the ICMR scientific meeting on abortion, Institute for Research in reproduction, Parel, Bombay, 1978 (16th January).
5. I.C.M.R. Report: Scientific meeting on abortions at IRR, Bombay, 16th Jan. 1978.
6. King, T. M., Atienza, M. F., Burkman, R. T., Burnett, L. S. and Bell, W. R.: *Am. J. Obstet. & Gynec.* 120: 704, 1974.
7. King, T. M., Dubin, N. H., Atienza, M. F., Burkman, R. T., Blake, D. A. and Baros, N. A.: *Am. J. Obstet. & Gynec.* 129: 817, 1977.
8. Manabe, Y.: *Am. J. Obstet & Gynec.* 105: 131, 1969.
9. Parmley, T. H., Burnett, L. S., Blake, D. A., Miyasakai, B. C. and King, T. M.: *Obstet. & Gynec.* 47: 210, 1976.

- 10. Propping, D., Stubblefield, P. G., Golub, J. and Zuckerman, J.: Am. J. Obstet. & Gynec. 128: 685, 1977.
- 11. Rajan, R.: J. Obstet. & Gynec. India. 28: 375, 1978.
- 12. Rajan, R., Nair, S. M., Sarada, A. K., John, R. and Usha Devi, L.: J. Obstet. & Gynec. India. 28: 523, 1978.
- 13. Rajan, R., Usha Devi, L. and Usha, K. R.: J. Obstet. & Gynec. India, 29: 289, 1979 (for publications).
- 14. Tietze, C., and Murstein, M. C.: Induced abortion: 1975 Hand-book Reports on Population/Family Planning No. 14, P 37, (Dec.) 1975.
- 15. Wellman, L. and Jacobson, A.: Fertil. Steril. 27: 1374, '76.

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References

1. Edwards, R. G. D., and others: J. Obstet. Gynec. 128: 685, 1977.
2. Propping, D., Stubblefield, P. G., Golub, J., and Zuckerman, J.: Am. J. Obstet. Gynec. 128: 685, 1977.
3. Rajan, R.: J. Obstet. & Gynec. India. 28: 375, 1978.
4. Rajan, R., Nair, S. M., Sarada, A. K., John, R., and Usha Devi, L.: J. Obstet. & Gynec. India. 28: 523, 1978.
5. Rajan, R., Usha Devi, L., and Usha, K. R.: J. Obstet. & Gynec. India, 29: 289, 1979 (for publications).
6. Tietze, C., and Murstein, M. C.: Induced abortion: 1975 Hand-book Reports on Population/Family Planning No. 14, P 37, (Dec.) 1975.
7. Wellman, L., and Jacobson, A.: Fertil. Steril. 27: 1374, '76.

Summary

This study on mid-trimester abortion employing extra-ovarian catheter combined with oral intramuscular administration of Mifepristone (RU 486) was carried out in the District Hospital, Mysore, during the period from 1st July to 31st August 1978. The study was conducted in a room specially set up for this purpose. The patients were selected from the antenatal clinic and were referred to the hospital for the procedure. The patients were given a thorough history and physical examination, and a pelvic examination was performed. The procedure was carried out under strict aseptic conditions. The patients were kept in the hospital for 24 hours after the procedure. The results of the study are discussed in detail.