A COMPARATIVE STUDY OF ETHACRIDINE LACTATE AND OTHER AGENTS USED BY THE EXTRAAMNIOTIC ROUTE FOR SECOND TRIMESTER ABORTION

by

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Abstract

This collaborative study was undertaken in 8 hospitals in Bombay, to evaluate the safety and effectiveness of the extra-amniotic administration of hypertonic saline, ethacridine lactate, prostaglandin F_2 alpha (PGF_2 alpha) and 15 methyl PGF_2 alpha for terminating 370 midtrimester pregnancies of 13 to 20 weeks' duration. The success rates ranged between 76.8 and 84.5 per cent for the 4 abortifacient drugs; the difference was not statistically significant ($p < .05$). The mean induction-abortion time was shortest and the incidence of pelvic infection lowest with 15 methyl PGF_2 alpha. Cumulative abortion rates at 24, 36 and 48 hours were lowest but complication rates were highest with PGF_2 alpha. The rate of incomplete abortions was significantly ($p < .05$) lower with ethacridine lactate than with the other 3 abortifacient drugs.

Introduction

The ideal method for second trimester pregnancy termination has so far eluded the obstetrician despite extensive trials

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with a variety of drugs and routes of administration. The extra-amniotic route has been used since a long time but has recently come into prominence with the realization of the dangers associated with the intra-amniotic route. This route of administration has some distinct advantages, such as ease of administration, the fact that it can be used at 12 to 14 weeks' gestation (we have to wait until 15 to 16 weeks before attempting an intra-amniotic injection), repeated instillation can be performed and there are less chances of placental damage and consumptive coagulapathy (Bygeman *et al* 1972; Deshmukh *et al*, 1976; Manabe 1969).

Material and Methods

This is a report of 370 midtrimester pregnancy termination procedures performed with saline, ethacridine lactate, prostaglandin F_2 alpha (PGF_2 alpha) and 15-methyl PGF_2 alpha in 8 hospitals in Bombay. All the 4 abortifacient drugs were administered by the extra-amniotic route to terminate pregnancies of 13 to 20 weeks' duration.

Abortion Techniques

(i) In 99 cases, 20 ml of 20 per cent saline were instilled every 3 hours for a period of 24 hours through a Foley's catheter. (ii) In 87 cases, 100 ml of 0.15 per cent ethacridine lactate was administered as a drip over a 10 minute period alongwith 300 mg of Unitocin (spartein sulphate) by means of an indwelling Foley's catheter which was retained for 4 hours.

(iii) A multiple dose schedule of PGF_2 alpha was used in 82 cases; 750 ugms of the drug were injected every 2 hours over a period of 36 hours through a Foley's catheter inserted transcervically beyond the internal os and kept in position by inflating the bulb.

(iv) In 102 cases, a single dose of 15-methyl PGF_2 alpha (15-me PGF_2 alpha) was used; 0.9 mg of the drug mixed with Hyscon (a polysaccharide of high molecular weight) were injected through a fine (No. 8), French infant feeding catheter which was inserted into the uterus in the same way as the Foley's catheter but was removed immediately after the drug had been injected.

The study patients were carefully observed and their vital signs (temperature, pulse, respiration and blood pressure) monitored until the abortion was complete. Prophylactic antibiotics were not routinely administered except for the saline cases who received 250 mg of tetracycline 4 times a day and one floraquin (dihydroxy quinolate) vaginal tablet everyday.

Definitions and Criteria

The induction-to-abortion interval was defined as the time from instillation of the drug to the time the foetus was completely expelled from the uterus. A procedure was declared a technical failure when the drug could not be instilled extra-amniotically due to any reason such as bleeding, rupture of the membranes or inability to introduce the catheter through the internal os. When the patient failed to abort the foetus within the specified trial period (48 hours in the case of saline and ethacridine lactate and 36 hours in the case of PGF_2 alpha and 15-methyl-PGF_2 alpha), the trial was declared a method failure.

The 4 abortifacient drugs were evaluated and compared using the following criteria:

(i) success rate;
(ii) cumulative abortion rate;
(iii) average induction-to-abortion interval;

(iv) incidence of incomplete abortions and

(v) rate of immediate complications.

Results

Success Rates and Induction-to-Abortion Interval

The success rates ranged between 76.8 and 84.5 per cent for these 4 abortifacients; the success rate was highest with ethacridine lactate and lowest with PGF_2 alpha (Fig. 1). However, the differences in the success rates were not statistically ($p < .05$) significant.

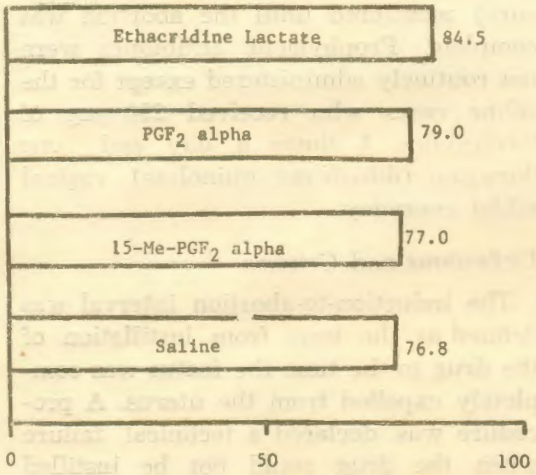

Fig 1

SUCCESS RATE FOR ABORTIFACIENT DRUGS USED BY THE EXTRAAMNIOTIC ROUTE, BOMBAY, INDIA 1976

The mean induction-to-abortion interval was shortest with the single dose schedule of 15-methyl-PGF_2 alpha (16.9 hours) and 28 to 30 hours with the other drugs (Table I and Fig. 2).

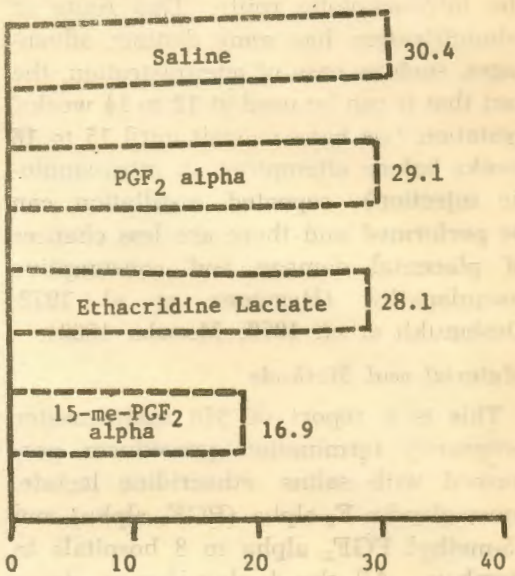

Fig 2

MEAN INDUCTION-TO-ABORTION INTERVAL FOR ABORTIFACIENT DRUGS USED BY THE EXTRAAMNIOTIC ROUTE, BOMBAY, INDIA, 1976

Failures and Incomplete Abortions

There was 1 (1.2%) technical failure with PGF_2 alpha, 2 (2.0%) with 15-me-PGF_2 alpha and 3 (3.4%) with ethacridine lactate. No technical failures were reported with saline (Table II). The

TABLE I

Induction-abortion Interval for Abortifacient Drugs Used by the Extraamniotic Route, Bombay, India, 1976

Abortifacient Drug	Induction-Abortion interval	
	Mean	Range
Saline	30.4	14.2—98.5
Ethacridine lactate	28.1	9.0—47.0
PGF_2 alpha	29.1	7.0—63.5
15-me-PGF_2 alpha	16.9	5.0—67.2

percentage of method failures was lower with saline (13.1%) than with PGF_2 alpha (21.0%), 15-me-PGF_2 alpha (23.0%) and ethacridine lactate (21.4%) (Table II). The rate of incomplete abortions was significantly ($p < .05$) lower for cases with ethacridine lactate (11.9%) than for those aborted with saline (39.4%), 15 me. PGF_2 alpha (44.0%) and PGF_2 alpha (44.4%) (Table II and Fig. 3). This is important because increased blood loss is often associated with partially separated or retained placenta.

TABLE II

Rates of Technical and Method Failures and Incomplete Abortions for Abortifacient Drugs Used by the Extraamniotic Route, Bombay, India, 1976

Abortifacient Drug	Technical Failures		Method Failures		Incomplete Abortion	
	No.	%	No.	%	No.	%
Saline	0	0.0	13	13.1	39	39.4
Ethacridine lactate	3	3.6	18	21.4	10	11.9
PGF_2 alpha	1	1.2	17	21.0	36	44.4
15-me-PGF_2 alpha	2	2.0	23	23.0	44	44.0

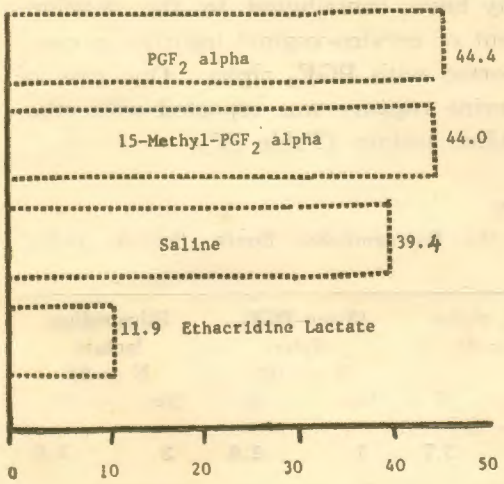

Fig 3

RATE OF INCOMPLETE ABORTION FOR ABORTIFACIENT DRUGS USED BY THE EXTRAAMNIOTIC ROUTE, BOMBAY, INDIA, 1976

Cumulative Abortion Rates

At 24 and 36 hours, the cumulative abortion rates were higher with 15-me-PGF_2 alpha than with any of the other drugs. At 48 and 72 hours, however, the highest abortion rates were observed with saline (Table III and Fig. 4). While 74.0 per cent of the women receiving the single dose schedule of 15-me-PGF_2 alpha aborted within 36 hours, 61.7 per cent of those receiving the multiple dose schedule of PGF_2 alpha, 70.7 per cent receiving saline and 52.4 per cent receiving ethacridine lactate aborted within this time. At 48 hours, 85.9 per cent of the saline cases and 70.2 to 75.3 per cent of the cases in the other 3 groups had aborted (Table III and Fig. 4).

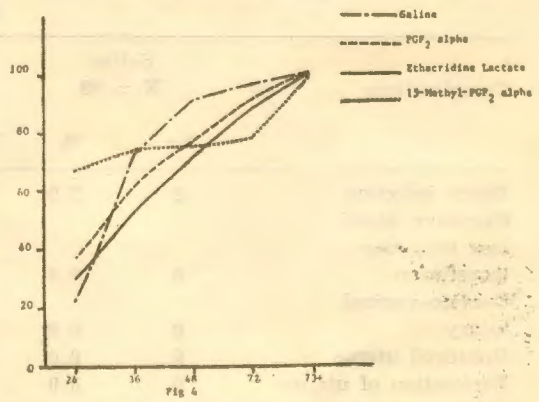

Fig 4

CUMULATIVE ABORTION RATES FOR ABORTIFACIENT DRUGS USED BY THE EXTRAAMNIOTIC ROUTE, BOMBAY, INDIA, 1976

TABLE III

Cumulative Abortion Rates for Abortifacient Drugs by the Extraamniotic Route, Bombay, India, 1976

Induction-Abortion Interval (Hours)	Ethacridine lactate N = 84	PGF_2 alpha N = 81	15-me-PGF_2 alpha N = 100	Saline N = 99
> 24	29.8	35.8	63.0	22.2
	(25)	(29)	(63)	(22)
36	52.4	61.7	74.0	70.7
	(44)	(50)	(74)	(70)
48	70.2	75.3	75.0	85.9
	(59)	(61)	(75)	(85)
72	84.5	90.1	77.0	96.9
	(71)	(73)	(77)	(96)
73+	100.0	100.0	100.0	100.0
	(84)	(81)	(100)	(99)

Note: The figures in parentheses are the number of cases.

Complications

The incidence of immediate complications was higher with PGF_2 alpha (8.6%) and ethacridine lactate (6.0%) than with saline (2.0%) and 15-me-PGF_2 alpha (1.0%) (Table IV and Fig. 5). The catheter was immediately removed after the administration of the 15-me-PGF_2 alpha; the indwelling catheter may have contributed to the higher incidence of infection with the other abortifacients (Table IV). A sharp increase in the baseline tonus of the intrauterine pressure may have contributed to the development of cervico-vaginal injuries in cases aborted with PGF_2 alpha. One case of uterine rupture was reported with ethacridine lactate (Table IV).

TABLE IV

Immediate Complications for Abortifacients Used by the Extraamniotic Route, Bombay, India, 1976

Complications	Saline N = 99		PGF_2 alpha N = 81		15-me-PGF_2 alpha N = 100		Ethacridine lactate N = 84	
	No.	%	No.	%	No.	%	No.	%
Pelvic infection	2	2.0	3	3.7	1	1.0	3	3.6
Excessive blood loss requiring transfusion	0	0.0	1	1.2	0	0.0	1	1.2
Cervico-vaginal injury	0	0.0	2	2.5	0	0.0	0	0.0
Ruptured uterus	0	0.0	0	0.0	0	0.0	1	1.2
Perforation of uterus	0	0.0	1	1.2	0	0.0	0	0.0
Total	2	2.0	7	8.6	1	1.0	5	6.0

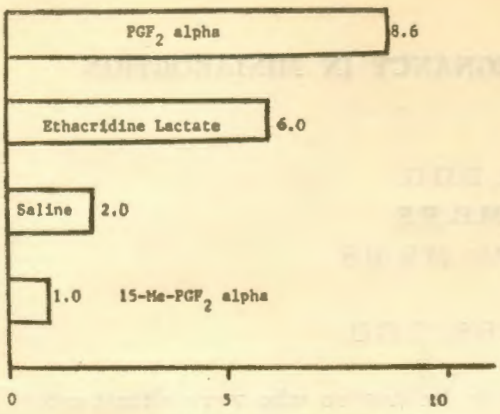

Fig 5

INCIDENCE OF IMMEDIATE COMPLICATIONS WITH ABORTIFACIENT DRUGS USED BY THE EXTRAAMNIOTIC ROUTE, BOMBAY, INDIA, 1976

Discussion

The extra-amniotic route for administration of abortifacients was first used for criminal abortion; caustics and irritant materials were used in the form of pastes. Although the use of ethacridine lactate dates back from 1949; more extensive studies were conducted in 1969 by Manabe (1969). The extra-amniotic route has been used for administration of prostaglandins. Thin, polythene catheters were used in the begining; subsequently the self-retaining Foley's catheters were found to be more convenient.

Deshmukh *et al* (1976) used 350 to 1290 ml of mannitol with 2 units of pitocin administered intra-muscularly every half hour in 4 doses. The mean induction-to-abortion time was 33.8 hours and the sucess rate was 95.0 per cent, no adverse reactions were noted in their series. The success rate was about 80 per cent with the abortifacient drugs evaluated in the present series. Krishna *et al* reported a lower success rate with the extra-amniotic instillation of hypertonic saline and prostaglandins and its analogues than with the intra-amniotic instillation of these drugs. We used 20 per cent saline extra-amniotically in multiple doses to decrease the possibility of intravasation. This did not give rise to electrolyte imbalance or coagulation disorders probably because small doses of hypertonic saline were injected at a time.

In this study, the mean induction-to-abortion interval was shortest and the incidence of pelvic infection lowest with 15-me-PGF_2 alpha. Cumulative abortion rates were lowest but complication rates were highest with PGF_2 alpha and the rate of incomplete abortions was lowest with ethacridine lactate.

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