CLINICO-BACTERIOLOGICAL STUDIES WITH INTRA-UTERINE ADMINISTRATION OF PROSTAGLANDIN FOR INDUCTION OF ABORTION

by

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Introduction

With liberalization of abortion, obstetricians and gynaecologists are confronted with the task of evaluating proper method for termination of pregnancy according to period of gestation. For pregnancy less than ten weeks, suction methods and even conventional dilatation and curettage are quite satisfactory. Problem arises when pregnancy is more advanced e.g. between 10-20 weeks. A method, which is simple, safe, effective, practical and preferably non-surgical, would be desirable. Pregnancies between 10-20 weeks have been terminated with prostaglandins (PG) by intra-uterine administration (Bygdeman, *et al*, 1971; Embrey and Hillier 1971; Wiquist, *et al*, 1972, Hingorani and Ganesh 1972) with fairly satisfactory results. Administration of Prostaglandin by intra-uterine route offers direct action and is associated with minimal side effect. When administration of PGF_2 alpha is done by intra-amniotic route, by one or more instillation, the risk of infection is said to be minimal. Whereas, when PGF_2 alpha is administered extra-amniotically, by Foley catheter (through cervix) which requires to be left in for several hours, there may be potential risk of infection. The purpose of this study was to establish the degree of risk involved in the extra-amniotic method which otherwise is very useful, not only for termnation of pregnancies between 10-15 weeks but also for more advanced pregnancies in cases where intra-amniotic technique is not technically feasible.

Methods

Eighty-one pregnant women, with gestation of 10-20 weeks who accepted to have abortions induced with PGF_2 alpha by intra-uterine administration were included in this study. Patients were divided into two groups.

Group 1: This consisted of 45 patients in whom abortions were induced with PGF_2 alpha administered extra-amniotically by Foley catheter with dose of 750 ugm initially and then every 2 hourly till the time of abortion or till 36 hours whichever was earlier. After 36 hours if pa-

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tient did not abort the pregnancy was terminated by some other suitable method. Catheter was pre-filled with sterile saline and was retained in place by filling the bulb with 15 ml sterile saline. Pregnancies in these patients were of 8-16 weeks gestation.

Group 2: This comprised of 36 patients who had abortions induced by PGF_2 alpha administered intra-amniotically, with initial dose of 25 mgm and subsequent dose of 25 mgm given after 6 hours. Pregnancies in these patients were of 14-22 weeks gestation.

Following schedule for bacterial cultures in the two groups was followed:

(1) Cervical swab culture before instillation of PGF_2 (both groups).

(2) Amniotic fluid culture before instillation of PGF_2 alpha (group 2).

(3) Cervical swab culture at 24 hours after instillation, if patient did not abort till 24 hours (both groups).

(4) Cervical swab culture at 36 hours after instillation, if patient did not abort after 36 hours (both groups).

(5) Cervical swab culture at 48 hours after instillation, if patient did not abort after 48 hours (both groups).

(6) Cervical swab culture at the time of abortion (both groups).

(7) Culture on the catheter fluid at the time of abortion (group 1).

(8) Cervical swab culture 24 hours after the abortion (both groups).

Cervical swabs were collected with all aseptic precautions in Stuart's transport media. Amniotic fluid and catheter fluid were collected in sterile containers. Each specimen was cultured on two plates of blood agar, one plate of chocolate agar, one plate of MacConkey's medium and into thioglycollate broth. One plate of blood agar was incubated anaerobically at 37°C for 48 hours. Chocolate agar plate was incubated at 37°C in an atmosphere of 5-10% carbon dioxide. The remaining blood agar, MacConkey agar plate and thioglycollate broth were incubated aerobically at 37°C for 24 hours. The thioglycollate broth was subcultured on blood and MacConkey's agar and processed as above. Organisms isolated were processed and identified by standard methods (Blair *et al*, 1970; Cruickshank, 1968; Edwards and Ewing, 1972).

Detailed clinical record of these patients was maintained and particular observations regarding clinical evidence of infection in the form of fever and vaginal discharge were made. Patients were re-examined 4 weeks after the abortion.

Observations

Results of bacterial culture in the extra-amniotic group are shown in Table 1.

Forty-one of the 45 patients belonging to this group did not harbour any organism in their cervix at the commencement of the study. Twenty-seven (65.12%) of these remained infection free throughout the course of the study. From 7 (17.07%), pathogenic organisms were isolated after abortion and in 5 (12.2%) more during abortion, whereas in 2 (5%) patients the organisms appeared 24 hours after the instillation of the drug.

Three of the 4 patients who had pathogenic organism in their preinstillation cervical culture continued to harbour the same organism even upto 24 hours after abortion. In the fourth patient, a different organism was isolated at the time of abortion.

Results of bacterial culture in group 2, i.e. patients who received prostaglandin F_2 alpha intra-amniotically is shown in Table II.

All the 36 patients of this group were free from bacterial infection to begin with

TABLE 1

Bacterial Isolates from Patients with Extra-amniotic Administration of PGF_2 alpha.

Sub Group	No. of cases	Pre-instillation cervical culture	Post-instillation cervical culture at			Cervical culture at the time of abortion	Catheter fluid at the time of abortion	Cervical culture 24 hrs. after abortion
			24 hours	36 hours	48 hours			
I	27	Sterile	Sterile	Sterile	–	Sterile	Sterile	Sterile
II								
a	2	Sterile	–	–	–	Sterile	Sterile	Staph. aureus
b	2	Sterile	–	–	–	Sterile	Sterile	K. aerogenes
c	1	Sterile	–	–	–	Sterile	Sterile	Esch. coli
d	1	Sterile	–	–	–	Sterile	Sterile	Esch. coli and K. aerogenes
e	1	Sterile	–	–	–	Sterile	Sterile	K. aerogenes and Ps. aeruginosa
III	1	Sterile	Sterile	–	–	Esch. coli	Sterile	Esch. coli
IV								
a	1	Sterile	–	–	–	Staph aureus	Staph aureus	Staph aureus
b	1	Sterile	Sterile	Sterile	Sterile	Ps. aeruginosa	Ps. aeruginosa	Esch. coli
c	1	Sterile	Sterile	Sterile	–	Sterile	Ps. alkalegenes	Ps. aeruginosa
d	1	Sterile	Sterile	Sterile	–	Esch. coli	Ps aeruginosa	Note done
V								
a	1	Sterile	Ps. alkalegenes	Ps. alkalegenes	Ps. alkalegenes	Sterile	Sterile	Sterile
b	1	Sterile	Ps. aeruginosa	Ps. aeruginosa	–	K. aerogenes	Sterile	Sterile
VI								
a	2	K. aerogenes	–	–	–	K. aerogenes	Sterile	K. aerogenes
b	1	Esch. coli	–	–	–	Esch. coli	Sterile	Esch. coli
c	1	Ps. aeruginosa	–	–	–	K. aerogenes	Sterile	Sterile

N. B.—Culture not required as patient aborted

TABLE II

Bacterial Isolates from Patients with Intra-amniotic Administration of PGF_2 alpha.

Sub Group	No. of cases	Pre-instillation fluid amniotic	Pre-instillation cervical culture	Post-instillation cervical culture at			Cervical culture at the time of abortion	Cervical culture 24 hours after abortion
				24 hours	36 hours	48 hours		
I	29	Sterile	Sterile	Sterile	Sterile	Sterile	Sterile	Sterile
II								
a	1	Sterile	Sterile	Sterile	Sterile	–	Sterile	Staph. aureus
b	1	Sterile	Sterile	–	–	–	Sterile	K. aerogenes
c	1	Sterile	Sterile	Sterile	–	–	Sterile	Ps. aeruginosa and K. aerogenes
III								
a	1	Sterile	Sterile	–	–	–	Esch. coli	Esch. coli
b	1	Sterile	Sterile	Sterile	–	–	Esch. coli	Esch. coli
IV								
a	1	Sterile	Sterile	Ps. aeruginosa	–	–	Ps. aeruginosa	Ps. aeruginosa
b	1	Sterile	Sterile	Ps. aeruginosa	–	–	Ps. aeruginosa	Sterile

N. B.—Culture not required as patient aborted.

and 29 (80.5%) continued to be so at the end of the study. In 3 (8.33%), 2 (5.5%) and 2 (5.5%) patients respectively, pathogenic organisms were isolated after abortion, at the time of abortion and 24 hours after instillation of the drug.

Analysis for relationship of induction abortion interval to pathogens was made. This is shown in Table III.

TABLE III

Induction Abortion Interval.in Relation to the Pathogens

Induction Abortion Interval	Extra-amniotic Group No. of cases			Intra-amniotic Group No. of cases		
	No path initially	Developing path later No.	%	No path initially	Developing path later No.	%
0 — 15 hrs.	10	0	0	9	1	10
15 — 30 hrs.	13	8	38	11	2	15
30 — 45 hrs.	4	4	50	4	4	50
45 hrs.	0	2	100	5	0	0

Path = Pathogen.

It is apparent that as the induction abortion interval increased beyond 15 hours, the pathogens were grown in increasing number, in the extra-amniotic group.

Analysis was made to see if there was any relationship between the occurrence of fever, presence of pathogens and induction abortion interval. This is shown in Table IV.

In the extra-amniotic group the average induction abortion interval was 50 hours in patients who had fever and harboured the pathogenic organisms as compared to 27 hours in those who had fever but did not harbour pathogenic organisms. The interval was also much higher than the average induction abortion interval of 23 hours and 32 minutes for this group.

In the intra-amniotic group, the induction abortion interval was longer i.e. 31 hours in patients who had fever and harboured pathogenic organisms, as compared to the average induction abortion interval of 25 hours and 30 minutes for this group.

Discussion

Obstetricians are anxious to evolve a simple and safe method for termination of pregnancy at 10-20 weeks of gestation. Administration of prostaglandin by intra-amniotic route carries lesser risk (19.5%) of infection as compared to 35% by the extra-amniotic route. If a foreign body like Foley catheter needs to be introduced via the cervical os, and retained for a period, then methods should be such that induction abortion interval should be short. The older methods e.g. laminaria tents, intrauterine glycerine, intrauterine catheter, fell into disrepute on account of the longer induction abortion interval with associated high rate of sepsis. This study has revealed a close relationship between the induction abortion interval and acquisition of pathogenic organisms. This is apparent specially in the extra-amniotic group. When the induction abortion interval was less than 15 hours, infection did not take place. When the interval was 30-45 hours, 50% of the patients got infected and when it was more than 45 hours all patients got infected. The popular saying 'Never let the sun set twice on woman in labour' should also

TABLE IV

Presence of Pathogens and Fever in Relation to Induction Abortion Interval

Group	Total No. in the group	No. of cases			Induction Abortion interval in hours in patients		Average induction abortion interval for the group
		With fever	with fever and pathogens +ve.	With fever and pathogenes —ve	With fever and pathogens +ve	With fever and pathogens —ve	
Extra amniotic Group	45	12	5	7	50 hrs.	27 hrs	23 hrs. 32 min.
Intra-amniotic Group	36	5	2	3	31 hrs.	33 hrs	25 hrs. 35 min.

be applicable to women undergoing late abortions.

Summary

A clinicobacteriological study was undertaken in 81 patients undergoing abortions with Prostaglandin F_2 alpha. Group I consisted of 45 patients with pregnancy of 8-16 weeks gestation. In this group abortions were induced by PGF_2 alpha administered extra-amniotically by indwelling Foley catheter. Group II consisted of 36 patients in whom abortions were induced by PGF_2 alpha administered intra-amniotically. Bacterial cultures of cervical swab were done before and after instillation, at the time of abortion and 24 hours after abortion. It was found that pathogens were grown more often in the extra-amniotic group and this was directly related to the duration of induction abortion interval.

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