COMPARATIVE EVALUATION OF ORAL PROSTAGLANDIN E_2 AND I/V PITOCIN DRIP IN INDUCTION OF LABOUR

by

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Karim and Sharma (1971) were the first to try oral route with good success. This route is most convenient physiological as compared to other routes of administration It is convenient for the staff:

To compare the outcome of induction with oral PGE_2 and with pitocin drip, present study was undertaken.

Material and Method

One hundred and fifty patients parity 0.-4. Period of gestation 30-43 weeks with different indications for induction of labour were taken at random and divided into 2 groups.

Group I: *Oral prostaglandins study group*: This group consisted of 75 cases who were given PGE_2 in the form of oral tablets as per schedule.

Grup II: *Pitocin drip group*: Constituted 75 patients and to this group pitocin in 5% dextrose in the form of intravenous infusion was given.

Patients with contracted pelvis, high parity (more than 4), abnormal lie, hydramnios and twin pregnancy were excluded from study by history and examination.

Before induction, history was taken with special reference to duration of amenorrhoea number of previous pregnancies and labour, problems of previous gestation, if any. significant incidents of present pregnancy.

PGE_2 dosage schedule: Drug was in the form of tablets 0.5 mg each. After all preliminaries done, 1 tablet was swallowed at zero hour and 2nd dose of 1 tablet repeated after 1 hour. If no pain started then 3rd, 4th, 5th and 6th doses of 2 tablets each were given at 2nd, 3rd, 4th and 5th hour. If still satisfactory uterine contractions were not achieved, 3 tablets each were given for 3 doses at 6th, 7th and 8th hour. The aim was to achieve active labour i.e. 3 uterine contractions per 10 minutes, each lasting for about 30-40 seconds with good relaxation in between with atleast 3 cm cervical dilatation. The dose was maintained at same or somewhat lower level till delivery. Any complication arising in between was managed accordingly, if need be therapy was stopped. If labour could not be established with 9 doses as per schedule, failure was registered.

Pitocin drip dosage schedule: After all preliminaries done, pitocin 1 unit in 540 ml of 5% dextrose was started in the form

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of I/V drip 20-40 drops/minute. If labour pains could not be started with 1st half of the bottle, ½ unit was added to make it 2 units/bottle. If need be next bottle was started at 3 units/540 ml and after half bottle it was made 4 units/540 ml by adding ½ unit. If with the 2nd bottle also labour pains could not be established then overnight rest was given. Next morning repeating all the preliminary recordings drip was set up with 4 units/540 ml and taken upto 7 unit/540 ml. If on the 2nd day also labour could not be established then on 3rd day, repeating all preliminaries, a drip was set up with 7 units/540 ml and taken upto 10 units/540 If still labour could not be established the patient was labelled as failed induction.

Grading of the Result was done as below:

(1) Sucessful delivery: When patient delivers vaginally with oral PGE_2 or pitocin drip.

(2) Successful induction: When labour could be established but therapy discontinued in the interest of mother or foetus.

(3) Failed induction: Failure to establish labour with 9 doses of oral PGE_2 tablets (Maximum dose of 3 tablets) of 10 units of pitocin in 540 ml of dextrose (i.e. on 3rd day).

Results

(I) Indications for Induction: The commonest indications for induction of labour in both groups as is evident from Table I was post maturity and post term i.e. 60 out of total 150. Premature rupture of membranes 56 out of 150 cases.

(II) Success Rate: Successful vaginal delivery was 81.33% for oral PGE_2 and 74.66% for pitocin drip. It was observed that success was influenced by Bishop score present before the induction as is evident from Table I.

TABLE I

Bishop score	Parity	Method	No. of cases	Successful	Percentage
0-3	Primi	PGE_2	3	1	33.33%
		Pitocin	4	2	50.00%
	Multi	PGE_2	4	1	100.00%
		Pitocin	1	1	25.00%
4-7	Primi	PGE_2	21	15	71.43%
		Pitocin	17	10	58.82%
	Multi	PGE_2	35	30	85.17%
		Pitocin	26	21	80.76%
8-13	Primi	PGE_2	7	6	85.71%
		Pitocin	11	10	92.30%
	Multi	PGE_2	8	8	100.00%
		Pitocin	13	12	82.31%
All group	Primi	PGE_2	31	22	70.96%
		Pitocin	32	22	68.75%
	Multi	PGE_2	44	39	88.64%
		Pitocin	43	34	79.01%
Total		PGE_2	75	61	81.33%
		Pitocin	75	56	74.67%

0 to 3 Bishop Score Group: Success rate was 50% with oral PGE_2 and 37.5% with pitocin drip. This group is insignificant comprising of 4 cases of oral PGE_2 and 8 cases of pitocin drip.

4 to 7 Bishop Score: As is apparent from Table I success rate is significantly higher for primigravidae for oral PGE_2 i.e. 71.43% as compared with pitocin drip group i.e. 58.82%. As far as multigravidae are concerned the success rate is slightly higher for oral PGE_2 group i.e. 85.71% as compared with pitocin drip group i.e. 80.76%.

Bishop Score 8 to 13: Success rate in primigravidae was 85.71% with oral PGE_2 and 90.30% with pitocin drip. For multigravidae with oral PGE_2 successful delivery rate was 100% and in pitocin drip group 92.30%.

(III) *Durations of Active Labour*

As is apparent from Table II for Bishop score group 4 to 7 and 8 to 13, there is no significant difference between duration of active labour in PGE_2 and pitocin induction groups for primigravidae.

Multigravidae 4-7 Bishop score group had duration of active labour longer by 80 minutes on an average, while multigravidae 8-13 Bishop score group had duration of active labour shorter by 4 hours and 58 minutes for PGE_2 induction group as compared with pitocin induction groups.

When all groups combined, duration of active labour was longer by 80 minutes in PGE_2 induction group as compared with pitocin induction group.

(IV) *Mode of Delivery*: has been compared in Table III. Incidence of forceps delivery was 22.66% with oral PGE_2 induction and 21.33% with I/V Pitocin. Lower segment caesarean section was 12.00% with oral PGE_2 induction group

TABLE II

Durations of Active Labour in Hours and minutes

Bishop score	0 to 3				4 to 7				8 to 13				0 to 13			
Parity	Primi		Multi		Primi		Multi		Primi		Multi		Primi		Multi	
Method	PGE_2	P	PGE_2	P	PGE_2	P	PGE_2	P	PGE_2	P	PGE_2	P	PGE_2	P	PGE_2	P
No. of cases tried	3	4	1	4	21	17	35	26	7	11	8	13	31	32	44	43
Mean	43.40	6.05	7.55	6.35	11.41	11.27	9.43	7.13	7.30	7.38	3.31	8.29	11.45	9.14	8.20	7.44
Range	—	4.00 to 8.10	—	—	4.20 to 26.00	5.00 to 21.41	3.15 to 23.00	2.00 to 16.00	3.00 to 12.00	2.30 to 12.30	2.30 to 8.00	1.45 to 17.15	—	—	—	—

	0 to 13	
	Multi	
	PGE_2	P
	75	75
	9.36	8.16
	—	—

P. = Pitocin.

and 17.34% with intravenous pitocin induction group.

TABLE III
Mode of Deliveries

Mode of delivery	PGE_2		Pitocin	
	No.	%	No.	%
Spontaneous vaginal	49	65.33%	46	61.33%
Low forceps	17	22.66%	16	21.33%
L.S.C.S.	9	12.00%	13	17.34%

(V) *Maternal and Foetal Complications*: have been compared in Table IV.

TABLE IV
Complications

Sr. No.	Complications	PGE_2	Pitocin
1.	Vomiting	17	2
2.	Foetal distress	4	8
3.	PPH	2	6
4.	Pyrexia	1	1
5.	Hypertensive response	1	—
6.	Laryngotrachea spasm	1	—
7.	Maternal distress	1	—
8.	Hypersensitivity	—	1
9.	Thrombophbolites	—	4
Total number of complications		27	22
Number of involved cases		21(28%)	22(29.33%)
Failed induction		9(12%)	12(16%)

Twenty-one cases had 27 complications with PGE_2 group as compared with 22 cases of pitocin group with 22 complications. In PGE_2 group common complication was vomiting (in 17 cases), while in pitocin drip group foetal distress was numerically double and incidence of postpartum haemorrhage tripple than oral PGE_2 group.

In 1 case PGE_2 had irratic response in the form of hypertension. No maternal mortality occurred in the series.

Foetal Outcome

Sixty-five neonates (86.66%) of oral PGE_2 group and 61 (81.33%) neonates of pitocin drip group had Apgar score of 10 both at 1st minutes and 5th minute. 5th minute Apgar score was 10 in all neonates where mothers were induced with alive foetuses. One foetus in oral PGE_2 induction group and 2 foetuses in pitocin induction group had intrauterine death before induction.

No foetal mortality was attributed to induction by either of the method.

Grading of Results

(I) Successful Delivery: was 81.33% with oral PGE_2 and 74.66% with pitocin induction group.

(II) Successful Induction (Failed delivery): Successful induction was 88% with oral PGE_2 and 84% with pitocin drip. 5 cases in oral PGE_2 group needed stoppage of therapy and in pitocin induction group 7 cases needed stoppage of therapy after successful induction for side effects.

(III) Failed Induction: 9 (12%) cases with oral PGE_2 and 12 (16%) cases with pitocin drip failed to respond to full regimes.

Discussion

In the present series 81.33% successful delivery with oral PGE_2 is higher than 74.66% of intravenous pitocin drip. The duration of active labour was found to be 9 hours 36 minutes for oral PGE_2 and somewhat lower for intravenous pitocin group i.e. 8 hours and 16 minutes.

In the present series side effects incidence was 28% with oral PGE_2. Like present series in all the series major side effect was vomiting. Other side effects included laryngeal spasm, pyraxia, postpartum haemorrhage, foetal and maternal distress. In addition, in present series hypertensive response to oral PGE_2 tablets in 1 case was observed. This response can be explained on the bases of paradoxical response to drug. When compared with intravenous pitocin drip overall incidence of side effects was more with oral PGE_2. Incidence of major complications like foetal distress and postpartal haemorrhage (pph) was much more with pitocin drip than oral PGE_2.

Apgar score of neonates at first minute in both drugs was almost similar i.e. 10 in 86.66% cases of oral PGE_2 and 81.33% of pitocin induction group. 5th minute apgar score was 10 for all the cases induced with alive foetuses. No foetal or maternal mortality is attributed to either of the methods.

Summary and Conclusion

A comparative evaluation of oral PGE_2 and commonly used regime of intravenous pitocin drip for induction of labour was done with 75 cases each. With oral PGE_2 duration of active labour on average was 9 hours and 36 minutes for all groups as compared with 8 hours and 16 minutes with intravenous pitocin group.

Rate of successful delivery was 81.33% with oral PGE_2 and 74.66% with intravenous pitocin drip. Rate of successful induction with oral PGE_2 was 88% and with intravenous pitocin group 84%, so that incidence of failed delivery but successful induction was 6.66% with oral OGE_2 and 9.33% with I/V pitocin drip. Incidence of failed induction was 12% with PGE_2 and 16% with I/V pitocin drip.

Total incidence of side effects with oral PGE_2 was 28% whereas side effects with intravenous pitocin was 29.33%. In PGE_2 group vomiting was main side effect observed in 22.66% of cases. In pitocin drip group incidence of foetal distress was 10.66% and post partum haemorrhage 8% which was higher than PGE_2 group in which foetal distress was 5.33% and post partum haemorrhage 2.66%.

For convenience of patient and staff we shall prefer to use oral PGE_2 for induction of labour but due to inavailability of the drug intravenous pitocin drip is still a useful method.

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