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Original Research Article

Oral prostaglandin and intravenous oxytocin for induction of labour: Maternal side effects

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Abstract
Induction of labour is an obstetric procedure designed to pre-empt the natural process of labour by initiating its onset artificially before this occurs spontaneously. The ultimate weapon at the disposal of the obstetrician is intervention to deliver the baby. This can be done by Induction or caesarean section. His decision to take thestep relies on assessment of the "Obstetric balance". The present study is a comparative study between oral prostaglandin E2 (PGE2) and intravenous oxytocin (IV oxytocin) for induction of labour carried out at Hospital.One hundred and twenty consecutive patients stated for induction of labour satisfying the selection criteria for the study were alternately recruited to Prostaglandin or oxytocin groups. The maternal side effects were more in the prostaglandin group.One occurrence of hypertonic uterine action a case of premature rupture of membranes in the PGE2 group. Post-partum hemorrhage was observed in 2 of the 43 patients of oral PGE2 and in 6 of the 45 patients induced with oxytocin.

Keywords: Oxytocin, oral prostaglandin, maternal side effects

Introduction
Since antiquity, various methods, many bizarre and some frankly dangerous have been used in an attempt to bring on labour. Long before oxytocics were recognised as a distinct group of biologically active substances, there were hints that some unknown compounds capable of inducing uterine activity existed. Pregnant Eskimo women ingested fat from paws of polar bears to enhance sluggish uterine activity (Schotman 1974) and for the same purpose oral ingestion of seminal fluid was practiced by some African tribes (Harley 1941). In Belgium, it was common practice in some strata of population to indulge in intercourse at the onset of labour, to hasten its progress. Since semen is one of the richest sources of Prostaglandins and as oral or vaginal administration of Prostaglandins causes the uterus to contract the above mentioned beliefs could have a sound physiological basis [1].

Massage of breasts and uterus are very old but inefficient methods. Something approaching the use of tents dates back to the sixth century and stretching of cervix digitally has long been employed. As far back as 1838 rubber tubing was pushed into the uterus only to be revived in the form of a stomach tube about ninety years later by Fitzgibbon. Scan zone used a hot carbolic douche in 1856 and at this time Kraus introduced his bougies, which only since the 1930's have fallen into disuse because of their relative inefficiency and their sepsis rate [2].

Barnes in 1861 used rubber bags filled with water but this was only an extension of more traditional method of using pig's bladder.

ISSN 2515-8260 Volume 09, Issue 04, 2022

Artificial rupture of fore waters stands in a class by itself for it has stood a prolonged test of time, being first used by denman in 1756 for cases of contracted pelivis and being known since then as the English method'. It remains to this day the most efficient and most widely used method.
In 1968 Karim *et al*. first reported on the successful use of Prostaglandin F2 for the induction of labour at term. Bygdemann was the one who first reported the stimulatory effect of Prostaglandin E1 in 1964. The polypeptide hormone, oxytocin, was first used in clinical practice by blair Bell (1909) but only began to be used extensively for labour-induction less than 30 years ago following its commercial synthesis [3].
Induction of labour is an obstetric procedure designed to pre-empt the natural process of labour by initiating its onset artificially before this occurs spontaneously.
The ultimate weapon at the disposal of the obstetrician is intervention to deliver the baby. This can be done by Induction or caesarean section. His decision to take thestep relies on assessment of the "Obstetric balance" [4].

Methodology

The present study is a comparative study between oral prostaglandin E2 (PCE2) and intravenous oxytocin (IV oxytocin) for induction of labour carried out at Hospital.
One hundred and twenty consecutive patients stated for induction of labour satisfying the selection criteria for the study were alternately recruited to Prostaglandin or oxytocin groups
The following criteria were adhered for to include patients in the present study,

- singleton pregnancy
- age of women 18 years or more
- women with gestational age of more than 37 weeks
- No contraindications for vaginal delivery like CPO, contracted pelvis
- avoid a case with a previous scar on the uterus
- cephalic presentation
- Patients were excluded from the study. They
- are in labour
- had vaginal bleeding of uncertain etiology
- had known active gynaecological disease
- had history of cardiac disease and convulsive disorder
- had abnormal presentation

Results

Gastrointestinal sysmptoms were more common side effects in PGE2 group. 5 of 43 patients experienced vomiting and 2 of the patients had diarrhoes, in PGE2 group compated to oxytocin group. No cases were found to have fever or hypertension. The results are shown in Table.

Table 1: Maternal side effects

Maternal side effects	PGE2 (n=43)	Oxytocin(n=45)
Vomiting	5	2
Diarrhoea	2	-

The maternal side effects were more in the prostaglandin group.

One occurrence of hypertonic uterine action a case of premature rupture of membranes in the PGE2 group. Post-partum hemorrhage was observed in 2 of the 43 patients of oral PGE2 and in 6 of the 45 patients induced with oxytocin as shown in table.

ISSN 2515-8260 Volume 09, Issue 04, 2022

Table 2: Maternal Complication during labour

Maternal complication	PGE2 (n=43)	Oxytocin(n=45)
Hypertonic uterine action	1 (2.32%)	-
Post-partum hemorrhage	2 (4.65%)	6 (13.33%)

The mean Apgar score in nullipara in the PGE2 group was 8.86 and 8.63 in the oxytocin group. The mean 5 minute Apgar score in both groups was 10.
The mean Apgar score was 8 and 7.86 in multipara treated with PGE2 and Oxytocin respectively, the d5 minute apgar score being 10 in both groups as shown in the following table.

Table 3: Apgar score at 1 – 5 minutes

Study group	Nullipara		Multipara	
	Mean 1 min.	Mean 5 min.	Mean 1 min.	Mean 5 min.
PGE2	8.86	10	8.0	10
Oxytocin	8.63	10	7.86	10

No neonate in both groups had poor Apgar score at birth.

The mean weight of the neonates was 2.68 kgs and 2.90 kgs in nullipara treaed with PGE2 and IV oxytocin respectively.
The mean weight of the neonates was 2.89 and 2.78 kgs in multipara treated with PGE2 and oxytocin respectively, as shown in Table.

Table 4: Mean weight of the neonates

Study group	Nullipara			Multipara		
	Mean	±	S.D	Mean	±	S.D
PGE2	2.68	±	0.76	2.89	±	0.25
Oxytocin	2.90	±	0.37	2.98	±	0.31

One of the 4.43 patients induced with PGE2 developed jaundice (2.32%) and 5 neonates of the 45 (11.11%) born to patients treated with oxsytocin developed neonatal jaundice. No neonates in both the groups had any other side effects.
17patients were induced with oral PGE2 and 15 patients with I.V. oxytocin in this group with a Bishop's score ≤ 5.

Characteristics of patients for induction

The mean age of the patients is 26.81 and 24.66 years in the PGE2 amd oxytocin treated groups respectively.
7 of 13 mullipara and 2 of 4 multipara were successfully induced with oral PGE2 and 6 out of 10 nullipara and 3 out of 5 multipara had successful induction treated with I.V. Oxytocin as shown in Table.

Discussion

In the present study 6 of 43 (13.91%) and 6 of 45 (13.33%) had fetal distress in PGE2 and oxytocin group with Bishop's score >6. 3 patients of 17 (17.64) and 4 of 15 (26.68%) with Bishop Score <5 had fetal distress.
Fetal disress appears to be more common in women induced with IV oxytocin, these results were comparable with Kalia *et al*. with 3.33% in PGE2 and 15% in oxytocin group, Hingorani *et al*. with 5.5% in PGE2 and 8.7% in IV oxytocin group. N.J. Secher *et al*. Katarina Bremme *et al*.

ISSN 2515-8260 Volume 09, Issue 04, 2022

M.G. Elder *et al*. found no significant difference in fetal distress.

The incidence of hypertonic uterine action in the present study is 1 of 43 (2.32%) in PGE2 group, no patients in oxytocin group had hypertonic uterine action. Hingorani *et al*. 1988 reported incidence of hypertonic uterine action in 3.5% and 3.6% of patients induced with oral PGE2 and IV oxytocin respectively [5].

The higher incidence of gastrointestinal side effects is an undesirable feasture of using oral PGE2 for induction. The incidence of vomiting in patients treated with oral PGE2 is 11.22% amd incidence of diarrhoea is 4.65% with Bishop's score >6 and 23.5% and 17.6% of vomitings and doarrhoea respectively in PGE2 group with Bishop's score <5.

13.3% with Bishop's score >6 had vomiting and 6.6% and 2% had Vomiting and diarrhoea respectively with Bishop's score < 5 when induced with IV oxytocin.

The incidence was similar to Hingorani *et al*. with 7.2% with PGE2 and 0.2% with IV oxytocin group, Miller *et al*. with 11.6% induced with PGE2 and 3.9% IV oxytocin group. N.J. Secher *et al*. 8% receiving PGE2 and 2% in oxytocin group [6].

The incidence of postpartum haemorrhage in present study is 4.65% for the prostaglandin treated group and 13.33% for oxytocin group. These patients required no treatment, the higher incidence of post-partum hemorrhage in the oxytocin treated group compared with oral PGE2 as also been observed by Katarina Bremme *et al*. 1981 who reported an incidence of 13.5% in patients induced with IV oxytocin.

The mean apgar score at 1 minute were 8.86 and 8.0 in the PGE2 and oxytocin treated groups and apgar score at 5 minute was 10 in both the groups in the present study.

Neonatal jaundice was found in 1 of 45 (2.32%) and 5/45 (11.11%) of babies born to patients induced with PGE2 and oxytocin respectively as observed by S.W. D' Souza [7, 8].

Conclusion

- 62% and 4.65% patients developed vomiting in PGE2 and oxytocin group respectively.
- Hypertonic uterine action was observed in 2.32% with PGE2 with no cases in oxytocin group.
- Post-partum haemorrhage was observed in 4.65% and 13.33% of cases induced with PGE2 and oxytocin respectivey.
- The mean Apgar score at 1 minute in nullipara was 8.86 and 8.63 and in multipara 8.0 and 7.54 in the PGE2 and oxytocin groups respectively.

References

1. Secher NJ, Lange P, Hassing F, Nielsen G, Thomsen Pedersen, Westergaard JG: A randomized study of Prostaglandin E2 tablets and intravenous oxytocin. Acta obstet. Gynaecol. Scand. 1981;60(3):237-241.
2. Omigbodm, Akindel, Osotimenin: Effect of saline and glucose infusions of oxytocin, Int. J. Gynaecol Obstet. 1993;40:235-239.
3. Prostaglandin and reproduction by Karim - Advances in prostaglandin research – S.M. Karim. Progress in obstetrics and Gynaecology. Methods of induction of labour Study, 3.
4. Recent advances in obstetrics and Gynaecology: Cervical ripening and induction of labour, 17.
5. Robert D. Vissher, Curtis D Struyk and Harrison C. Visscher: guidelines for elective induction of labour with oral prostaglandin E2: Obstetrics and Gynaecology. 1977 Jan, 49(1).
6. SW. D'Souza, Patricia Black, T. Mazfarlane and B. Richards: The effect of oxytocin in induced labour and neonatal jaundice. Brit. J. of obstet and Gynaecol. 1979 Feb;86:133-138.
7. Usha R Krishan, Ajitha Mandlekar Milind Vaze, Anjali Kulkarni: Oral prostaglandin in induction of labour. Indian J. Obstet. And Gynaecol, 1989, 370-372.

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