

FETAL OUTCOME FOLLOWING INDUCTION AND AUGMENTATION OF LABOUR BY OXYTOCIC AGENTS

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SUMMARY

Fortyone patients of high risk and complicated pregnancies were induced with intravenous oxytocin and nine patients with buccal oxytocin, combined with amniotomy. The mean induction delivery interval as well as the incidence of caesarean section was higher in patients with a low Bishop score and vice versa. Fetal outcome was good with a very low incidence of neonatal jaundice. There were no perinatal deaths.

INTRODUCTION:

Intervention in pregnancy is indicated when the fetus may face dangers within the uterus to an extent that they outweigh the dangers it would face if delivered. The frequency with which induction of labour is employed has undergone wide changes in the last few years due to increased understanding of the physiology of labour and condition of the fetus in utero, and improved methodology for altering uterine contractility and for fetal monitoring.

The objectives of induction of labour are to reproduce spontaneous labour as closely as possible without subjecting the mother or fetus to undue risks. Therefore both maternal and fetal

hazards must be assessed before inducing labour. Synthetic oxytocin has been used successfully for induction, since several years, with very few side effects.

MATERIAL & METHODS:

Fifty cases were selected in the department of obstetrics & gynaecology at Jaslok Hospital, out of a total of 300 deliveries conducted from January 1982 to July 1985. In 36 cases, labour was induced while in the rest 14 cases augmentation of labour was carried out by means of pitocin used intravenously or by the buccal route. In most of the cases it was preceded by stripping of the membranes. If the membranes had not ruptured spontaneously, amniotomy was performed when labour was well established, except in cases of intrauterine death.

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The cases selected were of high risk and complicated pregnancies. These patients were screened by non-stress tests, ultrasonography and serial HPL levels where required. The pelvic score was determined prior to induction by Bishop's method (Bishop 1964).

In 41 cases, pitocin was given intravenously in 500ml of 5% dextrose solution in an initial dose of 2.66 ml/min. With quarterly increments to a maximum of 52.5 mU/min. until regular contractions were established. Buccal pitocin was given in 9 cases starting with half of a 200 unit tablet and thereafter increasing hourly with 1 tablet until a maximum of 8 tablets. In all the cases, 15 minute recordings of uterine activity & fetal heart rate were made. The baby's condition at birth was noted including the Apgar score at 1 and 5 minutes and serum bilirubin estimation.

OBSERVATIONS:

Majority of the patients selected for induc-

tion with pitocin were primigravidae (32 cases), 13 were second gravidae and the rest were third gravidae and more (vide table-I). Fourteen out of 50 patients were already in early labour but required augmentation of labour. The rest of the indications are elaborated in table-II, the most common being pregnancy induced hypertension and postmaturity. The induction delivery intervals varied from 3 hours to 18 hours. 39 cases were between 37-40 weeks and had a mean IDI of 10.83 hours, those between 33-36 weeks of 8.33 hours and those above 41 weeks of 7.70 hours (vide table-III). The initial Bishop score was directly related to the induction delivery interval, and the response to induction was good when the score was above 9, the mean IDI being 8 hours. There were 5 cases with the score less than 4 and mean IDI of 12.13 hours and those with a score between 5 to 8 and a mean IDI of 9.48 hours (Table-IV).

Forty out of 50 cases progressed to vaginal delivery, out of which 8 cases needed assisted

TABLE - I

Distribution of cases according to parity

Parity	Number of cases
Primigravida	32
Second Gravida	13
Third Gravida & above	5

TABLE - III

Indications for induction

S. No.	Indication	Number of cases
01.	Augmentation of labour	14
02.	Pregnancy induced hypertension	10
03.	Postmaturity	10
04.	Essential Hypertension	4
05.	Premature Rupture of Membranes	4
06.	Bad Obstetric History	2
07.	Intra-Uterine death	2
08.	Poor Weight Gain	2
09.	Intra-Uterine growth Retardation	1
10.	Gestational Diabetes	1

delivery in the form of forceps or vacuum extraction. Ten patients required caesarean section, 2 of these had a Bishop score of less than 4 at the time of induction. Majority of the patients had caesarean section due to slow progress of labour, unsatisfactory dilatation of the cervix or foetal distress. None of the cases given buctocin required caesarean section (vide tables VI, V).

The fetal outcome in our cases of induction was similar to that of spontaneous labours. Apgar score of less than 7 was seen in 4 cases 2 of these requiring active resuscitation at birth. Four babies had jaundice (vide table-VII), but this was comparable to physiological jaundice and only one case needed exchange transfusion. There were no perinatal deaths following induction.

DISCUSSION:

Patients with a high inducibility score can

generally have labour induced whatever method is used, but it has been seen that oxytocin is the most effective. In a study Naismith et al (1973) observed that of 20 cases who underwent induction with oxytocin, 19 had vaginal delivery with a mean induction delivery interval of 10.8 hours.

The pre-induction Bishop score (Bishop 1964) indicates the likelihood of success of induction. In a collaborative study by Hendricks et al (1979), failures of attempted induction exceeded 20% among patients with a very low Bishop score, whereas a score of 8 was associated with only 3% failures and almost no failures where the score was 10 or more. In a study of 125 primigravidae, Calder and Embrey (1975) showed that with a low cervical score (0-3), the mean induction delivery interval was high (14.9 hours) and the incidence of caesarean section was 32% whereas with a score of 8-11, the mean IDI was 6.4 hours and the incidence of caesarean section

TABLE - III

Relation of duration of pregnancy to induction delivery interval

Weeks of pregnancy	No. of cases	Mean I. -D-I in hours
33-36	4	8.33
37-40	39	10.83
41 and above	7	7.70

TABLE IV

Relation of Bishop score to induction delivery Interval

Bishop score	No. of cases	Mean I. -D-I in hours
0-4	5	12.30
5-8	27	9.48
9 and above	18	8.00

TABLE - V

Obstetric Outcome

Weeks of pregnancy	No. of cases	Mean I. -D-I in hours
Vaginal delivery	32	64
Forceps/Vacuum extraction	8	16
Caesarean section	10	20

TABLE - VI

Outcome of Labour according to Bishop score and route of administration of oxytocin

Bishop score	Pitocin	No. of cases	Vaginal delivery	Forceps/ Vacuum	Caesarean
0 - 4	I/V	4	1	1	2
	Buccal	1	1	0	0
5 - 8	I/V	22	13	5	4
	Buccal	5	4	1	0
9 & above	I/V	15	10	1	4
	Buccal	3	3	0	0

TABLE - VII

Fetal Outcome

Subgroup	Number of cases
Apgar score less than 7	4
more than 7	36
Birth weight less than 2.5 kg	6
more than 2.5 kg	44
Hyperbilirubinaemia present	4
Nil	46

was 0%. All the above findings were consistent with our observations where the induction delivery interval was directly related to the pre-induction score, being 12.30 hours with a score of 0-4, the incidence of caesarean section being 40%, whereas with a score above 9 the mean IDI was only 8 hours (Table IV & VI).

For optimal reliability in inducing labour, intravenous oxytocin must be combined with amniotomy (Clader and Embrey, 1975) the appropriate dose for each patient may best be found by titrating oxytocin against uterine response (Anderson and Turnbull, 1969). We have followed this in our study. Our observations are also consistent with Brown et al (1973) who used I/V oxytocin in the dose of 2.8 mU/min. with quarterly increments to a maximum of 49 mU/min. combined with amniotomy. Buccal pitocin has few devotees because of poor control of absorption and the problem of withdrawing the stimulus in the event of uterine hypertonus (Calder and Embrey 1975). In one series only 67% of cases of induction with buccal oxytocin were successful. This was not in agreement with our

study in which all the 9 cases given buccal were successful and had normal vaginal delivery. The fetal outcome was comparable to those of spontaneous labours, with only 4 cases with an Apgar score of less than 7. There were no side-effects apart from hyper-bilirubinaemia which was severe only in one case. These findings were in agreement with Calder and Embrey (1975) who stated that the side-effects of oxytocin are rare except for a possible increased incidence of neonatal jaundice.

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