

## INDUCTION OF LABOUR AND PERINATAL OUTCOME — CHANGING TRENDS

By

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### SUMMARY

Induction of labour has become an integral part of the management of high-risk pregnancy. However, safety of this procedure is still debatable. 340 consecutive cases of induction in 2 study periods 5 yrs apart (1981-82 & 1987-88) were evaluated for changing trends of perinatal outcome in induced high risk cases. Hypertensive disorders of pregnancy and post dated pregnancy together were responsible for 56.2% and 58.48% induction cases in Study group A and B. Significantly higher percentage of cases had induction for PROM in group B.

No obvious change occurred with regard to age, period of gestation, parity and birth weight. Preterm birth increased along with increased PNMR in group B (more inductions for PIH and PROM). There was a trend for increased caesarean section and lower forceps rate.

Intranatal complications such as fetal distress and MSAF were similar in both groups. Prominent neonatal complications were birth asphyxia, hyperbilirubinemia, and respiratory distress. Septicemia was increased fourfold, due to increased inductions for PROM. Respiratory distress showed overall declining trend, while NNMR showed a rising one, with major determinants continuing to be low birth weight (85.7%), prematurity (57.14%) and birth asphyxia (71.42%).

### *Introduction*

Introduction of labour has become an integral part of the management of high risk pregnancy, and is aimed at achieving a continuing decrease in both maternal and perinatal morbidity and mortality.

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However, the safety of this procedure is still controversial; no systematic scientific study has been able to demonstrate the overall safety of oxytocin, the most commonly used pharmacologic agent to enhance or induce labour in our country.

There are hardly any prospective Indian series with regard to oxytocin induction and its effect on perinatal out-

come. This study has been undertaken on 340 consecutive induced cases in two studies spanning 5 year period in order to evaluate the changing trends of perinatal outcome in induced high risk cases.

### Material and methods

This study consists of 340 consecutive cases of induction with singleton pregnancy at the LHMC and associated Hospitals during the two study periods chosen at an interval of 5 years — study group A spanned the period from 1st Dec. 1981 to 31st March 1982 (Jain et al 1984) and study group B consisted of those women who were induced between 1st Dec. 1987 and 31st Jan. 1988.

Comprehensive data regarding maternal age, parity, antenatal high risk factors, indication of induction, mode of delivery, gestational age were recorded on a prestructured pretested proforma. The method of induction in 90% cases was combined medical surgical i.e dilute oxytocin drip infusion with delayed amniotomy (either with engagement of the fetal head or at 3-4 cm dilatation of the cervix). Pain was relieved by intramuscular Pethidine and Phenergan. All patients had close clinical monitoring in labour of uterine contractions, fetal heart rate, maternal pulse rate, respiration and blood pressure. Progress of labour was assessed by noting the strength of uterine contractions, descent of the presenting part and dilation of the cervix. Apgar scores at 1 min and 5 min were recorded as a measure of fetal well being. The neonates were then followed in postnatal wards and neonatal nursery till discharge or death in the hospital.

Students test and Chi square test were used for statistical analysis of the data. The level of significance was set to  $p < 0.05$ .

### Results

169 consecutive cases in study group A and 171 consecutive cases in study group B were analysed for this presentation. The indication for induction in both these groups is shown in Table I. The overall incidence of induction of labour was 8.5% in Group A which marginally increased to 9.6% in Group B.

TABLE - I  
INDICATION FOR INDUCTION

	Group n=169 (%)	Group n=171 (%)
Hypertensive disorders of pregnancy	33.72	31.58
Postdatism	22.48	26.9
IUGR	10.65	5.26
BOH	11.24	1.17
APH	5.32	2.34
PROM	11.24	26.9
Non reactive NST	1.77	1.17
Others	4.14	4.09

Table II compares the profile of cases in the two study groups. No obvious change occurred with regard to age, parity, period of gestation and birth weight. Perinatal mortality in the first study was 29.58/1000 births and there was a 50% increase in the second study to 40.93/1000 births. There was also an almost three - fold increase in the induction of preterm labour, from 4.14% in group A to 11.11% in group B.



TABLE II  
MATERNAL FACTORS AND  
PERINATAL OUTCOME

	Group A n=169	Group B n=171
Primigravida	49.7%	50.88%
BOH	34.91%	14.61%
Age	24.27±3.84 yrs	23.30 ±3.30 yrs
Period of gestation	39.28 ±1.89 wks	39.11±2.05 wks
Preterm birth	4.14%	11.11%
Birth weight	2.82 ± .5 kg	2.71 ± .53 kg
Still birth	2	-
Neonatal death	3	7
PNMR	29.58	40.93

Table III compares the intranatal and neonatal complications in the two study groups. The proportion of babies with low Apgar score increased in the study group B to 7.6% from 4.73% in group A. More alarming was the nearly four fold increase in the incidence of neonatal septicemia in group B over 1.18% in group A to 4.68% in group B. Fortunately, there was an overall decrease in respiratory distress esp. due to aspiration pneumonia/meconium aspiration syndrome and transient tachypnoea of the newborn.

An analysis of the mode of delivery is shown in Table IV. Vaginal delivery rate increased marginally in study group B, but the incidence of Caesarean section showed a two fold increase, while that of forceps extraction and assisted breech delivery showed an almost three fold decrease in the latter study group.

### Discussion

As the absolute safety of induction of labour has not been proved, the obstetrician is left to make a personal decision, which results in rather extreme swings in

TABLE III  
INTRANATAL AND NEONATAL  
COMPLICATIONS

	Group A n= 169 (%)	Group B n=171 (%)
Fetal distress	8.87	11.11
Meconium stained amniotic fluid	13.60	8.28
Birth asphyxia	4.73	7.60
Hypoxic ischemic encephalopathy		2.92
Hyperbilirubinemia	10.06	12.28
Septicemia	1.18	4.68
Respiratory distress	13.01	7.60

TABLE IV  
MODE OF DELIVERY

	Group A n=169 (%)	Group B n=171 (%)
Vaginal delivery	69.23	75.42
Forceps	18.93	7.62
Caesarean section	7.69	15.21
Assisted breech delivery	4.14	1.75

the frequency of induction. The overall rate of induction in this study period was 8.5% in group A which increased marginally to 9.6% in study group B. Hypertensive disorders of pregnancy and post-dated pregnancy were responsible for 56.2% and 58.4% of infections in study group A and B respectively (p. 0.05). Significantly higher percentage of cases had induction for premature rupture of membranes during later study period due to adoption of aggressive management policy because of known association of intrauterine infection with length of PROM.

On comparing the profile of cases studied, no obvious change occurred with

regard to age, parity, period of gestation and birth weight between the two study groups. However, appreciable decline was noted in cases of bad obstetric history requiring induction over the 5 years, which is a healthy trend.

It is pertinent to note that in study group B significantly increased number of preterm cases were induced for pregnancy induced hypertension and PROM, and this increase in preterm birth is reflected in the expected higher incidence of perinatal mortality.

Data has drawn attention to the fact that there is more liberal use of abdominal delivery over the years, with the simultaneous decline in forceps delivery, in these high risk induced cases (Table IV).

On comparing the intranatal and neonatal complications, no significant difference was observed in incidence of fetal distress and meconium staining of amniotic fluid over the years. Production of babies with low Apgar score however, increased in study group B. Attention has recently been drawn to nonasphyxial risks to the fetus i.e hypoxic ischemic encephalopathy (neonatal cerebral irritability) which was noted only in the second study group. The fourfold increase in neonatal septicemia was quite alarming, probably being related to increased cases of PROM being induced in study group B.

No difference was noted in the incidence of hyperbilirubinemia in the two groups.

The overall decrease in problems of respiratory distress is a healthy trend, reflecting our improved policy of I/V fluids used in induction cases and routine careful suction of the mouth soon after delivery of the head (Table III).

There was no intranatal still birth in study group B, possibly due to careful selection of cases for induction and better intrapartum fetal monitoring. The 2 cases of intrapartum death in study group A were due to cord prolapse and eclampsia (1 each).

Unfortunately, the neonatal mortality rate showed a rising trend in study group B, possibly related to increase in preterm induction and PROM cases. However, the major determinants of neonatal death continued to be low birth weight (85.7%), prematurity (57.14%) and birth asphyxia (Table II).

Reduction in frequency of intrauterine infection is possible by more active management of labour aiming to deliver all women within 12 hours of premature rupture of membranes. Also, all high risk patients requiring preterm induction need close clinical fetal monitoring in labour and excellent neonatal back-up with level III care.

#### References

- Jan S, Kumari S, Shendunekar N, Pruthi P, Rai C, Arany S, Chandra S. *IND. Pediatrics*: 1984, 21: 885.