Induction, Stimulation, and Augmentation of Labour

S. N. Daftary
Dept. of Obstetrics & Gynaecology, Nowrosjee Wadia Maternity Hospital, Mumbai.

Introduction:

Since the early 1950's when oxytocin was synthesized, Induction of labour has become increasingly popular, and accepted as an option in the management of selected cases of high risk pregnancies in which the continuation of pregancy is likely to affect adversely the maternal health, or the perinatal outcome.

Selection of cases

Patients selected for induction of labour should satisfy the following criteria.

1. The patient should be explained about the need for labour has become increasingly popular, and accepted as an option in the management of selected cases of high risk pregnancies in which the continuation of pregnancy is likely to affect adversely the maternal health, or the perinatal outcome.

2. The period of gestation, and the estimated foetal maturity confirmed on the basis of menstrual data, ultrasonography, and amniotic fluid analysis for L/S ratio if necessary.

3. The indication for induction verified, and it's timing be acceptable to the prevailing opinion and facilities available at the institution at that time.

4. The opinion of the perinatologist / neonatologist / physician obtained for concurrance.

5. The favourability of the cervix assessed on the basis of the BISHOP SCORE.

6. Rule out possible contraindications.

Methods of Labour Induction:

The methods of labour induction in common clinical practice include

1. Artificial rupture of the membranes or amniotomy (A.R.M.)
2. A.R.M. + Oxytocin Infusion
3. Prostaglandins.

Indications for Induction of labour : The need for induction of labour is felt in 5-8% of pregnant women. The common indication include:

Antepartum haemorrhage beyond 36 weeks of gestation which is not getting controlled, or causing foetal com promise

- Pregnancy induced hypertension with placental insufficiency, or not responding to medical measures.
- Diabetes mellitus.
- Premature rupture of the membranes.
- Hydramnios causing maternal distress.
- Renal insufficiency
- Infection worsened by pregnancy - pylonephritis, diverticulitis.
- Postdatism
- Placental insufficiency
- Rh-Isoimmunisation.
- Previous history of rapid labour.
- Patient / Physician convenience.

Contraindictions: These may be absolute or relative

- Cephalopelvic disproportion.
- Abnormal foetal presentation / Lye.
- Previously scarred uterus - Cesarean section myomectomy / hysterotomy / perforation following

previous MTP.

- Grand Multiparity
- Unripe unfavourable cervix

Selection of the method of Induction:

- A.R.M. is selected for multiparous patients having a favourable cervix (Bishop Score > 6). An abdominal examination is performed to confirm the foetal presentation and lye, a vaginal examination is performed, if the head is dipping into the pelvis, and there is no clinical evidence of any cephalo-pelvic disproportion, then the memberanes are ruptured with a Kocher's forceps or any other suitable instrument. If the liquor shows presence of meconium, the patient's condition should be reassessed, otherwise await natural events to follow. Closely monitor maternal and foetal parameters for well-being and progress of labour. Document all events on the partogram as soon as the patient gets into active labour.

- A.R.M. + Oxytocin Infusion: Following thirty minutes of observation after the A.R.M. and after confirming the maternal and foetal parameters of well-being as satisfactory, an oxytocin drip is set up in 5% dextrose saline.

Table 1:
Oxytocin infusion showing relationship between drops/min. and milliunits

Drops/min. Oxytocin	5 units / L. Milliunits / min	2.5 units/L. Milliunits
10	2.5	1.25
20	5.0	2.50
30	7.5	3.75
40	10.0	4.90
50	12.5	6.15
60	14.5	7.40

Escalation of the initial dose should be done at 15 minute intervals until the optimum response of 4 sustained contractions / 10 minutes is achieved. Usually an oxytocin concentration of 12 milliunits / min. is adequate.

The patients vital parameters, and the fetal heart rate are monitored closely.

Table 2.
Indian experience with oxytocin for labour induction.

No. of studies surveyed	6
No. of Indian cities covered	6
Average Incidence of Caesarean Section	72.8%
Average Duration of Ind-Delivery Interval in Hours In Primigravidae	16.2 Hrs.
In Multiparae.	9.6 Hrs.
Average incidence of low APGAR Scores <8	12.4%
Perinatal deaths	52/1000
Matermal Deaths	Nil

- **Prostaglandins for induction of labour:**
  Prostaglandins are available as oral tablets of 0.5 mg, or as gel for intracervical instillation as 0.5 mg presterilised syringes.

PG E2 is normally reserved for circumstances where labour induction is indicated, but the cervix is unfavourable (Bishop Score <5). The tablets are useful for labour augmentation thereafter.

The patient is placed in lithotomy, a lubricated speculum introduced, and the cervix is exposed. The PG E2 gel is introduced into the cervical canal with the help of the presterilised cannula supplied with the syringe so as to instill the gel into the cervical canal below the level of the internal os. The woman is kept in head low position for about ½ hour. The foetal heart sounds and the maternal uterine contraction are monitored periodically for the next 6 hours. After 6 hours, a vaginal examination is performed to asses the Bishop score. If the score does not exceed 6, a second instillation should be considered. If the cervix is ripe and the Bishop score >6, perform an amniotomy and later augument labour with oral PG tablet / oxytocin drip as per the attending obstetricians choice.

Effectiveness of PG E2 gel for cervical ripening is shown in table 2.

Table 3:

A summary of the Indian Experience of The effect of cerviprime gel / Primiprost on Bishop scores

Authors	Year	Patient Number	Bishop score Before	After
Shah M.H. et al	1991	27	3.0	7.0
Bhide A.G. et al	1993	34	2.8	8.5
Patki A.S. et al	1993	40	2.6	5.0

Outcome in Prostaglandin and Oxytocin usage

	Prostaglandin	Oxytocin
No. of Indian cities covered	12	6
Average Incidence of Vaginal Deliveries	86.6%	72.8%
Average Caesarean Sections	13.4%	27.2%
Average Duration of Ind.-Deliv. Interval in Hours		
Primigravidae	10.8% Hrs.	16.2 Hrs.
Multiparae	7.6 Hrs.	9.6 Hrs.
Average incidence of low APGAR scores<8	5.2%	12.4%
Perinatal Deaths	26/1000	52/1000
Maternal Deaths	Nil	Nil

Conclusion:

A broad review of the experience of obstetricians from all parts of the country shows that in obstetric practice about 3-7% of patients need induction of labour. The consensus of opinion is that the use of prostaglandins provide an effective method for achieving the objective. When compared to the use of the oxytocin induction of labour, the results of labour outcome convincingly prove that in patients treated with prostaglandins, labours are shorter, the incidence of caesarean sections is reduced and the foetal outcome in terms of APGAR scores and perinatal outcome is superior. (Table 3.)

Prostaglandins have conclusively established their place in obstetric practice, assuring the obstetric fraternity of a method of labour induction well worth adopting in clinical practice.

References:

1. Bhide A.G., Daftary S.N: J. Obstet & Gynaec India 43: 729, 1993.
2. Patki A.S., Mane S., Ganla K., Desai S: J. Obst & Gyn India 43: 728, 1993.
3. Shah M.H., Mandlekar A., Krishna U: J. Obst Gyn India 41: 324, 1991.

Preterm Labour

M . Y. Raval, Mumbai

Preterm birth remains the most important problem in perinatal medicine. Preterm labour is a medical, social & economic problem despite considerable advances in obstetric care and continues to be a major cause of perinatal mortality morbidity neonatal deaths, brain damage, respiratory distress, intrauterine & neonatal infections, hypothermia, and neuro-developmental handicap. Long term psychological effects are also possible, liver immaturity, hypoxia and acidemia may complicate.

The incidence varies between 5% (Turnbull), 6.7% (Singapore) and 10-43% in developed countries.

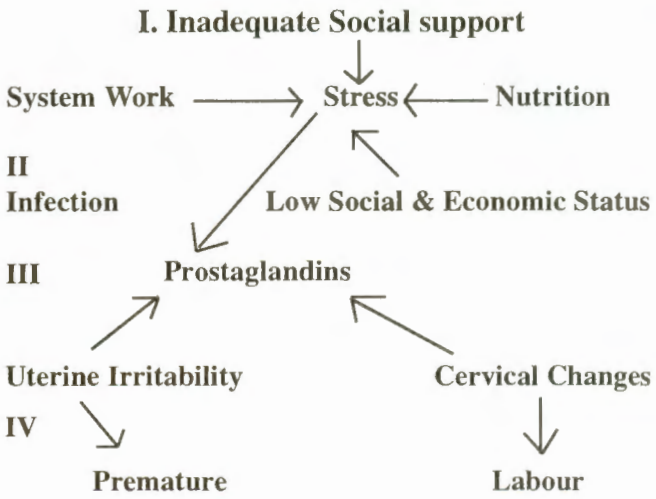
Preterm birth is defined as birth occuring between 21-37 weeks or before the 37th week after the start of the last normal menstrual period that is up to 36 weeks & six days or 259 days. The period of first 20 weeks be excluded.

Defining prematurity by birth weight under 2500 gms leads to a mix-up of the various reasons for a lower birth weight, such as prematurity or retarded foetal growth or both.

Height at birth averages about 50 cms. It varies widely, hence it is not suitable for routine use.

Ht., Wt. & duration of pregnancy are major factors in determining the outcome of pregnancy.

Tamby Raja R. L. proposed the following composite model of aetiological factors & sequence of preterm labour.



Aetiology of Premature Labour

Preterm labour is commoner in women with poor physical build and short stature, a pre-pregnancy weight of less than 45 kgs and a height of less than 145 cms, who have suffered socio-economic deprivation from their infancy, have had little or no education, many are heavy manual labourers, primi-gravida or grand multipara, with poor reproductive performance, maternal anaemia, malnourishment, ill-health, hypoproteinemia, tuberculosis, cardiac or renal disease, hypertension, chronic asthma, epilepsy, hypothyroidism, tobacco chewing or smokers and drug addicts have increased incidence of preterm labour. Patients with genital malformation, intrauterine infection, cervical incompetence, APH, premature rupture of membranes, multifetal pregnancy, polyhydramnios, asymptomatic bacteriuria, induced ovulation, & past history of preterm labour predispose to preterm labour. Primigravida account for 40% of preterm labour.

Diagnosis of progressive preterm labour

1. Warning signs include menstruation like cramps in lower abdomen, low backache, feeling of heaviness or pressure in vagina, mucoid discharge, TVS may be useful.

2 Diagnostic criteria for PTL include the following :-

Gestation size	21-37 weeks
Contractions	4 in 20 minutes or 8 in 60 minutes.

and Membranes intact with cervical changes, or Membranes ruptured and there are cervical changes, cervical dilatation with or without effacement, show or bleeding.

Thus, Preterm Labour (PTL) is re-defined as the initiation of regular painful contractions that occur usually with increasing frequency and intensity associated with progressive cervical changes of effacement & dilatation culminating (unless inhibited) in the delivery of a preterm infant (WHO, 1969, Anderson et al 1977).

Management of Preterm Labour

Prevention is best, but not always possible due to varied aetiology. However, there is substantial evidence that proper intervention can postpone labour for days or even weeks & improve the neonatal outcome. These interventions include

1. Transfer of mother to a centre with maternal & neonatal intensive care facility in-Utero Transfer,
2. Giving glucocorticoids to the mother to reduce respiratory distress & neurological morbidity.
3. Time is needed to arrange for a senior obstetrician to perform the delivery and for a neonatologist to be present,
4. To exclude and treat several conditions where continuation of pregnancy could be potentially hazardous e.g. severe pre eclampsia, eclampsia, APH, cardiac disease of mother, or chorio-amnionitis (moderate / severe).

Early and accurate diagnosis of PTL is crucial to the management of this condition.

Bed rest, hydration & sedatives have been tried as a non-specific treatment with varying results.

In a developing country like ours, without adequate neonatal services, vaginal delivery may be optimal for mother & baby in most instances.

"At Risk Approach" is fully justified. It must include

1. Maternal biodata & Socio-economic status,
2. Detailed reproductive history, and
3. Pregnancy complications.

Survival Rate of PTL	Weeks Pregnancy	Percentage
	28	72
	26	56
	24	33
Cerebral Palsy rate	25-30	15.3%
	31-34	6.1%
	34 + weeks	2.1%