

Induction of Labour at Usmanu Danfodiyo University Teaching Hospital, Sokoto

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Abstract

Context: Induction of labour is always a therapeutic challenge in obstetrics.

Objective: The aim of this study is to determine the incidence, indications and outcome of induction of labour in our obstetric unit.

Study Design and Setting: Descriptive study involving 205 patients admitted for induction of labour between January 1995 and December 2000.

Results: There were 6,931 deliveries within the period and 205 cases of induction of labour, giving an incidence of 3%. Hypertensive disease in pregnancy, prolonged pregnancy, and intra-uterine fetal deaths accounted for over 85% of cases of induction of labour in the unit. Induction of labour with successful vaginal delivery was achieved in 168 patients (82%). While 70 out of the 72 patients (97%) that had spontaneous uterine contractions following cervical ripening with Foley's catheter had successful vaginal delivery, only 96 of 133 patients (72%) that had uterine contractions initiated with Syntocinon drip after cervical ripening had vaginal delivery. Induction of labour was also more likely to be successful in cases of intra-uterine fetal death (95%). There was no maternal mortality in the series.

Conclusion: Induction of labour accounted for only 3% of our deliveries. Hypertensive disease in pregnancy and post term pregnancy were the most common indications. Chances of vaginal delivery were higher in the group that had spontaneous uterine contractions following cervical ripening than those that had uterine contractions initiated with Syntocinon. Vaginal delivery was also more likely when the indication for induction of labour was intra-uterine fetal demise.

Key Words: Labour Induction, Cervix Ripening, Delivery Outcome. [*Trop J Obstet Gynaecol, 2002, 19: 74-77*]

Introduction

Induction of labour means stimulation of uterine contractions before the spontaneous onset of labour for the purpose of achieving a vaginal delivery with or without ruptured fetal membranes¹. Induction of labour remains one of the therapeutic challenges in obstetrics. Of the various methods available for effecting induction of labour, the synchronous use of forewater amniotomy and oxytocin titration provides the highest success rate with minimal risk to both mother and newborn^{2,3,4,5}. Reports on African populations warn of accidents and high failure rates due to factors like unsuspected cephalopelvic disproportion and grandmultiparity⁶. Some antepartum and intrapartum factors that influence the outcome of induced labour have been reported^{7,8,9}.

The Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto is a tertiary centre but accepts patients that come directly to the hospital for consultations and those referred from primary and secondary health centres. Occasionally, patronage may come from the neighbouring Niger Republic because of the highly subsidized services. The aim of this study is to document our experience with induction of labour in the obstetric unit and

highlight other antenatal factors that might affect the outcome of labour induction.

Subjects and Methods

The case records of all the 209 patients that were admitted for induction of labour between January 1995 and December 2000 were reviewed and analysed. The required details were present in 205 cases, which then constituted the core material for this work.

The method of induction in the unit is the synchronous amniotomy with Syntocinon infusion in the presence of a favourable cervix (Group A) except in cases of intra-uterine fetal death where amniotomy is avoided.

If cervix is unfavourable, that is a Bishop's score⁷ of less than 5, cervical ripening is effected by application of the balloon of the Foley's catheter extra-amniotically provided fetal membranes are intact with broad spectrum antibiotic cover. If spontaneous uterine contractions follow the procedure, patients are classified into Group B.

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Patients who had cervical ripening, followed by amniotomy and Syntocinon infusion were put in Group C. The Group D patients were those that already had rupture of membranes and were given Syntocinon infusion straight away.

The hospital protocol for Syntocinon administration is a gravity-fed intravenous infusion using 5% Dextrose-Saline at a concentration of 10mU/ml for primigravida and 5mU/ml for multipara. It is started at 10 drops per minute and titrated by increasing the rate by 10 drops every 30 minutes until adequate contractions are established (3 in 10 minutes) or a maximum rate of 60 drops per minute (equivalent of about 40mU/ml) is reached.

Results

During the study period, there were 6,931 deliveries and 205 cases of induction of labour, giving an incidence of 3.0%. The age of the patients ranged from 15 years to 46 years with some cases being estimates, since exact birth dates were not known. Gestational age ranged from 28 weeks to 43 weeks. Those patients that were not sure of dates had ultrasound estimation of gestational age. Patients with post-term gestations (42 weeks and above) constituted 31% of the cases. All intra-uterine fetal deaths were confirmed by ultrasonography.

Table 1
Parity and Outcome of Labour Induction

Parity	Number of Patients	Number of Vaginal Births	Success Rate (%)
0	46	36	77.8
1	42	30	71.5
2	24	21	85.7
3	28	22	78.5
4.	35	32	90.0
5 or more	30	28	94.1
Total	205	169	82.4

The overall success rate for the induction of labour was 82.4% (169 out of 205). The 54 patients who had favourable cervixes at initial assessment (Group A), simply had amniotomy and Syntocinon infusion with successful vaginal delivery in 40 patients (74% success).

In Group B, 72 patients had extra-amniotic cervical catheter passed with inflation of the balloon, so as to ripen the cervix but they subsequently had spontaneous uterine contractions without the need for Syntocinon infusion and vaginal delivery in 70 cases (97% success).

There were 55 patients in Group C. They had amniotomy and Syntocinon infusion after the cervix was ripened, with successful vaginal delivery in 42 patients (76.4% success).

The 24 patients in Group D already had premature rupture of membranes and were given Syntocinon infusion straight away to initiate uterine contractions with successful vaginal delivery in 17 cases (70.9% success rate).

Table 1 shows the relationship between parity and outcome of induction of labour. There was no definite pattern except for the slight increase in the success rate amongst the grandmultipara.

Table 2 shows the indications for the induction of labour and obstetric outcome. Hypertensive disease in pregnancy was the most common indication. The most common reason for failure of induction necessitating caesarean section was disproportion or malposition (18 cases; 49%), followed by fetal distress (12 patients; 27%). Postpartum haemorrhage was recorded in 4 patients while there was one uterine rupture. There was no maternal death in the series.

Table 2
Indications for Induction of Labour

Indication for Induction	Number of Patients	Number of Vaginal Births	Success Rate (%)
<i>Hypertensive Disease in Pregnancy</i>	76	63	82.9
<i>Post-Term Pregnancy</i>	64	51	79.7
<i>Intrauterine Fetal Death</i>	37	35	94.6
<i>Premature Rupture of Membranes</i>	24	17	70.0
<i>*Others</i>	4	3	75.0
Grand Total	205	169	82.4

**Others: Diabetes Mellitus, Liver Disease in Pregnancy*

Discussion

The rate of induction of labour in our unit is 3% of total deliveries. This figure is low compared to reports from most of the developed countries where up to 23% have been documented¹⁰. It is however comparable to the 3% and 5% reported from South Africa and Nigeria respectively^{6,9}.

The reasons previously advanced for the low figures reported from the developing countries include the silent fear that the failure of induction may necessitate a caesarean section, to which there is strong aversion. Most of our patients also argue and believe that the pain of Syntocinon infusion is more than that of spontaneous uterine contractions, hence, the aversion to induction of labour even when medically indicated. The cost and inconvenience of admissions as in-patients for whatever reason is also increasingly becoming an important factor. If the indication is for instance, post-term pregnancy, sweeping of the membranes¹¹ during an antenatal clinic visit to initiate spontaneous labour, is much more acceptable to the patient than the formal admission for induction of labour with Syntocinon infusion and amniotomy. However, patients whose labours follow sweeping of membranes are not traditionally included in the list of patients who have had induction of labour. Sweeping of membranes as a method of induction of labour is said to be the most inconsistently documented method^{12, 13}.

We are in agreement with the concept that a successful outcome should be a vaginal delivery and that caesarean section for any reason should be considered a failure of induction of labour. The overall success rate for induction of labour in our unit was 82%. However, Orhue and co-workers reported 90.4% from another teaching hospital in Nigeria⁹. The difference might be explained from the fact that while this report was unselective in terms of gestational age, Orhue and co-workers work was limited to only term pregnancies. We however found higher vaginal delivery rate (97%) in the group of patients who had spontaneous uterine contractions following cervical ripening (Group B) when compared with Group C that had uterine contractions initiated after the infusion of Syntocinon and amniotomy. Onset of spontaneous uterine contractions in the process of ripening the cervix might therefore be considered a predictive factor in induction of labour. The reason for this is not precisely known, even though it has been suggested that induction of labour is more likely to be successful if physiological mechanisms are replicated¹⁴.

Maternal age and parity as specific antepartum factors have been investigated by various groups of workers^{15,16,17,18,19}. In this study, it was difficult to reliably analyse age as a predictive factor because a

good number of patients did not know their birth dates and what we had were mainly estimates. We did not find any consistent pattern for parity as reported by some workers⁹.

Hypertensive disease in pregnancy was the most common indication for induction of labour, closely followed by post-term pregnancy. There were no social or non-medical indications for induction of labour in our centre. In some reports, especially from the industrialized nations, such could account for as much as 5-10%¹⁰.

The indication for the induction of labour could also be an antenatal predictive factor. In this study, only 78% of those with post-term pregnancy had successful vaginal delivery when compared to 94% of those with intra-uterine fetal death. It is however not surprising, for even though it is commonly believed that induction of labour is a commitment to delivery, it must be emphasized that not all patients on induction must deliver urgently. For instance, while those patients with post term pregnancy on induction might have fetal distress that would necessitate caesarean section (failed induction), those already with fetal demise before induction do not need such intervention. With intra-uterine fetal death, labour could continue barring any other complication until the fetus is expelled vaginally.

The principal reasons for failure of vaginal delivery in this group of patients were cephalopelvic disproportion/malposition and fetal distress. Caesarean section becomes the inevitable option under such circumstances. Herein lies the need for proper and adequate counselling before commencement of induction of labour, the aversion to surgery notwithstanding. The only case of uterine rupture was diagnosed following abnormal vaginal bleeding and she had prompt laparotomy. There was no maternal mortality in the series.

In conclusion, the induction of labour rate in our unit is 3%. Apart from the known antepartum factors that could predict the outcome of induction of labour, the indication for the induction of labour and the behaviour of the gravid uterus during the process of ripening the cervix might also be important predictive factors. Induction of labour remains a relatively safe procedure when properly conducted.

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