

COMPARISON BETWEEN ELECTVE LABOUR INDUCTION AND SPONTANEOUS ONSET OF LABOUR IN PROLONGED PREGNANCY

Zaineb T Alyasin*, Khilud Salim Al-Salami[@] & Halla Abd al abbas[#]

*Lecturer, Dept. of Gynaecology & Obstetrics, College of medicine, Basra, Iraq. [@]Lecturer, Dept. of Gynaecology & Obstetrics, College of medicine, Basra, Iraq. [#]Department of Gynaecology & Obstetrics Basrah maternity and child hospital.

Abstract

Prolonged pregnancy is the most frequent reason for induction of labour as obstetricians are concerned about the risk of prolonged pregnancy on both fetus and mothers. The study aimed to determine the effects and risks of labour induction on delivery outcome compared to spontaneous labour in pregnant women with prolonged pregnancy.

This is a prospective case control study done in Basra Maternity and Child Hospital between January 2007 and may 2008 included 200 pregnant women at 42 weeks of gestation who were compared to 200 age and parity matched pregnant women with spontaneous onset of labour at 42 weeks and information about management of labour, maternal and fetal risks and outcome were collected.

Our data revealed that the duration of first stage of labour, oxytocin use and rate of caesarean section were significantly increased in the induction group compared to the control group and that primigravidae with prolonged pregnancy who had induction of labour had increased rate of secondary interventions (caesarean section and vacuum extraction) compared to Primigravida in the control group. Babies delivered for mothers who had spontaneous onset of labour had significant lower APGAR score than those babies delivered for mothers who had their labour induced for prolonged pregnancy.

In conclusion, Induction of labour for prolonged pregnancy is safe procedure but Primigravidae should be informed for the increase risks of caesarian section and vacuum extraction.

Introduction

Prolong pregnancy is a cause of anxiety for both women and obstetrician as it is a common cause of increased risk to the fetus and mother¹. Pregnancies of 294 days duration (completed 42 weeks) or more are defined as prolonged, postdate or post term pregnancy. Prolonged pregnancy is associated with an increase in perinatal mortality and morbidity in pregnancies which appear to be otherwise low risk².

Overall incidence of Prolonged pregnancy is 4-14% with average incidence of 10% of all pregnancies¹.

The evidence of increased prenatal morbidity and mortality in prolonged

pregnancy compared with delivery at 39-40 weeks of gestation¹, lead to conclusion that some cases of prolonged pregnancy should be prevented by earlier delivery³.

Labour induction is one of the most frequent medical procedures in pregnant women with an incidence ranging from 5% to 30% of pregnancies⁴. It is a major intervention in the normal course of pregnancy, with the potential to set in motion a cascade of interventions, particularly caesarean section however, with modern methods of labour induction, this risk appears to have diminished⁵. However, the risk of an unfavorable

delivery outcome in these pregnancies is related to various factors, including the indications for induction, the cervical status and the methods used⁶.

Currently the most common reason for induction of labor is prolonged pregnancy⁷.

The aim of this study was to determine the delivery outcome of labor induction in a group of pregnant women, all of whom were scheduled for induction at a gestational age of 42 weeks and in whom the only complication was prolonged pregnancy. These women were compared with age and parity matched women who had spontaneous onset of labor at 42 weeks of gestation.

Patients and methods

This is a prospective case control study done at Basra Maternity & Child Hospital; between January 2007 to May 2008.

The study consist of 200 women with Labour induced electively in singleton pregnancies with vertex presentation at 42 weeks of gestation these women were referred to the hospital by their obstetrician or by an outpatient department as a case of prolonged pregnancy for labour induction.

Women with Fetus with congenital abnormality, diabetes, hypertension, prior cesarean delivery, premature rupture of membranes o and any other medical or obstetrical risk factor for delivery were excluded.

Gestational age was confirmed to be 42 week, if the stated last menses agreed with an ultrasound examination prior to 20 weeks. All these women had ultrasound done prior to induction to exclude severe oligohydramnios. and any signs of fetal distress or other causes that neecessate caesarean section. 200 age and parity matched women with the induced group who had spontaneous onset of Labour at or beyond 42 weeks were used as a

control group and were selected from the labour ward.

A control women were selected for each case woman by choosing the next woman admitted to Labour ward who match for age, parity and gestational age but with spontaneous onset of Labour.

Before induction of Labour all 200 cases underwent cervical examination with assessment of Bishop Score. All of them were not in labour at time of examination with Bishop Score of ≤ 4 .

Ripening of cervix was performed by using mechanical method in which Foley's catheter (no. 22 fr) introduced under aseptic technique into the cervix with or without extra amniotic saline, balloon is usually inflated with 50-60 cc of sterile normal saline, all patients were covered with broad spectrum antibiotics, fetal heart rate usually recorded before and after catheter insertion and continuous observation after that is done for fetal heart, vital signs and signs of labour every 1 hour. After the catheter is fallen out, pelvic examination is done to assess the cervical state and labour is further managed by amniotomy with or without oxytocin infusion. If the catheter remain for 24 hours with no cervical changes & no uterine contractions, oxytocin stimulation stared, if uterine contraction did not develop & labour did not start, failure of labour induction was diagnosed and caesarean section done.

Labour onset was defined as the onset of regular uterine contraction 3 per 10 minutes which increase in frequency, intensity and duration.

Duration of first and second stage of labour and information about management of labour together with post delivery complication and fetal outcome all these data were collected and statistically analyzed using P-value.

Results

During the study period the data of 400 women were available for analysis. Table I Show characteristics of the study participant, both cases and controls were match for age & parity.

Table II Show duration of labour, the mean length of first stage of labour was (7.5 hours versus 5 hours; P. value < 0.05), this was significantly different as the first stage of labour was longer in women with induced labour than women with spontaneous onset of labour, but the length of second stage of labour (1.25 hours versus 1.25 hours) was the same. Regarding labour managements, the need for oxytocin was significantly increased in the induced group compared with women with spontaneous onset of labour (134/200 versus 88/200), in the rest of women artificial rupture membrane alone was sufficient for starting labour as in table III.

Table IV, Show the mode of delivery, cesarean section was significantly higher in the induction group than in women with spontaneous onset of labour (63/200 (31 %) versus (23/200 (11 %). The incidence of vacuum

extraction was also significantly higher in the induction group (15/200 (8%) versus (4/200 (2%)).

Table V Show influence of parity on mode of delivery, cesarean section rate was significantly higher in primiparous women in both induction group and control group being (40/63 (63.5)) and (15/23(65.2) respectively together with vacuum extraction rate which was also significantly higher in Primiparous (11/15(73.3%),(3/4(75%) respectively.

Table VI Show number and percentage of women with the post partum blood loss, no significant difference found between the two groups regarding blood loss.

Table VII Show neonatal outcome; in the induced group 191 babies had normal APGAR score (>7) compared to 178 babies in the control group; 18 babies in the control group had an APGAR score < 7), in one minute compared to 8 babies in induced group. At 5 minutes an APGAR score <7) was found in 4 babies in control group compared to 1 baby in the induced group; all these data were statistically significant.

Table I: Patient characteristics.

	Induction group n=200	Control group n=200
1)parity: -Primiparous -multiparous	110 90	110 90
2)maternal age	25.5 (17-34) years	25.5 (16-35) years

Table II: Duration of labour in hours.

	Induction group n=200	Control group n=200	P value
Length of first stage of labour	(3-12)hours Mean=7.5 hours	(2-8) hours Mean=5 hours	<0.05 Significant
Length of second stage of labour	(1/4-2)hours Mean=1.25 hours	(1/4-2) hours Mean =1.25	Non significant

Table III: Management of labour.

Oxytocin stimulation	Induction group n=200	%	Control group n=200	%	P.value
yes	134	67	88	44	<0.01 highly significant
no	66	33	112	56	

Table IV: Mode of delivery.

Mode of delivery	Induction group n=200	%	Control group	%	P value
Spontaneous vaginal delivery	122	61%	173	86.5	<0.01 Significant
Cesarean section	63	31.5%	23	11.5	<0.01 Significant
Vacuum extraction	15	7.5%	4	2	<0.01 Significant
Total	200	100%	200	100%	

Table V: Influence of parity on mode of delivery

Mode of delivery	Induction group	%	Control group	%	P value
1-Cesarean section					
Multiparous	23	36.5	8	34.8	<0.05 significant
Primiparous	40	63.5	15	65.2	<0.05 significant
Total	63	100%	23	100%	
2-Vacuum extraction					
Multiparous	4	26.7	1	25	<0.05 significant
Primiparous	11	73.3	3	75	<0.05 significant
Total	15	100%	4	100%	

Table VI: Postpartum blood loss among studied group.

Maternal blood loss	Induction group n=200	%	Control group n=200	%	p. value
<500 ml	186	93	194	97	>0.05 not significant
>500 ml	14	7	6	3	>0.05 not significant
total	200	100 %	200	100%	

Table VII: Neonatal out come.

	Induction group n=200	%	Control group n=200	%	p. value
Normal APGAR Score ≥ 7	191	95.5	178	89	
Abnormal APGAR Score at 1 minute <7	8	4	18	9	<0.05 significant
Abnormal APGAR Score at 5 minute <7	1	0.5	4	2	<0.05 significant
Total	200	100%	200	100%	

Discussion

Prolonged pregnancy is one of the most frequent clinical dilemmas faced the obstetrician and it can result in maternal and neonatal complications such as increased rate of macrosomia, muconium aspiration syndrome and fetal death⁸⁻¹⁰. Several studies showed that fetal and maternal risks increased beyond 41 weeks^{11,12}, the cause of prolonged pregnancy is not well understood, but most commonly the

cervix is unfavorable for induction in these women^{13,14}, if bishop score is less than or equal to 4, the risk of unsuccessful induction and subsequent interventional delivery may exceed (50%)¹⁵.

In our study patients in the case group had a Bishop score less than 4 and ripening of the cervix achieved by mechanical method by means of folly's catheter, with or without extra amniotic saline instillation and the rate of

caesarean section and vacuum extraction was (63(32%) and (15(7.5)) respectively, so the over all percentage of intervention was (39%).

The majority of patient who required intervention in the case group were nulliparous, (63.5%) of patients required caesarean section while (73.3 %) of them required vacuum extraction, so in our study nulliparity emerged as a potential risk factor for caesarean delivery this finding is with agreement with Alexander et al⁹ who found that the frequently identified risk factor for induction-related cesarean births include nulliparity, unfavorable cervical dilatation and epidural analgesia and that is not the induction per se is the risk factor for increased rate of cesarean delivery^{9,16}, in our study no epidural analgesia was used.

The need for oxytocin to augment labour was increased in the induced women, this is in accordance with other investigator¹⁶, but we found a significant difference in the length of first stage of labour between induced group and control group being longer in induced group, however the length of second stage was similar in both groups. Regarding complications after delivery, there was no difference between case and control group regarding post partum blood loss.

The number of babies delivered to mother in control group with low APGAR score after 5 minutes were higher than the case group (2%) compared to (0.5%); several studies dealing with the effect of labour induction revealed an increased rate of cesarean section and low APGAR score in the induction group^{7,8,17}, but in our study the rate of low APGAR score was higher in control group not the induced group, this may explained as the women in control group had already arrived to labour ward in active labour and had no proper assessment for fetal condition and amount of liquor compared to induction group who had carefully assessed for any fetal distress.

Conclusion and Recommendation

Induction of labour for women beyond term with no other complications is a safe procedure but women should be informed for the increased risk of secondary intervention such as cesarean section & vacuum extraction especially in primiparous women with unfavorable cervix.

As it is well known that secondary intervention worsen the birth experience so the option of elective cesarean section should be considered in primiparous women with unfavorable cervix.

References

1. Luekas M. Prolonged pregnancy. In evidence based text of Obetetrics and Gynecology for MRCOG, edited by D.M. Lussy & PHILIPN BAKER first edition 2007. London A member of Hodder had lines Group. Ch.19 P 272 – 274.
2. Crowley P; prolonged pregnancy in Dewhurst's Text-book of obetetrics and Gynecology, 7 th edition -2007. London Black well publishing. ch. 22, P.192 and ch.23, p.205.
3. Chamberlain G. (ed); prolonged pregnancy. Obstetric by Ten teachers. 18th edition 2006, London. Edward Arnold, Ch. 11, P.140.
4. Justus Hofmeyr.G. Induction and augmentation of labour in Dewhurst's Text-book of obstetrics and Gynecology, 7 th edition -2007, London Black well publishing. ch.23, p.205.
5. Gudlex G (1993) Induction of labour with prostaglandin E2: A prospective audit. N Z Med J 106: 78–80 (abstract).
6. Chan LY, Fu L, Leung TN, Wong SF, Lau TK (2004) Obstetric outcomes after cervical ripening by multiple doses of vaginal prostaglandin E2. Acta Obstet Gynaecol Scand 83: 70–74 (abstract).
7. Crowley I' (2000) Intervention for preventing or improving the outcome of delivery at or beyond term. Cochrane Database System Rev 2: CD 000170. (abstract).
8. Duff .C, Sinclair. M (2000) Exploring the risks associated with induction of labour: a retrospective study using the NIMATS database. Northern Ireland Maternity System. J adv. Nurs 31 : 410 – 417.
9. Alexander J. M, McIntire DD, Levono KJ (2001) Prolonged pregnancy : induction of labour and cesarean birth . Obstetric Gyneacol 79: 911 -915.
10. Maslow AS, Sweeny AL- (2000) Elective induction of labour as a risk factor for cesarean delivery among low- risk women at term . Obstet Gyneacol 195: 91 7 _ 922.
11. Ingemarsson I, Kallen K. Still births and Tate of neonatal details in 76, 761 post term pregnancies in Sweden , 1982-1991 : a register study - Acta Obstet Gyneacol, Scand 1997 : 76 :658- 62 (abstract).
12. Hilder I., Costeloe K Thilaganaihan B. Prolonged pregnancy: Evaluating gestation_ specific risks of fetal and infant mortality. Br J Obstet. Gyneacol 1998 : 105 : 169 -73.
13. Harris BA, HUddlestone JF, Suliff G (1983) The unfavorable cervix in prolonged pregnancy. Obstet .Gyneacol 62 . 171-174 . (abstract).
14. Magann EF, Perry KG, Dockery JR, Bass D, Morrison JC (1995) Cervical ripening prior to induction of labor: a comparison of Prostaglandin E2, estradiol, and oxytocin. Am JObstet Gyneacol 172 : 1702 _ 1708.
15. Magann EF, Chauhan SP, Nevils BG, Me Namara MF, Kinsella MJ, Morrison JC (1998) Management of pregnancies beyond forty-one weeks gestation with an unfavorable cervix. Am J Obstet Gyneacol 178: 1279–1287.
16. prysak M, Castro nova FC (1998) Elective induction versus spontaneous labour, a case control analysis of safety and efficacy. Obstet Gyneacol 92 : 47 _ 52.
17. Olesen A W, Westergaard JG, Olsen J. Perinatal and maternal complications related to post term delivery: a national register based study, 1978 _ 1993 . Am .J. Obstet Gyneacol 2003 ; 189 :222-7. (abstract).