

An Observation of Outcome in Association with Spontaneous Onset of Labor and Induced Labour of Primigravida at Term

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Abstract

Introduction: Labour is a usual physiological process considered by progressive rise in frequency, intensity and duration of uterine contractions resulting in effacement and dilatation of the cervix with descent of the fetus over the birth canal. Initiation of labour is defined as iatrogenic stimulation of uterine reductions to cause the delivery of fetus before the onset of spontaneous labour. Aim of the study: To observe the outcome in association with spontaneous onset of labor and induced labour of primigravida at term.

Methods: This cross-sectional study was conducted in the Department of Obstetrics and Gynecology in Ashiyan Medical College Hospital, Barua Khilkhet, and Dhaka, Bangladesh during the period from January 2018 to December 2018. Initially, all pregnant mothers at term (410/7 – 416/7 Weeks) were enrolled by purposive sampling. Thereafter, they were scrutinized according to the eligibility criteria. Finally, 80 participants were grouped in each category; namely spontaneous labor group. Thereafter, they were explained regarding the study procedure and informed written consent was charted on the partograph. A structure data sheet was used to obtain socio-demographic profile, obstetric profile, maternal and neonatal outcome profile were recorded using a pre structured, peer reviewed, interview and observation-based data collection sheet. All data were recorded, managed and analyzed using software Statistical Package for Social Science (SPSS) version 20.

Key words: Induction of Labor, Pregnancy, Spontaneous Labor, Induced Onset Labor, Gynecology

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INTRODUCTION

Labour is a usual physiological process considered by progressive rise in frequency, intensity and duration of uterine contractions resulting in effacement and dilatation of the cervix with descent of the fetus over the birth canal. Initiation of labour is defined as iatrogenic stimulation of uterine reductions to cause the delivery of fetus before the onset of spontaneous labour. Labour is typically induced by one of the following methods: Cervical ripening agents, artificial rupture of membranes, and uterine stimulation with oxytocin.¹ Induction of labour with the goal of achieving vaginal delivery prior to spontaneous onset of labour is recommended when the benefits of delivery out-weigh the risk of continuing the pregnancy.² Most of the women throughout their generative years are healthy and have a simple delivery of a healthy baby at term with spontaneous onset of labour. When illness ascends to butt in the pregnancy in courtesy of the mother or fetus or both, where the extension of pregnancy will pose an opposing outcome for mother and child initiation of labour is one of the means. WHO Global Survey on Maternal and Perinatal Health, which included 373 healthcare facilities in 24 countries and nearly 300 000 deliveries, showed that 9.6% of the deliveries involved labour induction.³ There is a consensus that the success of induced labour is directly related to the favourability of the cervix, as adjudged using the Bishop's scoring system. The risk of failed induction with consequent higher caesarean section rate has been observed in those that are induced with an unfavourable cervix. The effect of induction of labour on the period of labour. Feto-maternal outcomes and difficulties of labour has been equivocal. Engagement of head has been distinct as passage of widest diameter (biparietal diameter) of foetal skull through the plane of the pelvic inlet. It is generally recognised that high foetal station in primigravidas in labour near term may indicate a threat to the normal progress of labour because of foeto-pelvic disproportion or obstruction of the foetal passage by tumour or the placenta.⁴ However, a substantial number of primigravidae still do present with unengaged head at the onset of labour.⁵ Primigravida especially those with unfavourable cervix prior to the induction is among

commoner failed initiation. So, for valuation of cervical status, modified Bishop's scoring system will be used prior to initiation. Most of women in our country reputed trust that spontaneous labour is associated with better feto-maternal outcome. But it may be intricate with the precipitated labour, prolonged labour, fetal distress and many of maternal health.⁶

METHODS

This cross-sectional study was conducted in the Department of Obstetrics and Gynecology in Ashiyan Medical College Hospital, Barua Khilkhet, and Dhaka, Bangladesh during the period from January 2018 to December 2018. Initially all pregnant mothers at term (410/7 – 416/7 Weeks) were enrolled by purposive sampling. Thereafter, they were scrutinized according to the eligibility criteria. Finally, 80 participants were grouped in each category; namely spontaneous labor group. Thereafter, they were explained regarding the study procedure and informed written consent was charted on the partograph. A structure data sheet was used to obtain socio-demographic profile, obstetric profile, maternal and neonatal outcome profile were recorded using a pre structured, peer reviewed, interview and observation-based data collection sheet. All data were recorded, managed and analyzed using software Statistical Package for Social Science (SPSS) version 20. P value <0.05 was considered as statistically significant.

RESULTS

Table 1 shows that out of 80 pregnant women in each group 22(27.7%) women each belonged to <20 years' age in both sides whereas 58(72.3%) each belonged to ≥20 years' age category in both sides.

Interestingly, the mean age of spontaneous and induced onset of labor group women were 20.26±1.11 (age range: 18- 22) years and

20.14±1.03 (age range: 18-22) years respectively (p=0.51).

Table 1: Comparison of socio- demographic variables between two groups (N=160)

Variables	Spontaneous (n=80)	Induced (n=80)	p-value
Age, in years			
<20 years	22(27.7%)	22(27.7%)	1.0 ^{NS}
≥20 years	58 (72.3%)	58 (72.3%)	
Mean ± SD (in years)	20.26± 1.11	20.14± 1.3	0.513 ^{NS}
Range (in years)	18-22	18-22	
Education level			
Illiterate	10(12.5%)	12(15.0%)	0.371 ^{NS}
Primary	49(61.25%)	42(52.5%)	
JSC & above	21(26.25%)	26(32.5%)	
Gestational age (in weeks)	41.21±0.01	41.61±0.48	<0.001 ^S
BMI,(kg/m ²)	22.63±1.55	24.07± 1.32	<0.001 ^S

P-value was calculated by chi square test (qualitative variables) and student's t test (Quantitative variables)

On the other side, education profile of the participants showed that there were 49 (61.25%) and 42(52.5%) women out of 80 achieved primary education in spontaneous and induced onset group respectively. Subsequently, majority (26.25% vs 32.5%) in spontaneous and induced onset group achieved education JSC & above. The mean gestational age of spontaneous group women was 41.21 ±0.01 weeks, whereas induced onset women group was 41.61±0.48 weeks (p=<0.001).

Table 2: Distribution of cases table in both the groups according to their requirement of augmentation of labour withoxytocin.

Augmentation	Group A N (%)	Group B N (%)	P value
Yes	(42%)	(78%)	0.001
No	(58%)	(22%)	

BMI of the participants revealed that the mean BMI of spontaneous group women was 22.63±1.55 kg/m2 whereas the same in induced onset group women was 24.07± 1.32 kg/ m2 (p=<0.001). Distribution of cases table in both the groups according to their

requirement of augmentation of labour with oxytocin (Table 2) shows 42% of group A and 78% of Group B had augmentation of labour with oxytocin.

Table 3: Evaluation of progress in labor using Modified WHO partograph. (N= 143)

Variables	Spontaneous (n=7)	Induced (n=70)	p-value
Within alert line	48 (65.75%)	41(58.57%)	0.458 ^{NS}
Between alert and ac	25 (34.25%)	29(41.43%)	0.458 ^{NS}

P-value was calculated by chi square test, NS: Not Significant

Table 3 shows that among 73 vaginal delivered cases in spontaneous group the partograph showed within alert line in case of 48(65.75%) women whereas between alert and action line status was observed in case of 25(34.25%) women. On the contrary, out of 70 vaginal delivered induced onset women 41(58.57%) had partograph status within alert line whereas 29(41.43%) showed their partograph status between alert and action line. Table 4 shows that the mean of 1st stage in both spontaneous and induced onset groups were 10.53±1.04 (range: 6-12) hours and 7.59±0.85 (range: 6-9) hours respectively (p=<0.001). Besides, the same variable in 2nd stage was 49.10± 7.99 (range: 40-60) minutes and 45.05±8.28 (range: 40-50) minutes respectively.

Table 4: Comparison of duration of labor (1st and 2nd stage 2nd stage) between two groups (N= 143).

Stage of labor	Spontaneous(n=73)	Induced (n=70)	p-value
1st stage, in hours			
Mean ± SD	10.53±1.04	7.59±0.85	<0.001 ^S
Range	6-12	6-9	
2nd stage, minutes in			
Mean ± SD	49.10± 7.99	45.05±8.28	0.001 ^S
Range	40-60	40-50	

P-value was calculated by student's t test, S: Significant

Table 5 shows that out of 80 spontaneous labor women, 69(86.25%), 7 (8.75%) and 4(5%) had mode of delivery were normal vaginal delivery, cesarean section and ventouse extraction respectively. On the contrary, out of 80 induced onset labor women, 63(78.75%), 10(12.5%) and 7(8.75%) had mode of

delivery were normal vaginal delivery, cesarean section and ventouse extraction respectively.

Table 5: Comparison of mode of delivery between two groups (N= 160)

Mode of delivery	Spontaneous (n=80)	Induced (n=80)	p-value
Normal vaginal delivery	69(86.25%)	63(78.75%)	0.25 ^{NS}
Ventouse extraction	4(5%)	7(8.75%)	0.18 ^{NS}
Caesarean section	7(8.75%)	10(12.5%)	0.57 ^{NS}

P-value was calculated by chi square test, NS: Not Significant

Figure 1 showed that total 11 women in spontaneous group underwent LSCS and ventouse extraction. Among them, 3(27.27%) each underwent LSCS due to fetal distress like bradycardia and meconium stained liquor.

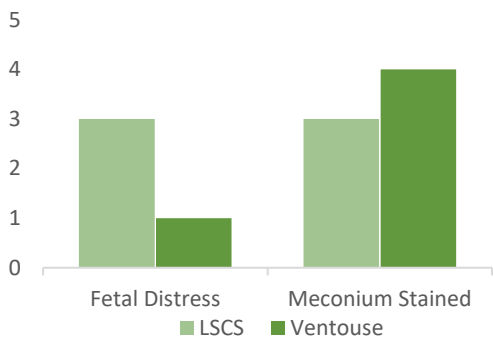


Figure 1: Indication of LSCS and Ventouse in spontaneous labor group (n= 11)

Simultaneously 1 (9.1%) and 4(36.36%) underwent ventouse extraction for similar indications like before respectively. Figure 2 showed that total 17 women in induced onset underwent LSCS and ventouse extraction. Among them, 4(23.52%) Underwent LSCS for fetal distress like bradycardia and 6(35.29%) underwent LSCS for meconium-stained liquor. On the contrary, 4(23.52%) and 3(17.64%) women underwent ventouse extraction due to fetal distress, meconium-stained liquors respectively.

Table 6 shows that out of 73 vaginal delivered spontaneous labor women 4(5.47%) suffered from atonic PPH whereas 1(1.36%) each suffered from cervical tear and perineal tear. On the contrary, out of 70 vaginal delivery induced onset labor 5(7.14%)

experienced atonic PPH. Like before, 1(1.42%) woman each experienced cervical tear and perineal tear here (p= >0.05).

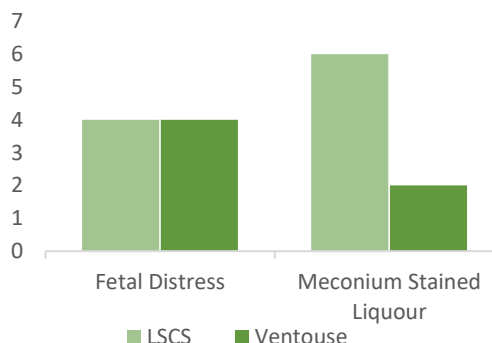


Figure 2: Indications of LSCS and ventouse in induced onset group (n= 17)

Table 6: Comparison of maternal outcomes between two groups. (N= 116)

Variables	Spontaneous (n=7)	Induced (n=70)	p-value
Atonic PPH	4(5.47%)	5(7.14%)	>0.05 ^{NS}
Cervical tear	1(1.36%)	1(1.42%)	
Perineal tear	1(1.36%)	1(1.42%)	

P-value was calculated by chi square test, NS: Not Significant

Table 7: Comparison of neonatal outcome two groups (N= 160)

Variables	Spontaneous (n= 80)	Induced (n=80)	p-value
Birth asphyxia	3(3.75%)	3(3.75%)	100 ^{NS}
Meconium aspiration	1(1.25%)	1(1.25%)	100 ^{NS}
NICU admission	4(5%)	1(1.25%)	0.47 ^{NS}
Apgar score @ 1 minute	6.35±1.45	6.22±1.46	0.356 ^{NS}
Apgar score @ 5 minutes	8.40±1.37	8.33±1.28	0.567 ^{NS}

P-value was calculated by chi square test (qualitative) and student's t test (Quantitative)

Table 7 shows that out of 80 women in spontaneous labor group 4(5%), 3(3.75%) and 1(1.25%) neonate had NICU requirements, birth asphyxia and meconium aspiration respectively. On the contrary, out of 80 induced onset labor women 3(3.75%) neonates had birth asphyxia. One 1(1.25%) each had meconium

aspiration and NICU requirements. Besides mean score between the groups showed no statistically significant difference ($p > 0.05$)

DISCUSSION

From the findings of the present study no significant difference was observed in maternal and neonatal outcome between spontaneous and induced labour among primigravida. Mean gestational age was significantly ($p < 0.001$) higher in induced labor group. Induction was given among the women having gestational age ($41^{0/7}$ - $41^{6/7}$) weeks at term which is in agreement with another study.⁷ Pregnancies over forty (40) weeks are at risk for perinatal morbidity and mortality which might be reduced by the induction of labour.⁸ Rana *et al.*⁹ Recommended that the possibility of caesarean delivery after induction is inferior than testified, perhaps owing to developments in methods for cervical ripening. They observed that as a result of routine induction of labour in pregnancy, vaginal delivery rate was 40% and caesarean section was 60% in primigravida. In the current study labor was supervised by Modified WHO partograph in all cases regardless of study group. The duration of first stage (Mean \pm SD duration 10.53 ± 1.04 vs 7.59 ± 0.85 in hours) and second stage (Mean \pm SD duration 49.10 ± 7.99 vs 45.05 ± 8.28 in minutes) of labor in spontaneous group were more than the induced group in the present study. In the study of Gupta *S et al.*¹⁰ the mean duration of active labour was 3.42 ± 1.44 hours in Group A and 3.58 ± 1.71 hours in Group B ($p = 0.436$). The second stage was lengthier in Group B as compared to Group A (16.25 min Vs 14.25 min). The difference was observed to be statistically significant ($p < 0.05$) in both groups considering the duration of second stage. Gupta *S et al.*¹⁰ established that the mean duration of second stage of labour was significantly added in induced Kumari G *et al.*¹¹ also found the second stage of labour to be considerably extended in induced group paralleled to spontaneous group. The study done by Vahratian *et al.*¹² concluded that there was statistically significant prolongation of duration of first and second stage of labor in the induced group. There is no difference between both group (p value was 0.458 in each group) in the progress in normal active phase of labor. Though more women in induced labor (41.43% vs 34.25%) moved between alert and action lines in comparison to spontaneous group it was not

statistically significant. Due to timely intervention most of the patient had normal active phase. This finding are comparable with another study.^{13,14} Regarding mode of delivery, apparently spontaneous onset of labor had more vaginal delivery (86.25% normal vaginal delivery and 5% ventouse extraction) compared to induced labor (78.75% normal vaginal delivery and 8.75% ventouse extraction) group while vice versa for cesarean section (8.75% vs 12.5%) but the differences were not statistically significant in the current study. In the study of Mahajan *et al.*¹⁵ they observed that, 59.33% patients delivered by normal vaginal delivery, 4.66% by instrumental delivery and 36% delivered by LSCS and 55.56% patients had undergone LSCS due to non- progress of labour, 37.03% due to foetal distress and 7.41% due to obstructed labour. Babu and Manjeera⁷ observed in their study that the risk of cesarean section in the nulliparous induced group was 40.2% in comparison to 19.4% spontaneous group. Prysak and Castronova¹⁶ in their study concluded that, cesarean section was increased in the population who had significant risk factors such as null parity, poor Bishop score, gestational age > 287 days, birth weight > 3800 gms. In this study population the entire induced group was low risk at term women. From a large population-based study in England, Stock *et al.*¹⁷ established that, elective induction of labor is not strongly associated with an increased odd of CS. Regarding maternal complication, the highest 4 (5.47%) out of 73 cases in spontaneous group and 5 (7.14%) out of 70 cases in induced onset group were suffering from atonic PPH, however, this was not statistically significant. these values were similar to 6.7% for induced and 1.7% for spontaneous, in that order, testified by Yadav *et al.*¹³ Besides, 1 (1.36%) each patient experienced cervical and perineal tear in 73 cases of spontaneous group. In contrast, 1 (1.25%) patient in 70 cases of induced onset group experienced cervical and perineal tear.

LIMITATIONS OF THE STUDY

The present study was conducted at a very short period of time. For being a study in a single community with comparatively small number of sample size, the study result may not reflect the exact scenarios of the mass people.

CONCLUSION AND RECOMMENDATIONS

From the present study we have concluded that there is no significant differences regarding the maternal and neonatal outcome of spontaneous labor and induced onset group mothers. Basically, atonic PPH, perineal and cervical tear are the observed maternal complications in this study though they are very negligible in number. Similar scenario was also evident in neonatal complications where it was observed that a few neonates suffered from birth asphyxia and meconium aspiration. Besides, some neonates required NICU admission. Majority in both groups were observed as uneventful like maternal outcome.

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