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A Study on the Condition of Labour & Neonatal Outcome after Delivery

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Abstract **Original Research Article**

***Background*:** The condition of labor and neonatal outcome after delivery are two critical components of maternal and child health. Labor is a complex physiological process that involves a series of changes in the body to bring about the delivery of the fetus. The quality and progress of labor can have a significant impact on the health and well- being of both the mother and the newborn. Factors such as the duration of labor, the strength and frequency of contractions, and the position of the fetus can all affect the outcome of delivery. ***Objective*:** In this study our main goal is to evaluate the Condition of Labour & neonatal outcome after delivery. ***Methodology*:** This is a prospective study was carried out (MAT-1) in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital (DMCH), Dhaka from 1" July 2009 to 31" December 2009. 50 Patients who are in 2nd stage of labour were included in my study. Fifty cases, including both primi- and multi-gravidae, who were admitted to Unit-I, Department of Obstetrics and Gynaecology, DMCH, during this period, was taken as the study population. ***Results*:** 59% pt need augmentation of labour and ARM was done in 48.1% of the pt. Of the total NVD, Assisted VD and LUCS was 70%, 10% & 20% pt respectively. Those who had LUCS among them 40% & 20% due to foetal distress and malrotation respectively where another 40% due to CPD. 50% primi and 83.3% multi pt in the age group 20 -30 years, on the other hand 6.2% primi and 16.7 % multi were above the age of 30 years. No multi pt was found below the age of 20 years. Cephalic presentation was found 100% those who had assisted VD and LUCS. Those who had NVD among them 88.6% & 11.4% presentation were cephalic and breech respectively. 100% pelvis was adequate those who had NVD and assisted VD. Those who had LUCS among them 70% pelvis was adequate and rest (30%) was not adequate. Membrane was intact 51.4% & 60% of pt in NVD and assisted VD respectively. Those who had LUCS among them majority (60%) of pt's membrane was ruptured. mild Dep (with in 1min) was found 50% neonate those who had augmented by both ARM and oxytocin where it was 17.4% those who had no dep. Majority (52.2%) of the neonate had no dep those who was augmented by only ARM. Mild Dep (with in 1min) was found in 50% augmented and 50% not augmented pt where majority (54.8%) neonate had no depression in augmented cases. ***Conclusion*:** From our study we can conclude that, due to implementation of Partographic control of labor reduces the complication of labour and materal and neonatal death. IDR is very helpful in making early decisions about the prognosis for the type of labour. With the use of partogram and its scientific application, the result showed that operative interventions were reduced, duration of labour and no maternal or perinatal mortality. In addition, it reduce the workload of recordkeeping in traditional way.

Keywords: Condition of Labour, neonatal outcome, delivery.

INTRODUCTION

The condition of labor refers to the state of the woman and the fetus during the process of childbirth. The quality and progress of labor are influenced by a wide range of factors, including maternal age, health status, and obstetric history, as well as fetal position, size, and well-being. A prolonged or difficult labor can lead to complications such as fetal distress, maternal exhaustion, and postpartum hemorrhage, which can have serious consequences for both the mother and the newborn [1-3].

The neonatal outcome after delivery refers to the health and well-being of the newborn immediately after birth and in the weeks following delivery. Factors such as gestational age, birth weight, and the presence of medical conditions can all influence neonatal outcomes. Adverse outcomes such as respiratory distress, low Apgar scores, and neonatal intensive care unit (NICU) admission can occur as a result of complications during labor and delivery [4-6].

Effective monitoring and intervention during labor and delivery are essential for ensuring optimal

maternal and neonatal outcomes. The use of partographic control of labor is one important tool for monitoring labor progress and identifying potential complications early on. This tool involves the use of a standardized graph to track key indicators of labor, such as cervical dilation, fetal heart rate, and contractions. By monitoring labor progress in this way, healthcare providers can identify deviations from normal labor patterns and intervene promptly to prevent complications [7-9].

In addition to partographic control of labor, other interventions may be needed to ensure optimal maternal and neonatal outcomes. For example, induction of labor may be necessary in cases where the woman's health or the health of the fetus is at risk. Augmentation of labor may be needed to strengthen contractions and speed up the progress of labor, while operative delivery may be necessary if there are complications such as fetal distress or maternal exhaustion [10, 11].

Overall, the condition of labor and neonatal outcome after delivery are critical components of maternal and child health. By monitoring labor progress effectively and intervening promptly when necessary, healthcare providers can help ensure safe and effective delivery and optimize maternal and neonatal outcomes.

OBJECTIVE

In this study our main goal is to evaluate the Condition of Labour & neonatal outcome after delivery.

METHODOLOGY

This is a prospective study was carried out (MAT-1) in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital (DMCH), Dhaka from 1" July 2009 to 31" December 2009. 50 Patients who are in 2nd stage of labour were included in my study. Fifty cases, including both primi- and multi-gravidae, who were admitted to Unit-I, Department of Obstetrics and Gynaecology, DMCH, during this period, was taken as the study population.

Pregnant women coming to the hospital in labour or starting labour in the hospital were included. After taking history with particular attention to aspects relevant to this study, clinical examinations were carried out.

Labour was diagnosed on the basis of regular, recurrent painful uterine contraction, progressive cervical dilatation, show and rupture of membrane or formation of bag of water.

Partographic recording was started for all women in labour. The frequency and strength of uterine contractions were studied half hourly in the active phase and the number of contractions in 10 minutes and strength of contractions were recorded. Fetal monitoring was done by auscultating fetal heart sound by stethoscope and seeing color of the liquor if membrane is ruptured. Fetal heart sound was heard immediately after contraction has passed and at 30 minutes interval and re-recorded on the graph. A detailed vaginal examination was done on admission, from 4 to 10 cm (full dilatation) in the ACTIVE phase and should progress more rapidly, normally at 1 cm every hour. Per vaginal examination was done at an interval of 4 hours and more frequently in the later part of the active stage of cervical dilatation. About uterine contractions moulding of the fetal head was also assessed. Before each vaginal examination, the level of the fetal head was assessed in fifths by abdominal palpation and was recorded with an '0' on the appropriate line of the chart. Maternal pulse rate was recorded every half hour, blood pressure and temperature once every 4 hours or more frequently, if indicated. Volume of urine passed was noted and estimation of sugar, protein and acetone in urine were done in selected cases.

Analgesics, intravenous fluid, strength and rate of oxytocin drip, all that were used, also recorded in the partogram. A female relative was allowed to stay with the patient in the first stage of labour. Injection pethidine 50-75 mg intramuscularly was used as pain killer when indicated. The labor was managed according to the standard practice. The length of labour was carefully noted with mode of delivery and the condition of baby determined by Apgar score. A 5 minute Apgar score <6 was regarded as abnormal.

In relation to alert and action lines, all the cases were studied and their due importance in practice was verified. The initial dilatation rate (IDR) in cm/hr was calculated on the basis of increase in the cervical dilatation at the next vaginal examination. The relation of IDR to outcome of labour was studied.

Data for individual study subjects were recorded on a predesigned data collection sheet. Parameters for which statistical analysis done were - age of the patient, gestational age, cervical dilatation, engagement, mode of onset of labour, augmentation, duration of active phase, second stage and total duration of labour, mode of delivery and their indications, mean IDR and neonatal outcome. Collected data were compiled and appropriate statistical analysis, such as Z-test, Chi-square test and unpaired student's 't' test were done using computer based software, Statistical Package for Social Science (SPSS). P value <0.05 was taken as minimum level of significance.

RESULTS

Figure-1 shows age distribution of the patients where majority were belong to 20-30 years age group 62%.

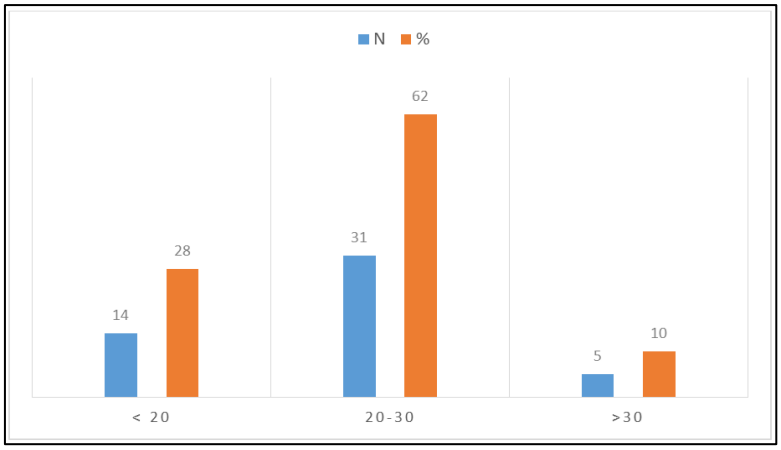

Figure 1: Age distribution of the patients

Table-1 shows Condition of Labour where 59% pt need augmentation of labour and ARM was done in 48.1% of the pt. Of the total NVD, Assisted VD and LUCS was 70%, 10% & 20% pt respectively. Those who had LUCS among them 40% & 20% due to foetal distress and malrotation respectively where another 40% due to CPD**.**

Table 1: Condition of Labour (n=50)

Condition of Labour	No	Percentage
Type of labour		
Normal Labour	19	41
Augmentation of Labour	27	59
Total	**46**	**100**
Process of Augmentation		
ARM	13	48.1
Oxytocin	8	29.6
Both	6	22.2
Total	**27**	**100.0**
Mode of delivery		
NVD	35	70
Assisted VD (ventose)	4	8
Assisted VD (Forcep)	1	2
LUCS	10	20
Total	**50**	**100**
Total Indication for LUCS		
Foetal distress	4	40.0
Malrotation	2	20.0
CPD	4	40.0
Total	**10**	**100.0**

Table-2 shows Age of the Pt in relation to parity (n=50) where 50% primi and 83.3% multi pt in the age group 20 -30 years, on the other hand 6.2% primi and 16.7 % multi were above the age of 30 years. No multi pt was found below the age of 20 years.

Table 2: Age of the Pt in relation to parity (n=50)

Age group (Years)	Primiparous (n=32)	Multiparous(n=18)	P value
	No. (%)	**No. (%)**	
<20	14 (43.8)	0	
20-30	16(50)	15(83.3)	.004*
>30	2(6.2)	3(16.7)	
Mean±SD	21.2244.6	26.72 +3.8	. 000*
Range	16-32	20-34	

*p value reached from chi square test/ 't' test, *Significant*

Table-3 shows Cervical dilatation of the Pt in relation to parity (n=50) where 4-5 cm cervical dilatation was found in 66.7% multi and 71.9% primi pt, where more than 6 cm cervical dilatation was found in 9.4% and 11.1% primi and multi respectively.

Table 3: Cervical dilatation of the Pt in relation to parity (n=50)

Cervical Dilatation (cm)	Primiparson (n=32)	Multiparous(n=8)	P value
	No (%)	No (%)	.92^{ns}
4-5	23 (71.9)	12 (66.7)	
>5-6	6(18.8)	4(22.2)	
>6	3(9.4)	2(11.1)	

Table-4 shows parity of the Pt and engagement of the fetal head (n=50) where majority (66.7%) of multi pt fetal head was not engaged where 62.5% fetal head was engaged in primi.

Table 4: Parity of the Pt and engagement of the fetal head (n=50)

Engagement	Primiparous (n=32)	Multiparous(n=18)	P value
	No (%)	No (%)	.04*
Not Engaged	12 (37.5)	12 (66.7)	
Engaged	20 (62.5)	6(33.3)	

*p value reached from chi square test, *Significant*

Figure-2 shows Parity of the Pt and type of labour (n=46) where 62.1% primi need augmentation of labour where 52.9% multi need augmentation.

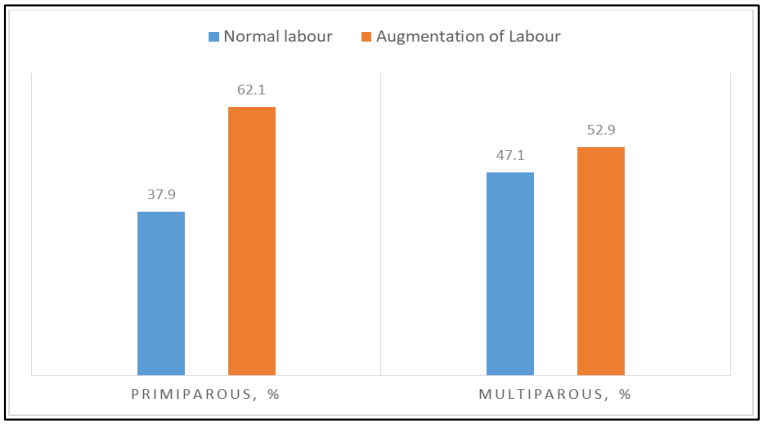

Figure 2: Parity of the Pt and type of labour (n=46)

Table-5 shows mode of delivery in relation to presentation of fetus, condition of pelvis and membrane (n=50) where cephalic presentation was found 100% those who had assisted VD and LUCS. Those who had NVD among them 88.6% & 11.4% presentation were cephalic and breech respectively. 100% pelvis was adequate those who had NVD and assisted VD. Those who had LUCS among them 70% pelvis was adequate and rest (30%) was not adequate. Membrane was intact 51.4% & 60% of pt in NVD and assisted VD respectively. Those who had LUCS among them majority (60%) of pt's membrane was ruptured.

Table 5: Mode of delivery in relation to presentation of fetus, condition of pelvis and membrane (n=50)

Presentation of fetus	Mode of delivery			P value
	NVD (n=35)	Assisted VD (n=5)	LUCS (n=10)	. 39^{ns}
	No(%)	No(%)	No(%)	
Cephalic	31(88.6)	5(100)	10(100)	
Breech	4(11.4)	0	0	
Pelvis	NVD (n=35)	Assisted VD (n=5)	LUCS (n=10)	P value
Adequate	35(100)	5(100)	7(70)	. 002ns
Inadequate	0	0	3(30)	
Membrane	NVD (n=35)	Assisted VD (n=5)	LUCS (n=10)	P value
Rupture	17(48)	2(40)	6(60)	.73ns
Intact	18 (51.4)	3(60)	4(40)	

Table-6 shows Neonatal outcome in relation to augmentation and process of augmentation where mild Dep (with in 1min) was found 50% neonate those who had augmented by both ARM and oxytocin where it was 17.4% those who had no dep. Majority (52.2%) of the neonate had no dep those who was augmented by only ARM. Mild Dep (with in 1min) was found in 50% augmented and 50% not augmented pt where majority (54.8%) neonate had no depression in augmented cases.

Table 6: Neonatal outcome in relation to augmentation and process of augmentation (n=50)

Augmentation	**APGAR score (5 min)**		**P value**
	Mild Dep (4-6)	**No Dep (>6)**	
	No (%)	**No (%)**	
Not augmented	1(50)	22 (45.8)	
Augmented	1(50)	27 (54.2)	.71^{ns}
Process of augmentation	Mild Dep (4-6), N (%)	No Dep (>6), N (%)	P value
ARM	1(25)	12 (52.2)	.33ns
Oxytocin	1(25)	7 (30.4)	
Both	2(50)	4 (17.4)	

DISCUSSION

In case of primigravida, 62.5% had spontaneous vaginal delivery and 25% had LSCS. On the other hand, in multigravida, vaginal delivery and LSCS rate were 83.3% and 11.1%, respectively. In study reported that, LSCS rate were 16.94% and 12.2%, for primi and multigravida patients, respectively [11]. In other study showed that 15.06% primi and 12.96% multigravida patients had caesarean section [12]. The LSCS rate in primigravida 25 % in the present study is also higher than other study (18%), but lower than the study done by another report where prime patients topped the list of LSCS 37 % [11, 12].

The increased incidence has been the result of (a) increased avoidance of forceps deliveries, (a) Avoiding vaginal deliveries in breech presentation and (c) Detecting deteriorating fetal environment in utero by monitioring techniques and a rising trend of resorting to LSCS for delivery of such compromised Babies.

The higher rate of caesarean section in primi patients in this study compared to previous studies can be explained by the fact that majority of them 43.8% belonged to 16-20 years age group, and as such, cephalopelvic disproportion and malrotation were major determinant for LSCS in this group.

Indication of LSCS in the present study was fetal distress 40 % and prolonged labour 60%. The cause of prolonged labour was malrotation in 20% cases abd CPF in 40% Cases.

In the present study, it was found that spontaneous vaginal deliveries were more 41% in those who did not require any augmentation. On the other hand 80% required LSCS who needed augmentation. This is consistent with the study by Rahman, who showed in her study that 90 Present cases required LSCS who needed augmentation.

In one study, 86.73 percent stimulated cases normal vaginal delivery occurred [13] whereas other reported that, intervention needed in 21.05 percent cases, which is more or less consistent with the study [14].

In the study, mild Depression (within 1 min) was found in 50 % augmented and 50% not augmented patient where majority (54.8%) of neonates had no depression in augmented cases.

Mild Depression (within 1 min) was found 50 % neonate those who had augmented by both ARM and oxytocin where it was 19.2% those who no dep. Half of thee neonate was male and female respectively. Mild dep (%-6) was found in 16 % neonate within one min where it was only %% within 5 min.

There was no still birth. In a study reported that 71.65% cried spontaneously, 21% cried after resuscitation and 7.09% needed admission to NICU [15]. The study showed that was a significant lower incidence of admission to neonatal care unit due to poor Apgar score at birth. This may be due to strict monitoring; timely intervention improved neonatal resuscitation setting in this institution.

In this series accelerated labour was associated with neonatal morbidity as judged by Apgar score. Among the patients actively managed, 2 Cases (50%) had Apgar score less than 6 and needed resuscitation, Whereas only 2 cases (50%) without anty augmentation where asphyxiated. Babies were asphyxiated (Apgar score 4-6) in 1 case stimulated by oxytocin (25%). This finding consistent with the study other study who showed 21. 43 % cases Stimulated by oxytocin had low Apgar score [13].

Incidence of operative delivery in the present study was 30%. Among them, 20% required Caesarean section and 10% needed instrumental delivery (ventouse of forceps). LSCS was done due to fetal

distress in 40 % cases. 6 patients (60%) underwent Caesarean Section due to prolonged labour. Labour was prolonged due to malrotation in 20 % cases and in 40% cases; it was due to Cephalopelvic disproportion.

CONCLUSION

From our study we can conclude that, due to implementation of Partographic control of labor reduces the complication of labour and materal and neonatal death. IDR is very helpful in making early decisions about the prognosis for the type of labour. With the use of partogram and its scientific application, the result showed that operative interventions were reduced, duration of labour and no maternal or perinatal mortality. In addition, it reduce the workload of recordkeeping in traditional way.

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