

The outcome of latent phase vs. Active phase admission to labour room of low risk nulliparous women in labour

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Summary:

Background: the first stage ,labour is divided into early (latent phase)when uterine contractions are irregular and cervical effacement and dilatation are gradual, while the active phase of labour commences when cervical dilatation reaches (4) cm .and uterine contractions are more powerful . Our aim from this study is to see the effect of the timing of admission to labour room on mode of delivery and foetal outcome.

Patients and method: 240 nulliparous women at term pregnancy were diagnosed as labour pain and admitted to Baghdad Teaching Hospital from the first of January to the end of December 2006, they were followed during their course of labour to see the effect of admission to the labour room in latent phase in comparison to those in active phase of labour on the mode of delivery and fetal outcome.

Results: Rate of C/Section was significantly higher in those admitted in the latent phase (group 1) than those in active phase [group2] (65% vs16.6%) Major cause of C/Section in group (1) was dystocia (65.3%) while in the group (2) was fetal distress (55%) Rate of C/Section among women whose labour was augmented in group (1) greater than group (2) (74% vs20%)

Conclusion: Later admission to labour room increased the rate of spontaneous vaginal delivery in low risk nulliparous women

Keyword: term nulliparous women, latent phase, active phase, mode of delivery, fetal outcome, dystocia.

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Introduction:

Normal labour can be defined as spontaneous painful uterine contraction associated with effacement and dilatation of the cervix and descent of the head in vertex presentation (1.) Normal labour is a continuous process that has been divided into four stages. The first stage further subdivided into two phases

1 – Slow (latent phase) which begins with the onset of regular contractions and ends when the cervical canal had shorten from 3cm to0.5 cm and dilated to 3cm.

2 – Faster (active phase) is characterized by an increased rate of cervical dilatation with descent of the presenting foetal part (2).this phase is subdivided into:

1- Acceleration phase. A gradual increase in rate of dilation initiates the active phase and leads to a period of rapid dilation, followed by the maximum slope which is defined as the period of active labour when the rate of cervical dilation is greatest.

2 -Deceleration phase .during the terminal portion of the active phase, rate of dilation sometimes slows, with termination at full cervical dilation. So the first stage describes the time from diagnosis of labour to full dilatation of the cervix (10 cm).(2)

The second stage of labour describes the time from full dilatation of the cervix to delivery of the fetus. The third stage is the time from delivery of the fetus until delivery of the placenta.

The fourth stage, or puerperium, follows delivery and concludes with resolution of the physiologic changes of pregnancy, usually by 6 weeks postpartum. Some believe that it is the first hour after delivery (3).

Nulliparous women in particular have no experience of labour and so may find the timing of presentation to hospital particularly difficult to judge. A delay in admission to labour room until the onset of the active phase of labour may help to clarify the criteria to diagnose labour and thus, reduce the number of women labelled with this diagnosis so the knowledge of the patterns of normal labour, and of women's behaviours, is fundamental to the formulation of strategies to reduce caesarean section rates (4). The timing of hospital admission may have consequences for the progress of labour because of the hospital environment may affect the progress in the latent phase (5) which is defined as the period of onset of labour and a point at which a change in the slope of cervical dilatation is noted. Differentiating between active labour and the latent phase of labour can be difficult and is most often made retrospectively (6) and can be treated by artificial rupture of membrane with oxytocin augmentation (7) this practice is used in our labour room. To overcome the problem of prolonged labour, complete history should be taken, questioner about the onset of regular contractions ,their frequency, intensity, and duration of the contraction, also past obstetric history and prenatal events should be investigated (8), careful and thorough physical examination must be performed. Then pelvic

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examination to determine the degree of cervical dilatation, effacement, and station and also to provide an excellent opportunity to assess the patient's pelvis and to perform clinical pelvimetry (9). Finally, fetal presentation and position must be assessed. Evaluating the position once cervical dilatation is advanced or completed appears to be a common practice, but knowing the fetal position as early as possible is beneficial because fetal position can be a major contributor to dystocia (10). Dystocia is defined as difficult labour or childbirth. It can be considered to involve the maternal pelvis (passage), the fetus (passenger), the expulsive forces (powers) or combination of these factors (8).

Patients and methods:

The study was conducted at department of obstetrics and gynecology , Baghdad teaching hospital , during the period from the beginning of January to the end of December in 2006.in this study 130 parturient women who were admitted to labour room in the latent phase (group1) were compared with 130 parturient women who admitted in the active phase (group 2). Ten women in group (1) and ten women in group (2) were omitted; owing to uncertain fetal condition like meconium after rupture their membrane.

Pregnant women attending labour word had the following inclusion criteria:

- 1 -Nulliparous.
- 2 - Women aged between 20 -30 years.
- 3 -Singleton pregnancy.
- 4 - Intact membrane.
- 5 - Low risk determine by their physician (there is no medical problem associated with the pregnancy).
- 6-labor begins spontaneously.
- 7- Completed 37 weeks of gestation.

Women booked for caesarean section or induction of labour was excluded.

All those women have been examined by portable U/Sin our labour room as part of routine examination to confirm the criteria needed in our research. Those are with normal viable term singleton pregnancy, longitudinal lie, vertex presentation, left occiput anterior position, normal position of the placenta, and single pocket of amniotic fluid is greater than 2 cm in two perpendicular planes. Determination of the active phase of labour was based on regular painful contraction and cervical dilatation greater than (3) cm.in the protocol of this study, false labour were excluded by giving the patient parenteral analgesics to relieve the patients discomfort and allow for progression of labour while she rests or sleeps. Ineffective labour was suspected when cervix did not dilate in spite of regular uterine contraction in such cases aminotomy performed and labour progress was evaluated at the next one hour. If no progress with hypotonic contraction labour was augmented with oxytocin, starting with 2 mU per minute and if necessary it was increased by 2 mU

per minute every 15 minute, and not exceeding 32 mU per minute. Partogram was used to assess progress of labour and maternal and foetal wellbeing were also followed up. finally the indication of caesarean section mainly(dystocia ,foetal distress) , ,cervical dilatation at time of caesarean birth ,the rate of labour augmentation with oxytocin in those with hypotonic contraction ,the time from admission to caesarean ,apgar score at (5)minutes ,and the birth weight were compared between two group. In this study apgar score at 5 minutes were used as apgar score at one minute has major limitation as an index of asphyxia.

Results:

A total of 240 women were randomized into two groups according to their presentation , group (1) includes (120) women ,those women presented in latent phase of labour and group (2)includes (120) women ,those women presented in active phase of labour. All the women complete the assigned criteria. There was no significant difference in obstetrical &demographic parameters between the two groups as shown in table (1). 70 women (58.3%) in group (1) need augmentation of labour while in group (2) only 50 (41.5%) of them need augmentation (p <0.001)this is statistically significant, also rate of C/S among the augmented group was greater in group (1) than group (2). (74.2% vs 20%) (p<0.003). (Table 2) For the total number of C/Section deliveries in group (1) greater than group (2) (78vs 20, p<0.002) as shown in table (2) .This is statistically significant. The main cause of C/Section in group (1) was dystocia (65.3%) and for group (2) was foetal distress (55%) (Table 2)Median of cervical dilatation at time of C/Section in group (1) was 2 cm &in group (2) was 4 cm. (this was statistically not significant as shown in table (2.) For oxytocin consumption were, (1.9 +/- 1.8) for group (1) vs. (1.02+/- 1.5) for group 2, (p < 0.001) (this was statistically significant as shown in table 2) For neonatal outcome birth weight and Apgar score at 5 minute in both groups show no statistical significance as shown in (table 3)

Table (1)

	Group 1	Group 2	P
Age (years)	23.65 +/- 3.2	23.48+/- 3.0	N.S
Gestational age(wks)	38.0 +/-1.19	38.36 +/- 1.7	N.S
Housewife	99 (85.5%)	101(84.16%)	N.S
Employed	21(17.5%)	19(15.83%)	N.S

The comparison of demographic &obstetrical parameters between two groups of Women admitted to the labour room group 1 (those in latent phase) and group 2(those inactive phase)

Table (2)

	Group 1	Group 2	P
Rate of NVD	42(35 %)	100 (83.6%)	<0 .002
Rate of C/Sin augmented & non augmented group	78 (65%)	20 (16.6 %)	<0.002
Reason of C/S			
Dystocia*	51 (65.3 %)	6 (30 %)	<0.002
Fetal distress	20 (25.6 %)	11(55%)	<0.002
Others	7 (8.9%)	3(15%)	N.S
Cervical dilatation at time of C/S	2[1,2,2]	4[4,4,5]	N.S
Oxytocin consumption	1.9 +/- 1.8	1.02 +/-1.5	<0.001
Labour augmentation	70(58.3 %)	50 (41.5%)	<0.001
Rate of C/S among augmented women	52(74.2%)	10(20%)	<0.003

Dystocia is defined as difficult labour or childbirth.

Comparison of C/Section delivers between the two groups.

Table (3)

	Group 1	Group 2	P
Birth weight (gm)	3109-/+335	3137-/+397	N.S
Apgar score in 5 min.			
<7	5(4.1%)	7(5.8%)	N.S
=/> 7	115(95.8%)	113(94.5%)	N.S

Comparison of Neonatal outcome among group 1 (women admitted in latent phase & group 2 (women admitted in active phase)

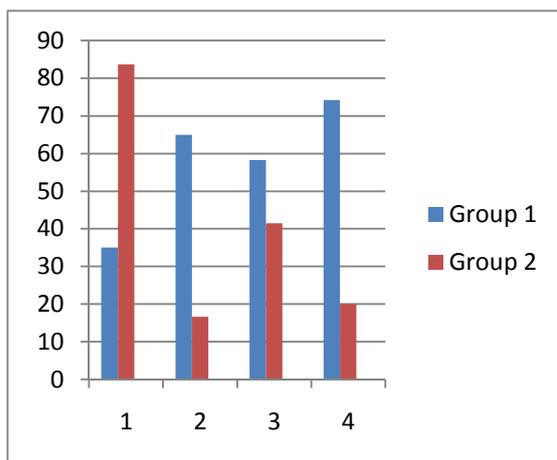


Figure (1) comparison of C/Section delivers

- 1 –Rate of NVD among group 1&2.
- 2-Rate of C/Section among group 1 &2.
- 3-Rate of labour augmentation among group 1 &2.
- 4- Rate of C/Section among augmented women.

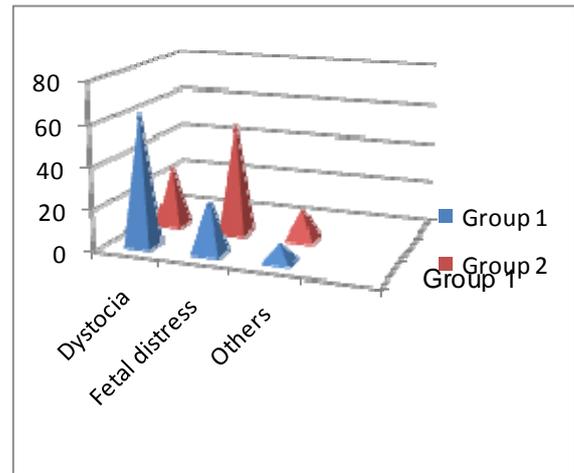


Figure (2): causes of C/Section among group 1&2.

- 1-Dystocia
- 2-Fetal distress
- 3-Others

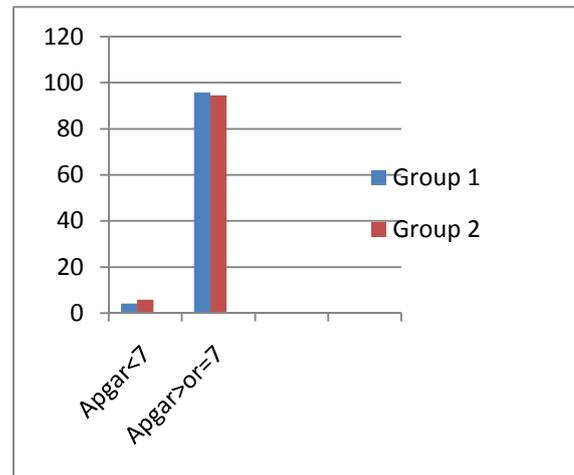


Figure (3): Apgar score at 5 min. between group 1 & 2

*Apgar score at 5 min. was used as the one minute score has major limitations as an index of asphyxia.

Discussion:

There is no doubt that in low risk pregnant women ,labour and delivery is a normal physiological process that most women experience without complication .Nevertheless, in most western countries the preferred place of birth is the hospital which generally means that the responsible caregiver is a medical specialist i.e. the obstetrician .Some professional guidelines even argue that because intrapartum actions can sometimes arise quickly and without warning, the hospital provides the safest setting for labour ,delivery, and the immediate postpartum period (11). But on the other hand the hospital environment is thought to be responsible for an increase in obstetrical interventions and the medication of labour and delivery in healthy low

risk women due to a set of cumulative factors such as separation of family members, rigid application of procedures, the lack of choice, e.g. for position for labour, and the routine implementation of continuous electronic foetal monitoring (11). Even in low risk cases which is associated with a rather high false positive rates for fetal distress etc. (12) Apart from the hospital environment inter-related aspect of obstetric care e.g. Personal and emotional factors are very likely to also play an important role with respect to the course of labour (12). The rate of c/section had been increased progressively in many countries including Iraq and this may be due to:

1-increased electronic fetal monitoring which markedly increased now a day.

2-concern for malpractice litigation has contributed significantly to the present c/section. There are fewer vaginal delivers rate comparing private hospital to the public hospital.

3-socioeconomic and demographic factors may play role in c/section.

In this study we found that common cause of c/section in nulliparous women is dystocia , which is defined as abnormal or difficult labour. Accurately diagnosing dystocia is crucial. The caesarean delivery rate for the past 20 years in United States has consistently been 50-75 % higher than the rate in Europe the increase in caesarean delivery rate in the United States is believed to be partly to the fear of litigation, influencing physicians to perhaps prematurely diagnose dystocia and other indications. Interestingly, in some European countries, the caesarean delivery rate is rising in response to the increasing incidence of litigation in those countries (13). Hemminki E.and Simukka R. 1986 observed those women who admitted to the hospital in early phase to those who coming late .those who admitted in early phase had more intervention during labour, more caesarean sections, longer postpartum hospital stay, in comparison to those coming late in active phase (4.)This is also approved in our study. Deidre S. Morten, 2000 they found that among women who delivered by caesarean, lack of progress was commonly diagnosed in the latent phase of labour, they found that in 51% of the caesareans done for lack of progress. Other indications for the caesarean were also recorded. The most common of these was terminology referring to non reassuring fetal status, which was present in 21 % of caesareans ,and their finding was approve to our finding. Other indications, including macrosomia, and genital herpes, were noted in less than 5 percent of the caesareans done for lack of progress (14) Paule Holmes,Lowrece 2001 they demonstrated that women who present to hospital early in labour have higher risk of C/S ,oxytocin a gestation than those who present later . Those presenting early may have dysfunctional latent phase of labour, they might have laboured for a long time before attending

hospital than women who presented late. (15) In the contrary to our study D.Chelmow, S.J.Kilpatric, found prolonged latent phase has been shown to be independently associated with an increased incidence of C/Sand other labour abnormalities.(16) this is disapproved to our study. Debra J.Jakson, Janet M .L ang, 2003 later admission in labour at (4 cm or greater cervical dilatation) increased the rate of spontaneous vaginal delivery in low –risk women. (17) This result is comparable to our study. S tewart et al, 1990 found that 40% of C/Section was done for dystocia diagnosed during latent phase. (18) While in our study 65.3 % of c/section was done for dystocia diagnosed during the latent phase. Rate of augmentation in both groups nearly similar but dose of oxytocin consumption not high and of C/section in group 2 lowers than group 1. Impely L. ,Hobson J.2000 show augmentation of labour which means artificial stimulation of labour that has begun spontaneously, reduces the duration of first stage of labour mainly by shortening the latent phase duration in association with amniotomy at very early cervical dilatation (19) this is compatible with our study.

References:

- 1-Freidman EA (1954), *the graphic analysis of labour, American journal of obstetrics &gynaecology* 68, 1568-1571.
- 2- Kimberly B, Fortner, Linda M. Szymanski: *The Jonhns Hopkins Manual of Gynaecology and Obstetrics; THIRD EDITION (2004) PP .77-79.*
- 3-Carol L.Archie ,*The Course and Conduct of Normal Labour and Delivery ,CURRENT diagnosis and treatment ,10th edition 2007 p p.203 -206 .*
- 4-E, Hemminki &R.Simmukka, *the timing of hospital admission &progress of labour Euro.J.Ostet Gynaecology repod Biol* 22 (1986), pp. 85-94.
- 5-Ministry of health of Ontario, *appropriate use of caesarean section recommendation for a quality assurance program, Ontario Ministry of Health, Toronto (1991).*
- 6- Roger R,Gilson GJ,Miller AC,et al :*Active management of Labour: does it make a difference? Amj Obstet Gynecol* 1997 Sep; 177(3):599-605.
- 7- Shy K,Kimpo C,Emanuel,et al: *Maternal birth weight &caesarean delivery in four race-ethnic groups. Am J Obstet Gynecol* 2000 Jun; 182(6) :1363-70.
- 8-ACOG Committee on Practice Bulletins – *Obstetrics, American College of Obstetrician &Gynaecologists: ACOG Practice Bulletin Number 49, December 2003: Dystocia &augmentation of labour .Obstet Gynecol* 2003 Dec; 102 (6):1445-54.
- 9- ACOG Committee on Practice Bulletins- *Gynecology, American College of Obstetrician &Gynecologist: ACOG Practice Bulletin clinical management guidelines for obstetrician – gynecologists.Number 40, November 2002 .Obstet Gynecol* 2002 Nov; 100 (5 Pt 1):1045-50.

- 10- American Academy of paediatrics & the American college of Obstetricians & Gynecologists. Guidelines for prenatal care ,5th eds. ELK Grove Village & Washington 2002, 125.
- 11- Cunningham GH, Gant NF, Leveno KJ : Inadequate labour in Cunningham FG, Williams JW, eds. Williams Obstetrics. 21th ed. New York, NY: McGraw-Hill; 2001: 432-43.
- 12- Bohra U, Donnelly J, O'Connell MP, Geary MP, Macquillan K, Keane DP . Active management of labour revisited: the first (1000) primiparous labours Obstet Gynecol 2003, 23: 118-20.
- 13- Boylan P, Frankowski R, Rountree R, et al : Effect of active management of labour on the incidence of caesarean section for dystocia in nulliparas. Am J Perinatol 1991 Nov; 8 (6) : 373-9 .
- 14- D.S. Gifford , S. Morton, M. Fiske, Lack of progress in labour as reason for caesarean, Obstetrics & Gynaecology 2000; 95: pp. 589-595.
- 15- P. Holmes , Lawrence W. the relationship between cervical dilatation at initial presentation in labour & subsequent intervention, British Journal of Obstetrics & Gynaecology, November 2001; 108(11): pp. 1120-1124.
- 16- D. Chelmow, S.J. Kilpatrick & R.K. Laros, Maternal & neonatal outcomes after prolonged latent phase . Obstetrics & Gynaecology 81 (1993), pp. 486-491.
- 17- Debra J. Jackson, Janet M. Lang, Impact of Collaborative Management and Early Admission in Labour on Method of Delivery , Journal of Obstetrics , Gynaecology , and Neonatal Nursing; March 2003 , 32: p. 147.
- 18- Stewart, PJ; Dulberg , Diagnosis of dystocia & management with caesarean section among primiparous women in Ottawa-Carleton , Canadian Medical Association Journal , March 1, 1990, 142(5) pp. 459-463.
- 19- Impey L, Hobson J, Graphic analysis of actively managed labour, American J. of Obstetric Gynecol . 2000 Aug; 183(2): 438-443.