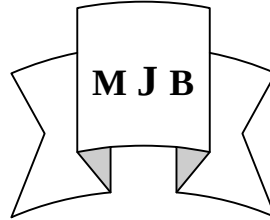


Lack of Progress in Labour as a Reason for Cesarean

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Abstract

To estimate the prevalence of lack of progress of labor as a reason for Cesarean delivery and to compare it with other studies.

We collect data from 1661 women who delivered full term , non breech infants , by unplanned Cesarean between Jan. 2002 – Jan . 2003, in Babylon Maternity and Pediatric Hospital. There were a subset of 9551 births sampled at delivery . We measured the proportion of unplanned Cesarean done for lack of progress in labor, the cervical dilatation at the time of Cesarean ,length of the second stage and slope of the active phase among the women.

Lack of progress was a reason for 69% of unplanned vertex Cesareans. At least 15% of the subjects who had Cesareans for lack of progress were in the latent phase of labor .The second stage of labor was not prolonged in 32% of women who women who delivered at 10cm .

Lack of progress in labor is a dominant reason for Cesarean delivery. Many Cesareans are done in the latent phase of labor and in the second stage of labor when it is not prolonged.

الخلاصة

لبيان نسبة طول الولادة كسبب للعملية القيصرية تمت دراسة 1661 امرأة اجريت لها عملية قيصرية غير مخطط لها للفترة من كانون الثاني 2002 الى كانون الثاني 2003 في مستشفى بابل للولادة والاطفال . كانت الولادات لهذه السنة 9551 ولادة منها 787 كانت عمليات قيصرية مخطط لها والبقية وهي 8764 امرأة جنينها وضعه على الراس اعطيت محاولة الولادة الطبيعية وكانت منها 1661 عملية قيصرية شملها البحث

وكانت نسبة طول الولادة كسبب للعملية القيصرية هو 65% (1082 من 1661)

Introduction

Labor is a dynamic event characterized by progressive cervical dilatation and descent of the head culminating in vaginal delivery.

Prolonged labor is a leading cause of death among mothers and newborn in the developing world. It's most likely to occur if a woman's pelvis not large enough for her baby's head to pass through or if a woman's uterus does

not contract sufficiently . If her labor does not progress normally , the woman may experience serious complications such as obstructed labor , dehydration , exhaustion , or rupture uterus. It also contribute to maternal infection or haemorrhage and to neonatal infection.

Skilled management of labor using a partograph, a simple chart for recording information about the progress

of labor and the condition of a women and her baby during labor , is key to the appropriate prevention and treatment of prolonged labor and it's complications and to support decision – making regarding interventions.

Lack of progress in labor , is the most common reason for Cesarean section specially in nulliparous patient. It has been attributed significantly not only to rising emergency Cesarean section rates but also to an increase in the number of elective procedures performed because many women choose not to try for a vaginal delivery after one unsuccessful attempt.

Normal Labor

The first stage of labor is from the onset of painful uterine contractions with cervical changes (effacement and dilatation) to full dilatation .It's divided into a slow latent phase when the cervix effaces and dilates from 3cm to 10cm at an average of 1cm/ hr. The second stage of labor is from full dilatation to delivery of the baby which could be 45 min. in nullipara and 15 min. in multipara. The third stage of labor is from delivery of the baby to delivery of the placenta which takes 5-15 min. with active management of labor.

Poor Progress in Latent Phase

Latent phase is a diagnosis that is easily made in retrospect when active labor ensues but often can not be demarcated from the preceding days of process of pre-labor. A prolonged latent phase is considered as one exceeding 20 hrs. in nullipara and 14 hrs. in multiparous woman .Exceeding the above limits does not confer increased maternal or fetal risk in the absence of any obstetric complications. A substantial proportion of cases with prolonged latent phase are actually in false labor and it may be

illogical to undertake any intervention unless clearly indicated.

A common clinical situation is to encounter a nullipara with irregular painful uterine contractions but unfavorable cervix before deciding on expectant management in the latent phase it is important to rule out underlying problems that may cause fetal compromise , like placental abruption ,ruptured membranes and chorioamnionitis.

A cardiotocograph may help to exclude fetal compromise .In the absence of complications, women given the appropriate support , encouraged to return home and intervention avoided until labor established . If contractions , pain and anxiety dictate hospital admission the woman informed the reason for admission . Adequate explanation at this stage avoids what the woman perceives as a long labor . Within 24 hrs. the majority of women will be in established labor and in others the contractions and pain subsides permitting discharge from the hospital .The main stay of the management of latent phase is to avoid unnecessary intervention because it will increase rate of Cesarean section .

Poor Progress in the Active Phase

Dystocia remains a significant cause for rising Cesarean section rate . It refers to difficult labor or child-birth . In clinical practice, dystocia is diagnosed when the rate of cervical dilatation in the active phase of labor is slower than the mean ,median or slowest tenth centile. In the UK. and many other countries, a rate of cervical dilatation of 1 cm./ hr or greater in the active phase of labor is considered as normal progress of labor .A line at a rate of 1 cm. / hr is drawn from the cervical dilatation when a woman is admitted in the active phase of

labor with painful uterine contractions . This is called the Alert line . Another line is constricted 1-4 hr. parallel to the right of the alert line is known as the Action line . If the progress of labor is to the right of the action line ,it's considered to be poor progress , needing augmentation . If the progress of labor is slow in the active phase and is to the right of the alert line , it is termed "primary dysfunctional labor". If the progress of labor is normal in the early active phase but subsequently the cervix not dilate or dilate slowly it is termed "Secondary arrest of labor". Some labors have a prolonged latent phase and primary dysfunctional labor . The descent of the presenting part as palpated on abdominal exam is also plotted in the partogram. A poor rate of descent also indicate problematic labor. The different patterns of poor progress in labor do not specifically identify the fault with the powers , passages and passenger. Passive management of labor involving waiting until a problem arose and then acting. Active management of labor is based on the principle of anticipating and identifying a problem and then taking action. Increasing the uterine power is one of the many components of the policy of active management it helps to overcome any borderline disproportion by promoting flexion, rotation, and moulding in vertex presentation. The other component of active management is reassurance ,pain relief ,hydration and feto-maternal surveillance . It was designed to prevent labor in the multipara and reduce Cesarean section rate . In the 1980 s, the Cesarean section rate of the National Maternity Hospital in Dublin was 4.8% , nearly one third the rates observed in USA . Despite this difference the neonatal mortality rate in Ireland was

similar to that in USA. Based management of labor shorten the length of labor but does not reduce Cesarean section rate . In the National Maternity Hospital in Dublin the rate of dystocia (2.3%) remained over 6 years period but Cesarean section rate for all indications increased from 5.3% to 10.3% during the same period.

Cephalo-pelvic disproportion (CPD) is often cited as a causative factor for poor progress in labor . The diagnosis of CPD in most cases can be made only retrospectively .Labor is the best test for pelvic adequacy with a cephalic presentation. Use of partogram will help to make a diagnosis of CPD . Careful analysis of data on this topic reveals that nearly two-thirds of women who had Cesarean section for CPD will deliver vaginally in their next pregnancy .This suggests that the influence of flexion, position, moulding and pelvic "give" with progress of labor is important. These differ in different labors. In a minority of cases mal-presentation is the cause while mal-position with different degree of flexion contribute to a sizeable proportion of cases.

A number of extrinsic factors influence the progress of labor . Social support in labor have been shown to be beneficial. Active management of labor was designed to reduce maternal exhaustion in labor . Dublin School demonstrated that 98% of labor did not exceed 12 hrs. in nullipara from the time of onset of observed labor . Epidural analgesia may be one of the factors suggested to contribute to mal-position that lead to poor progress of labor . Randomized trials did not demonstrate any prolongation of labor or increase incidence of Cesarean section rate with epidural analgesia . Significant

proportions of women with primary dysfunctional labor do not respond to oxytocin augmentation and there's some evidence that this group may lack adequate number of oxytocin receptors in the myometrium . In the last 25 years emphasis has been situated on active management of labor and decrease Cesarean section rate . [Perhaps it's time to research towards subcellular factors that control myometrial sensitivity to oxytocin]. Eight hours of augmentation with adequate monitoring in the absence of gross disproportion would result in vaginal delivery of the majority of nulliparous and multiparous women . There was no risk of intrauterine hypoxia or birth injury .

Poor Progress in the Second Stage

Progress in second stage is monitored by descent of the fetal head . The uterine contraction are monitored for duration and frequency for 10 minutes. The head level must be assessed by abdominal and pelvic exam. This is particularly important when operative intervention is planned . The true descent of the head should be assessed by feeling the bony part of the head . Engagement of the vertex occurs when the bi-parietal diameter (BPD) passes the pelvic inlet . This corresponds to 2 / 5th. Of the head palpable abdominally and on vaginal exam the leading bony portion of the fetal head is at or below the level of ischial spines. The average duration of the second stage is 45 min. in nulliparous and 15 min. in multiparous and prolonged second stage has been set at 2hrs. in nulliparous and 1 hr. in multiparous women. The occipito-posterior position is an important cause of non progress in second stage. Decision should be made to allow more time ,with a view to achieve safe instrumental delivery after

further descent of the head .In the absence of adequate descent a careful decision should be made to deliver the baby by Cesarean section.

Materials and Methods

This is an analysis of data from a study designed to learn more about obstetric outcome after vaginal and Cesarean deliveries. We sampled 9551 standard risk pregnancies that occurred between January 2002 and January 2003 at Babylon Maternity and Pediatrics Teaching Hospital with more than 7098 birth per year. We collect data from labor logs or equivalent sources to assess whether parity one or two, whether prior Cesarean had been done , or whether the study delivery by C/S . We then were able to assign women to one of six delivery subtypes : primiparas with vaginal delivery, primiparas with Cesareans, repeat vaginal delivery, vaginal delivery after Cesarean, repeat Cesarean , and Cesarean after vaginal delivery.

Subjects were then selected from this large sample. Women whose infants were breech and Cesareans were planned were excluded from the analysis. The remaining subjects had vertex presentation and intended to deliver vaginally at labor onset. From this sample, we selected all women delivered by Cesarean.

To develop a sample of standard-risk pregnancies, we selected women from labor and delivery logs ,with the following criteria at least 18 yrs. Of age no more than para one, not using insulin, without eclampsia or using pre-pregnancy medication for hypertension and delivered singleton infants without major congenital malformation.

Post partum-in-hospital interviews confirmed eligibility criteria, parity,

pre-pregnancy and pregnancy inclusion criteria . Data on obstetric history, prenatal and intrapartum care, fetal presentation, and maternal and infants outcomes were delivered from labor room and in patient checking.

A Cesarean delivery were considered to be planned if the medical record indicate that the decision of Cesarean was made before the delivery admission or if the mother answered that for sure that she was going to have Cesarean before she was been admitted to the hospital for her delivery. Diagnosis related to progress in labor were abstracted from the physicians notes in each record . Data on whether diagnosis were explicitly stated to be reasons for Cesarean were also collected from the physicians notes. Women were considered to have had Cesarean for lack of progress if their medical records used any of the following terms describe the reason for the Cesarean, dysfunctional prolonged, protracted, long labor, CPD, failure to progress, fetal pelvic disproportion, mal-position, prolonged or protracted first stage of labor, prolonged latent phase of labor, prolonged active phase of labor, arrest of dilatation ,prolonged second stage, arrest of descent or deep transverse arrest. Women whose Cesarean were done for failed induction were included only if their records also noted one of the above conditions to be reason for Cesarean .

Using this information, we defined a group of women who had unplanned Cesarean and who had a diagnosis of lack in labor as a reason, but did not necessarily the only reason, for the Cesarean. In many cases, other reasons for Cesarean were also present. Because we did not examine the other reasons cited for Cesarean, we did not draw conclusions about the

appropriateness of the Cesarean deliveries in this study. However, lack of progress was listed as a reason for Cesareans in all cases, so we assume that it contributed at least in part to decision to operate.

Results

Of the total (un-weighted) sample of 9551 women, 787 had either breech presentation or planned Cesarean deliveries, leaving 8764 women with vertex presentation who intended to deliver vaginally. Of these, 1666 (un-weighted) had unplanned Cesarean deliveries and were included in this analysis.

The weighted number of unplanned vertex Cesarean was 1666. Lack of progress was cited as a reason for the Cesareans in 65% (1082 of 1666) . Un-planned vertex Cesarean for lack of progress represented 11.3% from the 9551 births. The most common terms used to describe lack of progress were cephalopelvic disproportion "failure to progress" or feto-pelvic disproportion (85% of the diagnosis) prolonged active phase " arrest of dilatation " or secondary arrest of dilatation (25%), prolonged second stage 22% (deep transverse arrest), and mal-position in 16% . Abnormal pelvis as a reason for Cesarean in 7% . Prolonged latent phase in 3% (the percentages add to greater than 100 because the diagnostic terms not mutually exclusive).

Cervical examination at time of Cesarean performed for lack of progress, 24% of these Cesareans were done at 0-3 cm of cervical dilatation, 53% at 4-9 cm and the remaining 23% at 10 cm .

53% of Cesareans for lack of progress were done at 4-9 cm of dilatation (52%) in nullipara and 56% of

Cesareans in multipara]. In the active stage of labor.

Discussion

We found that lack of progress in labor is frequently diagnosed as a reason for Cesarean delivery. Among women who delivered by Cesarean, lack of progress was commonly diagnosed in the latent phase of labor, and in the second stage when it was not prolonged. These findings may be due to lack of awareness of the criteria or to disagreement by practicing physicians as to what constitutes lack of progression labor. It seems unlikely that those who perform Cesarean are unaware of the criteria of the diagnosis of lack of progress, these criteria have been cited widely in standard texts of obstetrics since at least 1976.

Physicians may disagree with current criteria and formulate their own for diagnosing lack of progress and use more relaxed definition than the present criteria. With the safety of Cesarean as less than the risk of continuing to observe a labor in the latent phase or the second stage that is not progressing rapidly. If characteristics of the woman, her labor, or the pregnancy cause the physician to worry about the outcome, he or she may be prone more to diagnose lack of progress prematurely. We found that in 50% of the Cesareans done for lack of progress, indications for the Cesarean other than lack of progress were recorded as unstable fetal status and macrosomia.

For the last 30 years, there has been a public concern about increasing C/S rates. The increase has been global phenomenon, in the timing and the rate of increase has differed from one country to another and marked differences in rates persist. In 1985 the

World Health Organization issued a consensus statement suggesting there were no additional health benefits associated with C/S rate above 10- 15%. This was based on an examination of estimates of national C/S rates and maternal and prenatal mortality rates from various countries. The advantages of safe vaginal over a C/S are clear, safe vaginal delivery is associated with lower maternal and neonatal morbidity and cost less.

Rates of C/S in North America exceeded 25% in the last decade and have now established below 25%. A recent

Evaluation of Cesarean delivery by task force for the American College of Obstetricians and Gynecologists reported that first time mothers delivery a term singleton cephalic fetus and women with previous C/S accounts two-thirds of C/S deliveries in US. Improved training in operative vaginal delivery has been recommended and it was suggested that safe use of these techniques may help reduce the Cesarean delivery rate.

The C/S rates in England was 21.3% with rates of 24% and 23.9% in Wales and North Ireland, respectively. This compares with a C/S rates of 12% in Norway. In our study the C/S rate is 17.4%

By measuring cervical dilatation just before Cesarean delivery, we determined the timing of the Cesareans in relation to the course of labor and found that a substantial proportion of Cesareans for lack of progress occur in the latent phase of labor. Future research might focus on which labor abnormalities result in poor outcomes and which can be safely observed without posing risks to the mothers or fetus.

Conclusion

Prolonged labor and its associated morbidity and mortality are rare in countries where skilled attendance is available. However, failure to progress contributing to rising C/S rates is of concern. There are factors determine the intervention and augmentation rate when the progress of labor is slow like psycho-social support , adequate and skilled and knowledgeable staff, and individualized care with flexibility of guidelines are key to optimal outcome in labor.

Practical Points

1. Intervention in the latent phase of labor should be avoided unless there's concern regarding maternal or fetal condition.
2. Cesarean section in the second stage of labor is associated with higher rates of major obstetric hemorrhage, prolonged maternal hospital admission and more frequent neonatal admission.

3. There's an increased risk of voluntary, in-voluntary subfertility following delivery by C/S.
4. Obstetricians should aim to deliver by the safest and most appropriate mode within their expertise balancing the risks of maternal and neonatal morbidity.

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