

Evidence based considerations regarding the new ACOG labor guidelines

Abstract

Recent guidelines issued jointly by the American College of Obstetrics and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine for assessing labor differ substantially from those described initially by Friedman, who led obstetric practice for decades. The new recommendations are based on results achieved by the analysis of patterns of cervical dilatation and fetal descent. They argue that labor models originally described by Friedman are no longer applicable to modern obstetrical practice. The main changes proposed to the Friedman curve are considered to be that the beginning of the active phase is from 6 cm opposed to 4 cm. The diagnosis of dystocia is established for a progression of dilatation under 0.5 cm/h opposed to 1.5-1.2 cm. Accepted duration of the expulsion is amended: over 3 hours for nulliparous and over 2 hours for multiparous. The new ACOG guidelines revised birth periods favoring a more permissive in terms of time factor.

Keywords: guidelines, cervical dilatation, nulliparous, dystocia

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Introduction

Having in the view the exponential increase in the number of caesarean sections for dystocia⁽¹⁾ the American College of Obstetrics and Gynecologists (ACOG) and the Society for maternal-fetal medicine issued new practice guidelines that differ substantially from those described initially by Friedman, who led obstetric practice for decades^(2,3).

The new guidelines are based on analytical evaluation principles used by Zhang and contributors to describe the algorithm of cervical dilatation and the descent of the fetus with respect to time⁽⁴⁾. Although the results have not yet been validated part of the obstetrical community had already accepted it⁽⁴⁾.

Historic

Before the 50's the most important element in the assessment of labor was its duration. Empirical principles were often used but were not effective in determining the optimal timing of intervention⁽⁵⁾.

In this respect, Friedman published the first study on labor progression in relation to its duration⁽³⁾. The first graphic representation of dilation and fetal descent in labor progression created objective evaluation criteria and not arbitrary⁽⁶⁾.

Friedman's results were often challenged because they were not corroborated with those from other studies. In fact many worldwide studies have confirmed the curves described and used them in obstetric practice⁽⁷⁾. Although there were many conflicting views on the importance of the lag phase and even the existence of the deceleration phase of dilatation, the presence and linear evolution of 1cm/h of the active phase of dilatation in nulliparous is present in all studies. Using

Friedman's curves in obstetric practice, especially in cases of induced labor was associated with a decreased rate of caesarean sections^(8,9).

Initial study data were obtained using methods that could not be subject to subjectivism like mechanical cervimetry, which confirmed the sinusoidal appearance of labor curves⁽¹⁰⁾. More recent data obtained using more efficient means support previous findings and confirm the presence of sinusoidal curves of labor in other mammalian species^(11,12).

The biggest evidence regarding the accuracy of data provided by Friedman is hard to believe that developments in labor may be different today, but Zhang and contributors offered another model⁽⁴⁾. This was based on the analytical data and not on clinical facts, and the aspect of the curve was exponential curve without being a sinusoidal wave as reported in previous studies.

It must be keeping in mind the fact that the results of Zhang and contributors are based on indirect, analytical assessments as opposed of Friedman results using clinical assessment of patients⁽⁴⁾.

Curves initially described by Friedman were not based on complex mathematical formulas but only on data collected from a single observer, then the data were corroborated by discoveries made by several observers from the same institution, the curves being hand-drawn⁽¹³⁾. Then it came the opportunity to evaluate and computerize more than 10,000 nulliparous from different institutions which confirmed the initial description of cervical dilatation and fetal descent⁽¹³⁾.

Zhang et al. evaluated data from the Consortium of Safe Labor after collecting information from 62 415 singleton births in cephalic presentation with spontaneous labor and without postpartum fetal com-

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plications. The data came from a retrospective study with electronic reporting from 19 medical centers in the United States⁽⁴⁾.

Transition to the active phase

One of the most important differences between the new and the old evaluation guidelines is the transition from latent to the active phase in Phase I of labor. Based on Friedman's curve it was wrongly concluded that the active phase of labor begins at a 4 cm dilatation, some authors considering this at even 3 cm dilatation⁽¹³⁾. According to the new guidelines, the active phase of labor begins at a dilatation of 6 cm. This new account has a special clinical importance in the diagnosis of abnormal labor at the beginning of the active phase. According to Friedman's curve abnormalities such as prolongation of the active phase of labor and arrest of dilatation could be diagnosed before 6 cm dilatation, but under the new guidelines they should be considered normal.

Observational data on cervical dilatation suggested that the active phase may start anytime between 3 and 6 cm dilatation and transition from latent phase can be correctly identified only by successive clinical examinations of each patient⁽¹⁴⁾.

Diagnosis of dilatation arrest

Under the new guidelines, the diagnosis of protracted active phase and stopping the arrest of dilatation cannot be established at a dilatation of less than 6 cm. Even if the new guidelines acknowledge a slow progression of dilatation in Phase I of labor, which is not an indication for caesarean section, they accumulate the protracted active phase and arrest of dilatation diagnosis despite clinical evidence suggesting that they are different diagnoses, with different responses to therapy and distinct prognosis¹⁵. The diagnosis of protracted active phase is determined in the absence of factors that can inhibit uterine contractility (i.e. the use of anesthesia, infection or obesity) without a positive response in dilatation with Oxytocin stimulation. If this situation occurs, contractility presents more risks than benefits¹⁶.

Role of contractile force

Under the new guidelines the diagnostic criteria for arrest of dilatation are: dilatation ≥ 6 cm, ruptured membranes, lack of dilatation progression ≥ 4 h in the presence of adequate contractions > 200 Montevideo Units (MVU) or lack of dilatation progression ≥ 6 h in the presence of Oxytocin induced contractions.

Uterine contractions are measured in MVU, but there is no guide for their superior limit, thus risking fetal exposure to excessive uterine contractility. MVU use is problematic in several aspects: intrauterine catheters are associated with more risks than benefits, and studies have shown the advantages of using intrauterine pressure measurement to non-invasive means of measuring uterine contractility during labor⁽¹⁷⁾. In addition, intrauterine pressure measuring is strongly

influenced by the position of both the patient and intrauterine catheter and information provided does not correlate with cervical dilation or indication of caesarean section⁽¹⁸⁾.

The new guidelines allow the progression of labor with adequate contractility, stopped at 8 cm dilatation for another 4 h (i.e. and another additional 4 h if the membranes were intact so far) until diagnosing of protracted labor and starting therapy for 4 h. This is not advisable because the new guidelines do not consider fetal risk from prolonged exposure to strong uterine contractions⁽¹⁹⁾.

Treatment of arrest of dilatation

In the absence of disproportion and other contraindications, the treatment of choice for arrest of labor is the administration of Oxytocin.

Though the administration should be individually tailored, studies have shown that about 90% of patients will continue cervical dilatation after 3-4 h of administration. Amniotomy is another form of treatment, but it may be associated with intrauterine infection, abnormal heart rate and increased pressure on the fetal skull⁽²⁰⁾.

The deceleration phase

During the terminal portion of the active phase of labor called the deceleration phase, uterine contractions remain strong, and the patient may perceive pain of increasing intensity. The graphic appearance of dilatation at this time, however, seems to slow. This results from the cervix being retracted in a cephalad direction around and alongside the fetal head. This period is of short duration in normal labor and multiple examinations are required to identify it^(20,21).

Labor curves described by Zhang and contributors did not identify this phase, but mentioned its existence in patients who were delivered by caesarean section, but were excluded from the study criteria⁽⁴⁾. Deceleration phase is an important moment of the onset of labor and that the prolongation of fetal descent suggests abnormalities and complications such as humeral dystocia and likelihood of imposing delivery by caesarean section⁽²¹⁾.

The second stage of labor

Phase II of labor is the period between complete dilatation and fetal delivery. This can be split into a latent phase (i.e. from the complete dilatation the onset of maternal expulsion activity) and an active phase (i.e. from the onset of maternal expulsion activity to expulsion). The old guidelines consider that this period lasts for 1-2 h in nulliparous and for 5-60 min in multiparous.

Zhang and contributors noted that the median duration of Phase II of labor in nulliparous and multiparous using epidural anesthesia was 1.1h (3.6) 0.4 H respectively (2.0)⁽⁴⁾. In the absence of epidural anesthesia, the median was 0.6 H (2.8) respectively 0.2H (1.3)⁽²⁴⁾.

Induction of labor, diabetes, preeclampsia, fetal size, chorioamnionitis, phase I duration, the maternal height

and fetal station at complete dilatation may play a key role in the phase II of labor but there are no standardized criteria in these cases.

Phase II of labor is assessed and by the descent of the fetal head: changing fetal station. At complete dilatation fetal station it is ≥ 0 and tends to be higher in multiparous compared to nulliparous. The descent of the fetal head is more rapid in multiparous with an interval of 16 minutes-3 hours for nulliparous and 7-38 minutes for mulliparous⁽²²⁾.

Conclusions

The curve described by Friedman was the result of analysis of clinical data without being data obtained by mathematical algorithms. Advanced computing methods confirmed the empirical dilatation schemes and descent of the fetal head.

Based on the conclusions made by some authors, ACOG adopted a new labor guideline since 2012. They showed that the active phase of dilatation starts at 6 cm and any extension of this phase or protraction < 6 cm, which Friedman in his study considers labor abnormality, ACOG considers it today as a physiological variation.

The new ACOG guidelines consider the arrest of Phase II of labor when a nulliparous had 3 h of expulsion activity and for a multiparous 2h. In the case of the use of epidural anesthesia 1 h is added to the above mentioned ones.

The new ACOG guidelines review the labor phases favoring a more permissive attitude in terms of time factor. The declared aim of the new guidelines ACOG in pursuing labor is to provide safe clinical strategies to prevent birth by caesarean section. Currently this guidelines are accepted only in US. ■

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