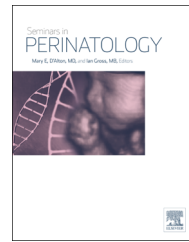


Available online at www.sciencedirect.com

ScienceDirect

www.elsevier.com/locate/semperi

Failed induction of labor

Corina Schoen, MD^{a,b,*}, and Reshama Navathe, MD^{a,b}

^aDepartment of Obstetrics and Gynecology, Sidney Kimmel Medical School at Thomas Jefferson University, 833 Chestnut St, 1st floor, Philadelphia, PA 19107

^bDepartment of Obstetrics and Gynecology, Christiana Care Hospital, Newark, DE

ARTICLE INFO

Keywords:

labor induction
cervical ripening
cesarean delivery

ABSTRACT

Induction of labor will affect almost a quarter of all pregnancies, but historically there has been no generally accepted definition of failed induction of labor. Only recently have studies analyzed the lengths of latent labor that are associated with successful labor induction ending in a vaginal delivery, and recommendations for uniformity in the diagnosis of failed induction have largely resulted from this data. This review assesses the most recent and inclusive definition for failed induction, risk factors associated with failure, complications, and special populations that may be at risk for a failed induction.

© 2015 Elsevier Inc. All rights reserved.

Introduction

Because 23% of all births in 2013 started with an induction of labor, it is imperative to have a consistent definition of success, and failure, of induced labor.¹ Historically, there has been no generally accepted definition of failed induction of labor, including within the most recent editions of Williams and Gabbe Obstetrics textbooks.^{2,3} The American College of Obstetricians and Gynecologists 2009 practice bulletin on induction of labor does not provide an unequivocal definition, although it does recommend a certain length of time before diagnosing a failed induction.⁴

The rate of labor induction has more than doubled in the United States over the past decade.⁵ Increasing induction rates may be associated, in part, with a rise in elective inductions, although as the pregnant population ages, so does the prevalence of medically necessitated deliveries.⁶ The conventional wisdom of labor induction increasing the risk of cesarean delivery (the endpoint of a failed induction) is now questioned, in large part secondary to the analysis of the randomized clinical trials comparing induction to expectant

management.⁷ In observational trials, cesarean delivery rates are consistently lower in women who have spontaneous labor compared to those who are induced. However, women cannot choose to be in spontaneous labor, so recent analyses have focused on a comparison of expectant management versus induction.⁸ Even with this paradigm shift, some women will experience a failed induction. This review assesses the most recent and inclusive definition for failed induction, risk factors associated with failure, complications, and special populations that may be at risk for a failed induction.

What is a failed induction?

Failed induction has been described several ways in the literature in both observational and randomized trials. Definitions have included failed vaginal delivery,⁹ failed entry into active labor,^{10,11} and failed labor after a certain number of ripening agents.¹² In some trials, no definition was provided in the protocol for failed induction.^{13,14} Due to this lack

*Corresponding author at: Department of Obstetrics and Gynecology, Sidney Kimmel Medical School at Thomas Jefferson University, 833 Chestnut St, 1st floor, Philadelphia, PA 19107

E-mail address: Corina.Schoen@jefferson.edu (C. Schoen).

of standardization, even among randomized controlled trials, it is not surprising that the term failed induction has an unclear meaning.

In clinical practice, the decision to proceed with cesarean delivery for failed labor induction is based on non-uniform criteria.¹⁵ In a secondary analysis of the Maternal Fetal Medicine Unit (MFMU) Network multicenter study on fetal pulse oximetry and cesarean, women with a latent phase extending beyond 12 h had a 39.4% vaginal delivery rate.¹¹ The protocol required at least 12 h of oxytocin administration after rupture of membranes, and then considered a failed induction if there was no progress into the active phase of labor. Active phase in this trial was defined as 4 cm dilated and 90% effaced or 5 cm dilated regardless of effacement. This study was consistent with two prior single center studies, showing progressively lower rates of vaginal delivery with longer durations of the latent phase.^{10,16} However, even after 18 h in the latent phase, 64% of women still achieved a vaginal delivery, dropping to 33% after 24 h.¹⁰ In all three studies, failure to exit the latent phase after 12 h of oxytocin and ruptured membranes was uncommon (4–17%).^{10,11,16}

Available data suggest that requiring at least 24 h of oxytocin after membrane rupture prior to declaring a failed induction in the latent phase reasonably balances the maternal benefit of vaginal delivery with maternal risks of chorioamnionitis and uterine atony. Reassuringly, with contemporary management, any fetal or neonatal risks associated with labor induction do not appear to be affected by latent phase duration.¹¹ Additionally, failed induction should be differentiated from arrest disorder in the first stage. The diagnosis of failed induction should be reserved for those women who have not achieved regular (e.g., every 3 min) contractions and cervical change after at least 24 h of oxytocin administration, with artificial membrane rupture if feasible (after completion of cervical ripening, if performed).¹⁷

Labor progression during induction

Until recently, labor progression was typically managed using the labor curves developed by Friedman¹⁸ in the 1950s. However, the modern obstetric population is quite different from Friedman's original group of nulliparous patients. The Safe Labor Consortium analyzed the duration of labor in 62,415 women with a term singleton pregnancy and developed contemporary patterns in labor.¹⁹ Labor in nulliparous women took longer than expected based on the Friedman curves. The investigators found that labor can take more than 6 h to progress from 4 to 5 cm, and more than 3 h to progress from 5 to 6 cm. The median duration of active phase, from 6 cm to complete cervical dilation, was 2.1 h in nulliparous women and 1.5 h in multiparous women, with the 95th percentiles of 8.6 and 7.5 h, respectively. The median and 95th percentiles for the cervical change before 6 cm are similar for nulliparous and multiparous women. This suggests that the historical criteria defining normal labor progress should no longer be applied to the contemporary obstetric population.

As modern data suggest that active labor may not begin until approximately 6 cm dilation, rather than the previously recognized 4 cm cutoff, a diagnosis of an arrest disorder should not be made until 6 cm dilation is reached. Once 6 cm cervical dilation is reached and the active phase is entered, labor progress during induction of labor is similar to the patient in spontaneous labor; however, the duration of the phase before 6 cm dilation is longer in women undergoing induction of labor.²⁰ More than half of induced women remained in the latent phase for 6 h, and nearly one-fifth remain in the latent phase for 12 h or longer.²¹ Also, women who are induced after cervical ripening have a markedly prolonged labor progression from 3 to 4 cm. Women who undergo pre-induction cervical ripening are slower to enter the active phase and have a slower course of labor than those who are induced and do not require cervical ripening agents.²²

Risk factors for failure

An unripe cervix, nulliparity, and obesity are the driving risk factors for a failed induction of labor, though "failure" in these studies is largely defined as not achieving a vaginal delivery.^{23–25} In a retrospective study of over 2000 nulliparous women, either undergoing induction of labor or presenting in spontaneous labor, women who had elective induction with cervical ripening had a significantly longer latent phase and early active phase and a 2–3 fold increased risk of cesarean delivery compared with those with a spontaneous onset of labor. Despite cervical ripening, oxytocin, and a long wait for cervical change, women with an unfavorable cervix had a cesarean delivery rate of 40%.²⁴ This was consistent with findings of earlier studies, which showed a similar increase in cesarean for women with an unripe cervix and who received pre-induction ripening.²⁵ Both nulliparous and multiparous women with an unripe cervix at preterm and at term had lower vaginal delivery rates, compared to those cases with a ripe cervix.²⁶ However, the measure of cervical ripeness, often in the form of a Bishop score, has mixed results when predicting a failed (or successful) induction. A recent systematic review and meta-analysis showed no utility in this practice for Bishop scores of 4, 5, or 6.²⁷ At a Bishop score 9, the negative predictive value was 96%, meaning 96% of women would deliver vaginally. However, overall sensitivity to predict a cesarean based on Bishop score ranged from 12 to 100%, with a specificity of 12–95%.²⁷ Conversely, other evidenced-based reviews have shown an association with successful induction (measured by vaginal delivery) with high Bishop score.²⁸ The utility of the Bishop score to determine whether to induce now or later is limited, as evidence that expectant management in hopes of achieving a better Bishop score and thus a higher vaginal delivery rate is not present.^{7,8,28,29}

Nulliparity also plays a role as a risk in failed induction. In a retrospective cohort of over 1.2 million women at term, elective induction in multiparous women was associated with a high vaginal delivery rate of 97% versus 76.2% for nulliparas.²⁶ Recent evidence-based reviews have shown in women induced versus expectant management, there is

Download English Version:

<https://daneshyari.com/en/article/3836236>

Download Persian Version:

<https://daneshyari.com/article/3836236>

[Daneshyari.com](https://daneshyari.com)