



Does stage of labor at time of cesarean affect the risk of subsequent preterm birth?

Yes. Women who had a cesarean delivery at term during the second stage of labor (dilation ≥ 10 cm) had a significantly higher rate of subsequent preterm birth (PTB) before 37 weeks (13.5%) than did women who underwent cesarean during the first stage of labor (< 10 cm; 2.3%), according to this secondary analysis of a large retrospective cohort study ($P = .03$). Results also suggest that this association holds true for spontaneous PTB before 34 weeks, although the analysis was underpowered for this outcome.

Levine LD, Sammel MD, Hirshberg A, Elovitz MA, Srinivas SK. Does stage of labor at time of cesarean delivery affect risk of subsequent preterm birth? Am J Obstet Gynecol. 2014;209:325.e1-e8. doi:10.1016/j.ajog.2014.09.035.

► EXPERT COMMENTARY

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Recent policy changes in the United States have led to a modest reduction in the incidence of late PTB (34–37 weeks), but the rate of PTB before 34 weeks' gestation has changed little over the past 40 years. One reason: It has taken us more than 30 years to recognize that uterine contractions are a downstream consequence—not a cause—of preterm labor. By the time a woman presents to labor and delivery with regular phasic uterine contractions and cervical change, it is too late to alter the course of events; the pathogenic processes leading to this clinical presentation have been active for weeks—probably months. Efforts to suppress myometrial

contractility at this point using standard tocolytic medications have little or no effect. At best, they delay delivery for 24 to 48 hours, just time enough to transfer the patient to a tertiary care center, administer antenatal corticosteroids, and, possibly, administer magnesium sulfate for neuroprotection.

There is mounting evidence that the cervix plays a central role in spontaneous PTB pathogenesis. The task of the cervix is to

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WHAT THIS EVIDENCE MEANS FOR PRACTICE

This study suggests that the attainment of full dilation during the course of labor may damage the fibrous tissues that make up the cervical stroma, leading to a persistent functional defect that manifests as spontaneous PTB in a future pregnancy. If that is true, could it also be true that a normal vaginal delivery at term is a “risk factor” for spontaneous PTB in a future pregnancy? There is one clinical variable that could account for this apparent contradiction—the interpregnancy interval. It is well known that a short interval (< 6 months) is a risk factor for adverse pregnancy outcomes, including PTB. It is possible that, having been injured at the time of delivery, the cervical stroma needs time to heal. Similar observations have been made when investigating the association between cervical conization and PTB.² This is a testable hypothesis that I hope these investigators will pursue. In the meantime, we should continue to advise our patients to allow for an appropriate interval between pregnancies.

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remain functionally intact (long and closed) throughout gestation even as the fetus grows and the uterus expands, and then to efface and dilate in the days and hours before labor. PTB ensues if this process of cervical remodeling occurs prematurely.

In support of this hypothesis, cervical shortening on transvaginal ultrasound in the mid second trimester is a major risk factor for spontaneous PTB that is independent of parity and obstetric history.¹ This risk can be abrogated by interventions that artificially “strengthen” the cervix (such as placement of a cervical cerclage or pessary) or interfere with the biochemical changes within the cervical stroma that promote cervical effacement (by progesterone supplementation). This analysis by Levine and colleagues provides additional evidence in support of the role of the cervix in spontaneous PTB.

As the investigators themselves hypothesize: “... there may be an inherent biologic risk

in achieving complete dilation, regardless of mode of delivery, or perhaps something protective about not achieving complete dilation. This could be attributed to changes in cervical stroma that occur with complete dilation that causes the cervix to be more susceptible to premature dilation in a future pregnancy.”

Although compelling, the “cervical trauma” hypothesis remains to be confirmed. Additional studies are needed to confirm these observations, and it would be preferable to limit these studies to the risk of subsequent spontaneous PTB with intact membranes only, rather than including women with preterm premature rupture of membranes, as in the current study. ❌

References

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2. Himes KP, Simhan HN. Time from cervical conization to pregnancy and preterm birth. *Obstet Gynecol.* 2007;109(2 pt 1):314-319.