Length of the Second Stage of Labor and Risk of Preterm Delivery in a Subsequent Pregnancy

Joanne Quiñones MD, MSCE  
*Lehigh Valley Health Network, Joanne.N.Quiñones@lvhn.org*

Daniel Gomez MD  
*Lehigh Valley Health Network, Daniel.Gomez@lvhn.org*

Matthew Hoffman MD

Cande V. Ananth PhD, MPH

John C. Smulian MD, MPH  
*Lehigh Valley Health Network, john.smulian@lvhn.org*

See next page for additional authors

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Authors
Joanne Quiñones MD, MSCE; Daniel Gomez MD; Matthew Hoffman MD; Cande V. Ananth PhD, MPH;
John C. Smulian MD, MPH; Lauren A. Plante MD; Daniel W. Skupsk MD; Karin M. Fuchs MD; and William
E. Scorza MD

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Preterm delivery refers to a delivery that occurs before 37 weeks gestation, with 70 to 80 percent of preterm births occurring spontaneously. The overall preterm delivery rate in the United States is 12%. The greatest risk factor for preterm birth is a prior preterm birth (PTB) and a prior term birth seems to reduce the PTB risk to 5-8%. This observation suggests that women with spontaneous PTB (sPTB) after a prior term birth may have a different etiologic profile. Studies with women with PTB have limited research that has suggested an association of abnormal labors (such as a prolonged second stage of labor) with the development of cervical shortening, cervical insufficiency and/or preterm delivery due to spontaneous labor and PROM (Navar 2006). The etiology for cervical shortening/insufficiency and preterm delivery in women without otherwise obvious risk factors may be structural damage to the cervix during a previous term birth, due to a precipitous or prolonged second stage, cervical lacerations or surgical trauma (Naeye 1982). Although no difference in lacerations or cervical injury in women who experience a prolonged second stage was found, a recent study did show that a prolonged second stage of labor was an independent risk factor for sPTB (Vyas 2006). In our cohort, the length of the second stage of labor in the first delivery was 55 minutes (interquartile range 26-97). Among the 6,342 women (94.4%) who delivered preterm in the subsequent pregnancy, the median length of the second stage in the first delivery was 55 minutes (interquartile range 26-97). Among the 573 women (8.6%) who delivered preterm in the subsequent pregnancy, the median length of the second stage in the first delivery was 42 minutes (interquartile range 24-63; p<0.0004). After adjustment for maternal age, obstetric service, race/ethnicity, smoking, and chronic hypertension, there was a 35% lower risk of sPTB in a subsequent delivery if the second stage of labor was less than 50 minutes in the first delivery. There were no differences in sPTB when stratified by mode of delivery. Conclusion: Second stage labor length in the index pregnancy was shorter for women who delivered preterm in a subsequent pregnancy. These data do not support the concept that cervical injury from a longer second labor stage is associated with preterm delivery after a prior term delivery.