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

Tara Lockstein  
*Muhlenberg College*

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

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

William E. Scorza MD  
*Lehigh Valley Health Network*, William_E.Scorza@lvhn.org

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**LENGTH OF THE SECOND STAGE OF LABOR AND THE RISK OF PRETERM DELIVERY IN A SUBSEQUENT PREGNANCY**

Tara Lockstein, Daniel Gómez MD, Joanne N. Quiñones MD MSCE, William E. Scorza MD

Division of Maternal Fetal Medicine
Lehigh Valley Health Network, Allentown, Pennsylvania

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### Background

- **Preterm birth (PTD):** delivery that occurs prior to 37 weeks gestation
- ~70-80% of preterm births occur spontaneously
  - Preterm labor
    - 40-50%
  - Preterm premature rupture of membranes (PPROM): ~20-30%
- 12% of births in U.S. occur before 37 weeks
- Multiple gestations or a short cervix (<30 mm) may be causes of preterm birth
- Cervical insufficiency may be due to a precipitous delivery or a prolonged second stage of labor
- **Cervical insufficiency → second trimester abortion or premature labor**

### Objective

To evaluate whether an increased duration of the second stage of labor or prolonged labor in a primiparous singleton term delivery increases the risk of PTB in the subsequent singleton pregnancy.

### Methods/Results

- Cohort study of retrospectively collected obstetric data from Lehigh Valley Health Network between April 2007 - November 2013
- Obtained characteristics of the first pregnancy delivered at a gestational age of ≥ 37 weeks
  - Exposure of interest: length of the second stage of labor
  - Information regarding woman’s subsequent pregnancy was collected
  - Primary outcome: Gestational age at delivery
- 26 out of 33 patients were identified as eligible for inclusion in the study (Table 1)
  - 6 patients had a prolonged second stage (≥3 hours) in the first pregnancy
  - 17 patients had a normal second stage of labor
- Primary outcome: Gestational ages in subsequent pregnancy similar between the groups (38.8 ± 1.5 weeks in 17 women with a normal second stage vs. 39.6 ± 1.0 weeks in 6 women with a prolonged second stage, P=0.26)
- 3 patients delivered preterm in their second pregnancy
  - Similar lengths of first and second stage of labor in first delivery (Table 2)

### Conclusion

- Information gathered from the study will provide additional data regarding the length of the second stage of labor as a potential risk factor for cervical shortening and spontaneous preterm birth
  - Preterm delivery screening
  - Management of term labor
- Only reviewed 52 pregnancies
  - Small sample size
  - Additional data needed
  - Additional data needed
  - 1000 patients to be reviewed to address whether there is a relationship between the second stage of labor in the first delivery and future PTB risk

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#### Table 1. Patient demographics and labor characteristics by delivery

<table>
<thead>
<tr>
<th>Demographics and labor characteristics</th>
<th>First Term Delivery</th>
<th>Subsequent Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age (years)*</td>
<td>27.4 ± 5.0</td>
<td>29.6 ± 5.0</td>
</tr>
<tr>
<td>Resident service (vs. private), n (%)</td>
<td>4 (15.4)</td>
<td>5 (19.2)</td>
</tr>
<tr>
<td>Cesarean delivery, n (%)</td>
<td>3 (11.5)</td>
<td>4 (15.4)</td>
</tr>
<tr>
<td>First stage labor length (hours)*</td>
<td>9.9 ± 4.6</td>
<td>8.0 ± 4.5</td>
</tr>
<tr>
<td>Second stage labor length (hours)*</td>
<td>2.0 ± 1.6</td>
<td>0.5 ± 0.7</td>
</tr>
<tr>
<td>Gestational age at delivery (weeks)*</td>
<td>39.2 ± 1.2</td>
<td>39.0 ± 1.4</td>
</tr>
<tr>
<td>Neonatal birthweight (grams)*</td>
<td>3249.2 ± 507.8</td>
<td>3447.8 ± 595.7</td>
</tr>
</tbody>
</table>

*Data analyzed with Student t tests, as indicated.

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#### Table 2. Labor characteristics by gestational age in subsequent pregnancy

<table>
<thead>
<tr>
<th>Labor characteristics</th>
<th>Term delivery in subsequent pregnancy</th>
<th>Preterm delivery in subsequent pregnancy</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 26</td>
<td>n = 3</td>
<td></td>
</tr>
<tr>
<td>Gestational age in the subsequent pregnancy</td>
<td>39.4 ± 1.1</td>
<td>36.4 ± 0.3</td>
<td>0.0001</td>
</tr>
<tr>
<td>(weeks)*</td>
<td>n = 18</td>
<td>n = 3</td>
<td>0.98</td>
</tr>
<tr>
<td>First stage labor length in the first term delivery</td>
<td>9.9 ± 4.7</td>
<td>9.8 ± 4.7</td>
<td>0.27</td>
</tr>
<tr>
<td>(hours)*</td>
<td>n = 20</td>
<td>n = 3</td>
<td></td>
</tr>
<tr>
<td>Second stage labor length in the first term delivery</td>
<td>2.0 ± 1.7</td>
<td>1.0 ± 0.7</td>
<td></td>
</tr>
</tbody>
</table>

*Data analyzed with Student t tests, as indicated.

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REFERENCE:


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