Timing of Delivery for Women with Stable Placenta Previa

Sean C. Blackwell, MD

Women with placenta previa are at increased risks for complications related to obstetrical hemorrhage and the need for emergent delivery. Some will remain asymptomatic without preterm labor or vaginal bleeding, and thus the clinician must decide when to schedule cesarean delivery in a “stable” patient. Decision-making for the optimal timing of delivery across the late preterm and early-term period requires balancing the probability and severity of maternal hemorrhage at each gestational age versus the probability and severity of neonatal morbidity. On the basis of the limited available data, in women with uncomplicated complete placenta previa, scheduled delivery between 36 and 37 weeks should be considered.

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Placenta previa, a placenta that overlies or is proximate to the internal os of the cervix; occurs in approximately 0.3%-0.5% of deliveries.1 If persistent at the time of delivery, cesarean delivery is indicated because of the risks and consequences of maternal hemorrhage associated with vaginal delivery. Women with placenta previa are at increased risk for obstetrical hemorrhage, transfusion, hysterectomy, admission to the intensive care unit, and even maternal death.2-5 Placenta previa often requires iatrogenic preterm birth (PTB) <34 weeks because of maternal bleeding or spontaneous preterm labor.6,7 Women who develop vaginal bleeding after 34 weeks are often promptly delivered because catastrophic bleeding can occur and is not predictable on the basis of clinical factors.8 However, many women with placenta previa remain asymptomatic, and thus the clinician must decide when to schedule cesarean delivery in a “stable” patient. This article summarizes the available literature regarding the potential advantages and disadvantages of scheduled delivery for placenta previa across the late preterm (LPTB) and early-term (ETB) periods.

Placenta previa is associated with PTB. In a U.S. population-based study of live births, approximately 16.9% of women with placenta previa deliver <34 weeks, 27.5% deliver 34-37 weeks, and 55.6% occur ≥37 weeks2 Stafford and colleagues9 found that women with placenta previa and a midtrimester cervical length <30 mm delivered <34 weeks, 34-37 weeks, and >37 weeks in 45%, 24%, and 31% cases, respectively. Interestingly, 76% of these women had an emergent cesarean delivery (emergency delivery occurred in 28% of women with a cervix >30 mm). Unfortunately, most studies in which the authors reported outcomes of placenta previa, they did not clarify what proportion of women who have LPTB or ETB required emergent care and delivery because of maternal bleeding vs what proportion were scheduled and delivery was performed under “controlled” circumstances.

Table 1 summarizes the potential advantages of scheduled LPTB in asymptomatic women with placenta previa. The primary advantage of earlier delivery is that it decreases the probability of a woman presenting with acute hemorrhage and need for emergent cesarean delivery. In fact, catastrophic blood loss can rapidly lead to maternal cardiovascular decompensation (shock) and disseminated intravascular coagulopathy. Mobilization of resources (eg, blood bank, anesthesia, surgical) may not be prompt enough to avoid major maternal and/or neonatal morbidities. However, if delivery is performed under optimal circumstances (eg, in asymptomatic state with ready availability of resources), the risk of complications may be lower. The benefits of lower surgical complication rates with scheduled compared with emergent delivery include...
delivery remain theoretic and on the basis of expert opinion, because the existing literature does not address this question. The benefits of avoiding emergent delivery with earlier delivery must be weighed against the neonatal risks of iatrogenic prematurity. Although the absolute risk of death or long-term complications of prematurity with LPTB are extremely low, “softer” morbidities are common and may be clinically significant. In addition, the neonatal risks associated with LPTB are significantly increased when compared with delivery at term. Thus, decision-making for the timing of delivery across the LPTB and ETB period requires balancing the probability and severity of maternal hemorrhage at each gestational age versus the probability and severity of neonatal morbidity with delivery (Fig. 1). Because there are no clinical trials in which the investigators compare strategies regarding the optimal timing of delivery in women with placenta previa, clinicians have relied on combining data from observational studies that summarize the “average” probability of adverse maternal and neonatal outcomes across gestational age ranges. As an example, Table 2 describes the relationships between the probability of maternal hemorrhage (increases) and neonatal morbidities (decreases) with advancing gestational age. Data regarding the probability of emergent maternal bleeding are derived from 230 cases of placenta previa delivered at a single institution between 1980 and 2001. Data regarding neonatal morbidities and mortality are summarized from the Safe Labor Consortium and include LPTB and ETB for any indication. At what specific gestational age threshold the maternal and neonatal risks trade-off is a matter of clinical judgment based on assessment of clinical factors (eg, number of prior cesarean deliveries, maternal comorbidities, practice setting, and patient risk tolerance)

Zlatnik and colleagues have recently performed a decision analysis aimed to address this question. They evaluated delivery between 34 and 38 weeks and compared maternal and neonatal quality-adjusted life years. They compared 4 strategies at each week: (A) immediate delivery; (B) delivery 48 hours after antenatal corticosteroids (ACS); (C) amniocentesis with delivery if (FLM) or retesting in 1 week if immature; (D) amniocentesis with delivery if (FLM) or administration of ACS. Maternal outcomes evaluated were hysterectomy, transfusion, and maternal death. Fetal/neonatal outcomes were stillbirth, neonatal death, respiratory distress syndrome, and cerebral palsy. In this model, ACS administration at 35 weeks, 5 days and delivery at 36 weeks was the optimal strategy. The benefit of this strategy was predicated on the assumption that there is fetal/neonatal benefit of ACS at this gestational age. Immediate delivery at 36 weeks without ACS was the second best strategy and preferred if ACS were already given before 34 weeks or assumed to have absent or minimal efficacy. Other than this decision analysis study, recommendations for the timing of

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**Table 1** Potential Benefits of Iatrogenic LPTB in Women with Placenta Previa: Advantages of Earlier Delivery

<table>
<thead>
<tr>
<th>Potential Benefits of Iatrogenic LPTB</th>
<th>Advantages of Earlier Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease probability of cesarean delivery with an unstable patient</td>
<td>Avoid presentation with hemorrhage (anemia, shock), labor, fetal compromise</td>
</tr>
<tr>
<td>Avoid unexpected presentation at a nontertiary care hospital</td>
<td>Avoid cesarean delivery under emergent circumstances</td>
</tr>
<tr>
<td>Optimize availability of hospital resources</td>
<td>OR resources (surgeons, surgical assistants, anesthesia)</td>
</tr>
<tr>
<td>OR, Blood bank and blood products</td>
<td>Consultants</td>
</tr>
<tr>
<td>Reduce potential conflict of responsibilities from other patient care activities</td>
<td>Other laboring patients</td>
</tr>
<tr>
<td>Other surgical procedures</td>
<td>LPTB, late preterm birth; OR, operating room.</td>
</tr>
</tbody>
</table>

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**Figure 1** Conceptual diagram that presents the trade-off of maternal and neonatal risks and benefits related to the timing of delivery for women with “stable” placenta previa.
delivery are limited to expert opinion. In a recent review from the clinical expert series of obstetrics and gynecology, Oyelese and Smulian\(^1\) stated “In a stable patient, it is reasonable to perform a cesarean delivery at 36-37 weeks of gestation, after documentation of fetal lung maturity by amniocentesis. If the amniocentesis does not demonstrate lung maturity, we deliver the women by elective cesarean at 38 weeks, without repeating the amniocentesis, if they remain stable, or earlier if bleeding occurs or the patient goes into labor.”

Further investigations are warranted to evaluate several unanswered questions related to the timing of delivery:

- **What proportion of women with placenta previa require emergent delivery between 34 and 37 weeks?**
- **To what degree are complications increased with emergent delivery because of maternal hemorrhage vs scheduled delivery under “controlled conditions?”**
- **Should the type of placenta previa (partial vs total) or other comorbidities (previous cesarean delivery, maternal obesity) affect the timing of delivery?**
- **Is there any role for FLM assessment with amniocentesis?**

In summary, available data suggest the following management recommendations:

- In women with uncomplicated complete placenta previa, scheduled delivery between 36 and 37 weeks should be considered.
- In women with a placenta previa with additional comorbidities (eg, high body mass index, multiple previous cesarean deliveries) or complicated clinical course (eg, episode[s] of vaginal bleeding), earlier delivery may be necessary and should be individualized.

### References


### Table 2 Estimation of Risks of Maternal and Fetal/Neonatal Complications

<table>
<thead>
<tr>
<th>Outcome</th>
<th>34 weeks</th>
<th>35 weeks</th>
<th>36 weeks</th>
<th>37 weeks</th>
<th>38 weeks</th>
<th>39 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal emergent bleed(^1,12)</td>
<td>–</td>
<td>4.7%</td>
<td>15.0%</td>
<td>29.9%</td>
<td>58.6%</td>
<td>87.2%</td>
</tr>
<tr>
<td>Fetal/neonatal(^13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NICU admission</td>
<td>67.4%</td>
<td>42.4%</td>
<td>22.1%</td>
<td>11.8%</td>
<td>7.2%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Need for mechanical ventilation</td>
<td>6.6%</td>
<td>4.5%</td>
<td>3%</td>
<td>1.1%</td>
<td>0.5%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Neonatal mortality</td>
<td>0.8%</td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.2%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

NICU, neonatal intensive care unit.