Management of Postterm Pregnancy

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Conflict Statement
This presenter has no financial or other conflicts to report

BACKGROUND

ReVitalize Definitions of Gestational Age

- Postterm
  - Term pregnancy: 27.0 - 41.6 weeks
  - Early postterm: 42.0 - 43.0 weeks
  - Late postterm: 43.0 - 45.6 weeks

Maternal Risks
- Long Labor
- Hemorrhage
- Infection
- Cesarean Section
- Operative vaginal delivery
- Perineal Lacerations
- Shoulder dystocia

<table>
<thead>
<tr>
<th>Risk</th>
<th>37/39 weeks</th>
<th>42 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chorioamnionitis</td>
<td>0.16%</td>
<td>6.15%</td>
</tr>
<tr>
<td>Endomyometritis</td>
<td>0.64%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Abruptio placentae</td>
<td>0.09%</td>
<td>0.44%</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>0.4%</td>
<td>1.5%</td>
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<tr>
<td>(peak 40 weeks)</td>
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</tr>
<tr>
<td>Postpartum Hemorrhage</td>
<td>1.1%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Primary Cesarean Section</td>
<td>14.2%</td>
<td>25%</td>
</tr>
<tr>
<td>CS Fetal Concern</td>
<td>13.3%</td>
<td>27%</td>
</tr>
<tr>
<td>Instrumented Vaginal Del</td>
<td>14.5%</td>
<td>18.5%</td>
</tr>
<tr>
<td>3rd/4th Degree Laceration</td>
<td>3.4%</td>
<td>9.1%</td>
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</tbody>
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https://evidencebasedbirth.com/evidence-on-inducing-labor-for-going-past-your-due-date/

Baby Risks
- The risk of having a meconium increased every week starting at 38 weeks, and peaked at 42 weeks (7.5% at 40 weeks, 9.5% at 41 weeks, and 16.0% at 42 weeks) [Caughey & Musci 2004].
- The risk of having a baby large for dates increased every week after the first week (3.7% at 40 weeks, 13.3% at 41 weeks, and 18.0% at ≥42 weeks) [Caughey & Musci 2004].
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Neonatal Dysmaturity
- Dry skin
- Overgrown nails
- Creases on palms and soles
- Absent fat stores
- Brown, green or yellow discoloration from the meconium

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Rate of Postterm Pregnancy
Recurrence of prolonged and post-term gestational age across generations: maternal and paternal.

- Intergenerational data from the National Birth Registry of Norway of singleton mothers and fathers giving birth to singleton children >75% of term at 42 weeks or post term at 41-42 weeks.
- A post-term mother (42 weeks) had a 4% increased risk of giving birth to a child at 41-42 weeks (RR = 1.04; 95% CI = 1.01-1.08). The RR of a pregnancy at 42 weeks in the second generation was 1.79 (95% CI = 1.49-2.16). Both mother and father were post-term.
- There is a familial factor related to recurrence of prolonged pregnancy across generations and both mother and father seem to contribute.

Who is at risk for prolonged and postterm pregnancy?

- Retrospective cohort study of all term, singleton pregnancies delivered at a mature, managed care organization.
- Multivariable logistic regression models were used for risk factors for pregnancy (RR > 0.9 weeks of gestation) 41-42 weeks of gestation. Factors associated with post-term infants included history of post-term births in a partner (aOR = 2.07, 95% CI = 1.15-3.75), maternal age >30 years (aOR = 1.80, 95% CI = 1.11-2.90), and any years older (aOR = 1.07, 95% CI = 1.02-1.12).
- Post-term infants were also associated with a lower risk of reaching 66 or 62 weeks of gestation.

Evaluation: ACOG Practice Bulletin

- "Accurate determination of gestational age is essential to accurate diagnosis and appropriate management of late-term and postterm pregnancies. Antepartum fetal surveillance and induction of labor have been evaluated as strategies to decrease the risks of perinatal morbidity and mortality associated with late-term and postterm pregnancies".


Postterm Genetic Factors

- Swedish population
- Odds of postterm births increased if mothers were older, heavier, more educated, or pregnant, or caring a male fetus.
- The highest odds increase was seen in women with a previous postterm birth, both with the same partner (odds ratio = 4.4, 95% confidence interval 4.0-4.9) and after a partner change (odds ratio = 1.4, 95% confidence interval 1.1-1.8).
- Sisters of women with a post-term birth were also at increased odds of postterm birth (odds ratio = 1.8, 95% confidence interval 1.4-2.3). White brothers' partners were not.
- Half of the variation in postterm births could not be explained by factors known in families, and the remaining 50% was explained by genetic factors, namely male (20%) and maternal (30%) genetic factors.
WHAT ABOUT PREVENTING WITH ROUTINE ELECTIVE INDUCTION?

Elective Induction: EFFECT ON CESAREAN SECTION

Population Based Study (Scotland)
- In each gestation between 37 and 41 completed weeks, elective induction of labour was associated with a decreased odds of perinatal mortality compared with expectant management (OR 0.46; 95% CI 0.31-0.64) in the induction of labour group versus 0.89 (0.70-1.14) in the expectant management group.
- By 41 weeks gestation (207,790/14,414; 1.46"). In comparison with a spontaneous vertex delivery, expectant management was associated with a reduction in the odds of spontaneous vertex delivery (OR 4.6; 95% CI 3.1-6.9) in the induction of labour group versus 5.7; (95% CI 4.7-6.9) in the expectant management group, adjusted odds ratio 1.13 (1.05-1.20).
- In women with a breech presentation, there was no association between induction of labour before 40 weeks gestation and perinatal mortality.
- However, in women with a breech presentation, there was an increased risk of perinatal mortality (OR 1.73; 95% CI 1.29-2.32) in the induction of labour group versus 1.20 (95% CI 0.87-1.65) in the expectant management group, adjusted odds ratio 1.46 (1.01-2.10).

Elective Induction
- Three RCTs compared expectant management with elective induction of labour. We found that overall, expectant management of pregnancy was associated with a significantly lower risk of cesarean delivery than elective induction of labour (OR 0.46; 95% CI 0.31-0.64; absolute risk difference 1.9; 95% CI 0.2-2.7 percent). The majority of this effect was due to a reduction in cesarean delivery due to failure to progress (OR 0.52; 95% CI 0.36-0.76; adjusted odds ratio 0.88; 95% CI 0.70-1.14). In studies of women at 41 weeks gestation, the evidence was mixed in outcomes because of the size and number of studies and consistency of the findings. Among women less than 41 weeks of gestation, there were three trials which reported no difference in cesarean delivery among women who were induced as compared to expectant management (OR 1.07; 95% CI 0.88-1.30; adjusted odds ratio 1.01; 95% CI 0.71-1.46), but all of these trials were small, narrow, and of poor quality.

Why lower CSR?
- Rates of PTF and fetal Concern increase with gestational age
- Stillbirth prevented
- Fetal weight increasing
- Placental reserve decreasing?
- Choice for conversion to breech
- Reality we do not know why
- So is spontaneous labor a "gift"?

CSR by Gestational Age

Induction vs. Expectant Management in Post Term Pregnancy
- Landmark, RCT designed trial
- 3407 women with uncomplicated pregnancies of 41 or more weeks’ duration
- Among the 1701 women in the induction group, 360 (21.2 percent) underwent cesarean section, as compared with 438 (24.5 percent) of the 1706 women in the noninduction group (P < 0.05). When both infants with lethal congenital anomalies were excluded, there were no perinatal deaths in the induction group and two perinatal deaths in the noninduction group (not significant).
- Women in the expectant management group ended up being induced but NOT because of breech.
Another look at Hannah, et al. vs. Group 3

Elective Induction: EFFECT ON INFANT OUTCOME

Rate by Expectant Management

Number Needed to Deliver

Back of Envelope Costs*

NEW RESEARCH ON ELECTIVE INDUCTION

The ARRIVE Trial

*Based on current delivery statistics and NNT by Rosenstein et al.
Will Undergoing Trials Answer the Elective Induction question?

- **ARRIVE** study funded by NIH is randomizing 6,000 patients with induction at 39 weeks focused on maternal outcomes (CSR) but unlikely to have sufficient power to evaluate SB and NND

- **SWEPIS** is Swedish multicenter observational study of 41 versus 42 weeks induction based on 10,038 healthy vertex pregnancies should be able to compare SB rates (NNT higher)

OTHER CONFOUNDERS IN DECISIONS

Maternal Age Effect

- NNT analysis revealed that among women younger than age 35 years, 4000 pregnancies must be delivered at 39 weeks to avoid 1 fetal/infant mortality in the following week, whereas this number is only 2326 in women older than age 35 years.

- We would not suggest making clinical recommendations based on this single retrospective study alone.

- These findings warrant consideration of the other clinical ramifications and the economic impact of this strategy given the potential for longer hospital stays and higher costs associated with induction of labor of a large and growing population of women 35 years old and older.

CONCLUSION

Management

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<tr>
<th>Strategy</th>
<th>Indicators of all pregnancies</th>
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<tbody>
<tr>
<td>Antepartum Surveillance</td>
<td>Twice weekly NST and CST</td>
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<td>Timing of Delivery</td>
<td>TBD</td>
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<tr>
<td>Antepartum Assessment</td>
<td>Early onset of laborations,</td>
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<td></td>
<td>Macroscopic presentation at</td>
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<tr>
<td></td>
<td>viability</td>
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<tr>
<td>Prevention by 39 week induction</td>
<td>TBD (See page 75-76)</td>
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What are your thoughts and questions?