Obstetric management of moderate and late preterm labor

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Extremely PTB <28wg
Very PTB <32wg

Moderate PTB 32-33\(^{6/7}\)wg
Late PTB 34\(^{0/7}\)-36\(^{6/7}\)wg
Mortality rate in PTB

- Max. <32.wg
- Mortality and serious morbidity are considered rare in 32-37wg
- Increased willingness to deliver at these gestations for maternal and fetal indications

Laughon SK, et al. Obstet Gynecol 2010

- Study estimated that 1 in 15 of late preterm babies was delivered for ‘soft’ or elective precursors, and was thus avoidable.

- Infant mortality among late preterm babies is three times higher than that of term babies (7.7/1000 live births for late preterm births compared with 2.5 /1000 live births at term).

- Premature infants are at greater risk for:
  - Short- and long term complications
  - Disabilities and impediments in growth and mental development
Morbidity in 34-37wg group

- Most morbidities related to prematurity are increased in the late preterm group when compared with infants born at term
- Most markedly where respiratory morbidities are concerned
1. **Indications for delivery in late preterm gestation** (34-36\(^{6/7}\) wg)

- **Obstetric**
  - Spontaneous preterm labour
  - PPROM
  - Pre-eclampsia/gestational hypertension
  - Oligohydramnios
  - Prior caesarean delivery
  - Accreta/praevia

- **Maternal**
  - Chronic maternal disease in pregnancy

- **Fetal**
  - IUGR
  - Multiple gestation
  - Anomalies
Spontaneous preterm labour in late preterm period

- Treatments for active preterm labour:
  - Tocolysis up to 48 hours
  - Antibiotics to prevent early onset GBS infection
  - Antenatal corticosteroids

- Gestational age beyond which intervention is no longer warranted???

ACOG guidelines: the decision of when to intervene with preterm labour should be based on the neonatal intervention capacities at the hospital of the practising obstetrician
Antenatal corticosteroids – up till when?

- **ACOG** has not recommended antenatal corticosteroids for gestations >34wg:
  - Low risk of severe respiratory morbidity
  - The lack of consistent evidence of corticosteroid efficacy at this age
  - Theoretic potential for long-term harm following late exposure

- **RCOG** guidelines recommendation:
  - Routine administration for all women at risk of preterm birth up to and including 34\(\frac{6}{7}\) weeks of gestation
  - All women undergoing elective cesarean delivery up to and including 38\(\frac{6}{7}\) weeks of gestation

*P.C. McParland. Semin FetalNeonat Med, 2012*
PPROM in late preterm period

- ACOG recommendation: delivery ≥34 wg (Level B)
- But, nearly 50% of MFM providers deliver pregnancies complicated by PPROM at later than 34wg

Is delay in delivery harmful for patients with PPROM?

**Pre-eclampsia/gestational hypertension in late preterm period**

- Most experts agree that patients with clinically stable severe preeclampsia should be delivered by ≤34 wg

**Appropriate gestational age for delivery of mild preeclampsia and gestational hypertension?**

- NICHD/SMFM recommendation for delivery:
  - Mild pre-eclampsia delivery at 37.wg
  - Gestational hypertension at 37-38wg

- Women with mild pre-eclampsia or gestational hypertension would benefit from delivery at 37 weeks’ gestation rather than waiting until 39 weeks

*Koopmans CM, et al. Lancet, 2009*

Isolated oligohydramnios

- Isolated oligohydramnios, while certainly warranting closer evaluation, should not be an indication for delivery without other complicating factors before term.

- The majority of adverse perinatal outcomes in cases could be attributed to iatrogenic prematurity related to early delivery, rather than the oligohydramnios itself.

Zhang J, et al. BJOG, 2004
Prior caesarean delivery

- The timing of an elective repeat caesarean after a prior low transverse cesarean is unambiguous at 39 wg

- Prior scar is from a classical uterine incision—preferably delivery prior to the onset of labour

- NICHD/SMFM recommendation—delivery at 36-37 wg
Accreta/praevia

Placenta accreta

- SMFM – planned late preterm delivery is an acceptable management strategy

Placenta praevia

- Optimal – delivery between 36 and 38 weeks’ gestation
Fetal indications

IUGR

- ACOG - delivery should be considered once there is complete cessation of growth or a non-reassuring fetal assessment

- NICHD/SMFM – Delivery between 38 and 39 weeks in cases of IUGR without other comorbidities and otherwise reassuring fetal testing
Multiple gestations

- Constitutes 2–3% of all births in many centres
- 58% of all twins are born preterm, the majority of whom are born after 32 weeks’ gestation

- Delivery for uncomplicated twin pregnancy - when?
### Multiple gestations, uncomplicated

<table>
<thead>
<tr>
<th></th>
<th>NICH /SMFM</th>
<th>NICE</th>
<th>ACOG</th>
<th>Expert opinion</th>
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</thead>
<tbody>
<tr>
<td><strong>Dichorionic</strong></td>
<td>38wg</td>
<td>≥37wg</td>
<td>$38^{0/7} - 38^{6/7}$wg</td>
<td>38-40wg</td>
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<tr>
<td><strong>Monochorionic/diamniotic</strong></td>
<td>34-37wg</td>
<td>From 36wg (after antenatal corticosteroids)</td>
<td>$34^{0/7} - 37^{6/7}$wg</td>
<td>36-37wg</td>
</tr>
<tr>
<td><strong>Monochorionic/mono amniotic</strong></td>
<td>32 wg</td>
<td>32 wg</td>
<td>32-34 wg</td>
<td>32 wg</td>
</tr>
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2. **Indications for delivery in moderately preterm period**

(32-33\(6/7\)wgestation)

**IUGR**

- **Timing delivery** — There is little consensus about the optimum time to deliver the growth restricted fetus
- **Decision based on combination of factors:**
  - Gestational age
  - Doppler ultrasound of the umbilical artery
  - BPP score
  - Presence /absence of risk factors for, or signs of, uteroplacental insufficiency
- The goal is to maximize fetal maturity and growth while minimizing the risks of fetal or neonatal mortality and short-term and long-term morbidity
Moderate preterm infants with IUGR and comorbidities, specifically severe Doppler abnormalities (AEDV or REDV UA, and abnormal MCA PI, and abnormal DV PI), are likely to be delivered by obstetricians to prevent demise

*Chalubinski KM, et al. Ultrasound Obstet Gynecol 2011*
REDV UA

≥32 weeks

Delivery

< 32 ng

Antenatal steroids
Daily fetal monitoring (BPP)

Until 32 wg or until the BPP score becomes abnormal
AEDV UA

≥34 weeks

Delivery

< 34 ng

Antenatal steroids
Daily fetal monitoring (BPP)

Until 34 wg or until the BPP score becomes abnormal
Decreased diastolic flow
PI > 95th percentile

- BPP twice per week
- Risk factors / signs of utero-placental insufficiency are present

- Delivery at term or when BPP becomes abnormal
- Delivery at 37 to 38 weeks
Indications for delivery in moderately preterm period
(32-33\textsuperscript{6/7} wg)

- **Severe pre-eclampsia/HELLP** - women with severe pre-eclampsia are likely to be delivered in both the moderate and late preterm periods

- **Spontaneous preterm labour or PPROM<34 wg** if chorioamnionitis were diagnosed

Gyamfi-Bannerman C. Semin Fetal Neonat Med, 2012
Method of delivery

- Depends on a variety of factors
- Preterm labor per se does not dictate one way or the other
- There is little evidence from controlled studies on which to base the management of preterm birth

Decision-making process - can it be made easier?

- Caesarean section has been postulated to have a theoretical advantage over vaginal delivery in premature infants:
  - Avoidance of prolonged labour
  - Allowing a less traumatic birth

- Preterm Caesarean section can be technically difficult – may require corporal incision; fetal malpresentation; risks of scar dehiscence in future pregnancy

- Other maternal risks associated with Caesarean section

- Vaginal birth is the preferred mode in the absence of other obstetric indications due to reduced maternal complications

Decision-making process - can it be made easier?

However, VB involves the risk of hypoxia and future neurodisability to the baby

Challenge:

Balancing the fetal versus maternal risks and safety
**Decision-making process regarding mode of delivery**

*Does mode of delivery influence neonatal outcome in preterm births?*

*Most agree that neonatal outcome does not depend upon the mode of delivery*

One study - Caesarean delivery could potentially reduce mortality in preterm neonates of birth weight of 1000–1499 g

*Proceedings of 58th Annual Clinical Meeting (ACOG ’10), 2010*
*T. Ghi, et al., Journal of Maternal-Fetal and Neonatal Medicine, 2010*
*S. Sonkusare, et al. Medical Journal of Malaysia, 2009*
Does Caesarean Section Enhance the Survival Rate of Preterm Vertex Infants?

No significant differences between elective and selective (intention to deliver vaginally with recourse to CS) policies for Caesarean delivery were found for fetal, neonatal, or maternal outcomes.

Increased odds of serious maternal morbidity in the Caesarean section group.

Grant A and Glazener CM. Cochrane Database of Systematic Reviews, 2001
Impact of Caesarean section on 32-36 weeks preterm births

The data suggested that for low-risk preterm infants at 32 to 36 weeks’ gestation, independent of any reported risk factors, primary cesarean section may pose an increased risk of neonatal mortality and morbidity.

Influence of CS on respiratory adaptation

M. H. Malloy. Birth, 2009

There was no significant difference between planned immediate caesarean section and planned vaginal delivery with respect to neonatal outcomes.

There was a significant advantage for women in the vaginal delivery group with respect to maternal puerperal pyrexia and other maternal infection.

There is not enough evidence to evaluate the use of a policy of planned immediate caesarean delivery for preterm babies.
Many studies agree that vaginal birth is appropriate for V/V twins born after 33 weeks or weighing at least 1500–2000 g.

A recent systematic review and meta-analysis of 18 studies concluded that vaginal delivery is appropriate for twin pregnancies with V/V presentation.

Although this is the majority view supporting the safety of vaginal delivery of V/V twins, contrary opinion does exist.

Rossi AC, et al. BJOG 2011
Conclusion

- There are many medical indications that result in preterm delivery.
- Some common indications for late preterm birth, specifically mild pre-eclampsia and gestational hypertension, may not be justified.
- Indicated moderate preterm birth is much less common and generally is related to pathologic fetal growth or severe pre-eclampsia/HELLP.
- Obstetric practice has a direct impact on the rates of prematurity.
- Clinical judgement of the obstetrician depending on the individual case still remains important in deciding the mode of delivery.