Premature Rupture of Membranes

Gregory L. Goyert, MD
Division Head, MFM
Women's Health Services
HFHS

Premature Rupture of Membranes
PROM

- PROM
  - Ruptured membranes prior to labor
- Preterm PROM
  - Ruptured membranes prior to 37 weeks
- Keys to appropriate management
  - Accurate gestational age assessment
  - Dynamic, intensive maternal & fetal assessment

PROM Etiology

- Intraamniotic infection
- Preterm contractions
- Low socioeconomic status
- 2nd/3rd trimester bleeding
- Low BMI
- Copper/zinc deficiencies
- Connective tissue disorders
- Cigarette smoking
- Uterine overdistension
- Pulmonary disease
- Amniocentesis
- Short CL
- Cervical conization
- Cerclage
- History prior PTD
- No identifiable risk factors
PROM after Midtrimester Amniocentesis

- Outcome much better than after spontaneous preterm PROM
- Risk after amniocentesis 1-1.2%
- Attributable risk of pregnancy loss 0.06%
- Typical clinical course is resealing with restoration of normal amniotic fluid volume

PROM Diagnosis

- History and Physical
  - Speculum examination, not digital unless
    - Active labor is obvious
    - Imminent delivery is planned
  - Confirmed by visualization of fluid per os
- Ferning
  - Vaginal secretion pH assessment-Nitrazine
    - Basic if amniotic fluid
    - False positives with blood, semen, bacterial vaginosis
- Ultrasound for amniotic fluid volume
  - Instillation of indigo carmine dye
PROM Diagnosis

- **AmniSure**
  - Placental alpha-microglobulin-1 (PAM-1) assay
  - Concentration in AF 1k-10k higher than vagina
  - Prospective observational study 184 patients
    - Sensitivity 98.7%; specificity 87.5%
    - Positive PV 98.1%; negative PV 91.3%
  - Cost: $55/test kit

- **ROM +**
  - Placental Protein 12 (PP12) and Alpha-fetoprotein (AFP)
  - Similar/better performance than AmniSure
  - Cost: $35/test kit

Loss of bedside clinical skills?

Initial Management PROM

- Confirm gestational age, presentation, fetal status
- Delivery indicated regardless of gestational age
  - Evident intrauterine infection
  - Abruption
  - Fetal compromise
- PROM at term
  - Labor induction
  - GBS prophylaxis based on prior culture/risk factors
  - Decreased risk chorioamnionitis, postpartum endometritis, neonatal antibiotic therapy

Expectant Management Preterm PROM

- Proceed with delivery at or beyond 34 wks
  - It is assumed that patients with preterm PROM will benefit from betamethasone in the late preterm period
- 24-34 weeks, manage expectantly
  - Inpatient management
  - Frequent maternal/fetal surveillance
    - Daily fetal testing
    - Maternal fever, tachycardia, uterine tenderness
  - Initial AFV and CL, in isolation, not useful
  - Specific recommendations for or against tocolysis with preterm PROM cannot be made
    - Conflicting data
      - Longer latency; increased risk of chorioamnionitis
    - Therapeutic usage not recommended
Expectant Management Preterm PROM

- **Corticosteroid administration**
  - Single course for patients 23-34 weeks
    - Reduced risk RDS, IVH, NEC, mortality
  - Utility of rescue course of BMZ
    - Insufficient evidence to make a recommendation for or against
  - It is assumed that patients with preterm PROM will benefit from betamethasone in the late preterm period

- **Adjunctive antibiotic therapy**
  - Widely studied and debated
  - NICHD-MFMU Research Network 1997
    - Intravenous ampicillin/erythromycin 48 hours
    - Followed by oral amoxicillin/erythromycin 5 days
    - Decreased risk chorioamnionitis, increased latency
    - Reduced risk RDS, NEC, and PDA
  - Intrapartum GBS prophylaxis indicated regardless of prior antibiotic therapy
  - Oral erythromycin/extended spectrum ampicillin-clavulanic acid not beneficial, may be harmful, not recommended

- **After viability, safety of expectant management at home not established**
  - Hospitalization with MF surveillance recommended
  - No controlled studies have found cerclage retention or removal after PROM improves outcome
  - Either removal or retention is reasonable
  - With active HSV, expectant management with antiviral therapy may be preferable
    - Need to balance against risk of prematurity
    - Recent series (29 pts) with no cases of neonatal HSV
Expectant Management Preterm PROM before Viability

- Accurate, current outcomes information crucial
  - Rapidly evolving landscape
  - Perinatology.com
    - Extremely Preterm Birth Outcome Data
- No evidence-based guidelines
  - Initial period of inpatient monitoring
  - Delivery should be offered
  - Early identification of infection or abruption
  - Monitor temperatures at home
  - Readmit to hospital at viability
    - Corticosteroids and latency antibiotics

---

**Percentage Survival by Gestational Age**

![Graph showing percentage survival by gestational age](ACOG/SMFM Obstetric Care Consensus November 2015)
Percentage with severe or moderate disability by gestational age among surviving newborns

ACOG/SMFM Obstetric Care Consensus
November 2015

ACOG Practice Bulletin #172 October 2016

PROM Management
Overview

- Early Term and Term: 37 weeks and beyond
  - Proceed to delivery
  - GBS prophylaxis as indicated
- Late Preterm: 34-37
  - Same as for Early Term and Term
  - Consider course of betamethasone
- Preterm: 23-34 weeks
  - Expectant management
  - GBS prophylaxis
  - Single course corticosteroid
  - Consider rescue course
  - Antibiotics to prolong latency
  - Magnesium sulfate for neuroprotection at < 32 weeks at delivery

ACOG Practice Bulletin #172 October 2016

PROM Management
Overview

- Previabile Gestations: < 23 weeks?
  - Intensive counseling
  - Expectant management or labor induction
  - Not recommended prior to viability:
    - GBS prophylaxis
    - Corticosteroids
    - Antibiotics (?)
    - Tocolysis
    - Magnesium sulfate for neuroprotection