

## ANMC WOMEN'S HEALTH SERVICE PRELABOR RUPTURE OF MEMBRANES

### A. Preterm PROM

#### 1. Definition:

Rupture of the membranes  $\leq 36 \frac{6}{7}$  weeks gestation and prior to the onset of labor. (To be distinguished from "prelabor rupture of membranes" prior to the onset of labor at term, and from premature rupture of membranes without labor prior to viability at 23-24 weeks, which is most commonly associated with "hour-glassing" of the membranes secondary to cervical insufficiency.)

#### a. Associations with PPROM:

-same as for preterm birth above, current theory is that PPROM is the result of occult infection at the choriodecidual interface with production of microbial collagenases resulting in membrane rupture.

#### Midtrimester PPROM: KEY POINTS

- Midtrimester PPROM is associated with the same risk factors at PPROM later in gestation
- Mean latency is 17 days, median latency is 7 days because the majority of pregnancies deliver soon after rupture of membranes
- The frequency of chorioamnionitis is higher early in the latency period and at lower residual amniotic fluid volumes
- Abruptio placentae and cord prolapse are more common in pregnancies complicated by PPROM
- Neonatal survival is primarily related to gestational age at delivery and is comparable to that in preterm deliveries matched for gestational age without PPROM.
- The neonatal risk of both pulmonary hypoplasia and musculoskeletal deformation decrease with advancing gestational age, shorter latency, and greater residual amniotic fluid volume.
- Maternal risks from midtrimester PPROM are lower than fetal/neonatal risks and include infection, need for cesarean delivery, and need for classical hysterotomy.
- Absence of amniotic fluid leakage associated with resealing of membranes and reaccumulation of amniotic fluid confers a prognosis comparable to that of pregnancies without PPROM.

#### Corticosteroids

A single course of corticosteroids is recommended for pregnant women between  $\geq 23 \frac{0}{7}$  weeks and  $\leq 33 \frac{6}{7}$  weeks of gestation who are at risk of preterm delivery within 7 days.

#### 'Rescue' Steroids

A single course of 'rescue' therapy is reasonable if the  $\geq 24 \frac{0}{7}$  weeks and  $\leq 33 \frac{6}{7}$  weeks of gestation patient is clinically estimated to be at high risk of delivery within the

next seven days, at least seven days have passed since the initial course of antenatal corticosteroids. However, regularly scheduled repeat courses or multiple courses (more than two) are not recommended.

### **Antibiotics**

There are 3 separate indications to give antibiotics in this setting:

- GBS prophylaxis
- prolong latency period
- treat overt chorioamnionitis

### **2. Management:**

- Review pregnancy dating criteria
- Perform sterile speculum examination for evidence of amniotic fluid
- Refrain from performing a digital examination unless absolutely necessary to document advanced labor prior to transport. (Remember that if you can visualize a portion of the presenting part, the cervix is most likely significantly effaced and dilated at least 4 cm, but if it appears “closed” it may be any dilation <4cm...) Digital examination “winds the clock of infection” and significantly decreases the latency period for the onset of labor, and increases the risk of infection, and is to be avoided in this setting if at all possible.
- Confirm presentation by Leopold’s and/or ultrasound
- Perform level I ultrasound to assess GA, EFW, AFI, presentation, and anatomy
- Obtain fetal monitor strip and maternal vital signs
- Administer group B strep prophylaxis per guideline
- Tocolysis (see above) may be appropriate to facilitate transport, but is otherwise not indicated
- $\geq 24\ 0/7$  -  $\leq 31\ 6/7$  wks: Consider MgSO<sub>4</sub> for neuroprotection (see below)
- Consult with OB-GYN is advised for further management and transport

At ANMC PPROM is managed as an inpatient\*

- Daily NST should be carried out
- Maternal temperature and fetal heart rate are monitored q4h, but the onset of uterine contractions is the most common sign of incipient infection. Overt chorioamnionitis mandates delivery.
- Labor may be induced at  $\geq 34\ 0/7$  weeks documented gestation, or sooner with consultation with the Pediatrics service
- Patients may be induced with either vaginal or oral misoprostol or IV oxytocin
- Group B strep prophylaxis should be re-instituted in labor
- If chorioamnionitis is suspected, gentamicin 2 mg/kg IV q8h should also be administered to cover gram negative pathogens
- Patients with rupture of membranes **at term** who are not in labor have a better outcome without an increase in their cesarean birth rate if induced as soon as they present.

\*In cases of extreme prematurity, expectant management should be individualized. There is 2B data to support antibiotic prophylaxis at 23-24 weeks. The data is only 2C from  $\geq 20\ 0/7$ -  $\leq 23\ 0/7$  wks. Please consult with either MFM or Neonatology.

(Please see ACOG/STFM Consensus Summary: Peri viable Birth)

### **EGA $\leq$ 33 6/7 weeks**

#### **Step 1**

If  $\geq$  23 0/7 -  $\leq$  33 6/7 weeks gestation, administer Betamethasone (12 mg) given intramuscularly 24 hours apart for two doses or Dexamethasone (6 mg) given intramuscularly every 12 hours for four doses

#### **Step 2**

If GBS status is unknown, obtain a rectovaginal GBS specimen and for 48 hrs administer:

Ampicillin 2 gm IV q 6 hours X 48 hrs

If penicillin allergy is reported, but it is not urticaria or anaphylaxis, the drug of choice is then cefazolin (1 g IV q8h x 48 hrs), not clindamycin. This is followed by cephalexin 500 mg orally four times daily for five days.

#### **plus**

Azithromycin 500 mg IV q 24 hr x 48 hrs

If erythromycin allergy is reported, cross-reactivity with azithromycin should likewise be uncommon.

#### **Step 3**

To increase the latency period **after 48 hrs**, administer azithromycin 250 mg daily orally for an additional 5 days

#### **Plus**

Amoxicillin (500 mg orally three times daily or 875 mg orally twice daily) for an additional 5 days

### **Use of Magnesium Sulfate for Fetal Neuroprotection**

Women with preterm premature rupture of membranes at  $\geq$  24 0/7\* -  $\leq$  31 6/7 weeks gestation who are expected to deliver within the next 24 hours are eligible for magnesium sulfate for fetal neuroprotection

- upon diagnosis and/or
- in active labor

#### **Exclusion:**

Women who have not delivered within 12 hours of admission for PPRM.

1. A loading dose of magnesium sulfate 6 g IV over 20 minutes should be given.
2. A maintenance dose of magnesium sulfate of 2 g/h should be continued for 12 hours.

3. Other orders for antenatal corticosteroids, and group B strep prophylaxis as per guideline.
4. The infusion should be stopped at 12 hours if delivery has not occurred.
5. If delivery is again considered imminent (resumption of active labor and cervix >4 cm dilated) within 12 hours after the infusion has been discontinued, a repeat 6 g bolus is suggested, and the infusion may be resumed at 2 g/h. The total length of maternal exposure should be less than 24 hours, even if magnesium sulfate is given in divided doses.
6.  $\leq 24 \frac{6}{7}$  wks: only give 4 gm bolus and 1 gm per hour\*

### **Rescue Steroids**

A single course of 'rescue' therapy 24 0/7 wks to  $\leq 33 \frac{6}{7}$  wks is reasonable if the patient is clinically estimated to be at high risk of delivery within the next seven days, and at least seven days have passed since the initial course of antenatal corticosteroids. However, regularly scheduled repeat courses or multiple courses (more than two) are not recommended.

### **Management of Late Preterm ( $\geq 34 \frac{0}{7}$ wk $\leq 36 \frac{0}{7}$ wks)**

1. In women with a singleton pregnancy between 34 weeks 0 days -36 weeks 6 days of gestation who are at high risk for PTB within the next 7 days (but before 37 0/7 weeks of gestation), we recommend treatment with betamethasone (two doses of 12 mg IM twenty four hours apart).
2. In women with preterm labor symptoms in the late preterm (LPT) period, please wait for evidence of preterm labor, such as a cervical dilatation of at least 3 cm or effacement of at least 75%, before treatment with betamethasone.
3. Late preterm antenatal corticosteroid administration should NOT be used in women diagnosed with chorioamnionitis.
4. Administration of late preterm antenatal corticosteroids should NOT be given if the pregnancy was already exposed to antenatal corticosteroids.
5. In women with LPT pregnancies receiving betamethasone, please avoid the use of tocolysis in an attempt to delay delivery to complete the steroid course since it is unclear if the benefits of betamethasone administration are outweighed by the risks of attempts to delay delivery.
6. In women with LPT pregnancies with a potential medical indication for delivery, betamethasone need not be given unless there is a definitive plan for LPT delivery.
7. These recommendations exclude patients with:  
Pregestational diabetes, multifetal gestations, previous exposure to steroids during this pregnancy, or pregnancies with one major or two minor non-lethal fetal malformations. (see Appendix 1)
8. Expectant management in a hospital setting can be offered to these patients. This should include careful monitoring of symptoms and signs of maternal infection, chorioamnionitis, and antepartum hemorrhage. Care should be individualized through shared decision making, and expectant management should not extend beyond 37 0/7

weeks of gestation. Latency antibiotics are not appropriate in this setting. (Quist-Nelson 2018)

## **B. Term PROM**

Women with PROM at 37 0/7 weeks of gestation or more, if spontaneous labor does not occur near the time of presentation in those who do not have contraindication to labor, labor should be induced, generally with oxytocin infusion. However, a course of expectant management may be acceptable for a patient who declines induction of labor as long as the clinical and fetal conditions are reassuring, and she is adequately counseled regarding the risks of prolonged PROM.

Criteria for short term expectant mgmt. at term (<24 hrs)

- GBS negative
- Cephalic
- Reassuring NST
- No signs of infection
- Pocket of fluid 2x2
- Ability to check temp at home
- Good transportation
- Reliable and has assistance
- Kick counts

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#### Rescue corticosteroids in PPRM

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2/7/11  
3/2/02  
10/26/98  
7/31/97  
10/11/95  
October 1994  
January 1988  
June 1980

## **Appendix 1 (See Table 1 and Table 2)**

### **Table 1: Major Fetal Anomalies / Congenital Malformations**

**(Need one major anomaly for exclusion)**

#### **Pulmonary**

Congenital diaphragmatic hernia (CDH)  
Congenital cystic adenomatoid malformation  
Pleural effusions  
Chylothorax  
Bronchogenic cyst  
Bronchopulmonary sequestration

#### **Cardiac**

Anomalous pulmonary venous return  
Tricuspid atresia  
Mitral atresia  
Double right ventricle  
Ebsteins's malformation  
Pulmonary atresia  
Hypoplastic left heart syndrome  
Transposition of great vessels  
Tetrology of fallot  
Double outlet right ventricle  
Aortic stenosis  
Aortic coartation  
Fetal arrhythmia (tachycardia, bradycardia, or supraventricular tachycardia)

#### **Genito-urinary**

Any genitor-urinary lesion accompanied by oligohydramnios at <24 wks  
Bilateral renal agenesis

Cystic renal disease (polycystic or multicystic)  
Obstructive uropathy  
Horseshoe kidney  
Megacystis microcolon  
Cloacal abnormality

### **CNS**

Anencephaly  
Holoprosencephaly  
Dandy-walker malformation or variant  
Septo-optic dysplasia  
Neural tube defect  
Vein of Galen aneurysm

### **Skeletal**

Acondrogenesis  
Thanatophoric dysplasia  
Osteogenesis imperfecta  
Thoracic dysplasia  
Hypophosphatemia  
Short rib polydactyly  
Any skeletal defect with suspected small thorax

### **Other**

Any karyotype abnormality  
Any suspected genetic syndrome  
Cleft lip/palate  
Micrognathia  
Hydrops  
Fetal anemia  
Neck mass  
Gastroschisis

## **Table 2: Minor Fetal Anomalies / Congenital Malformations**

**(Need two minor anomalies for exclusion)**

### **Cardiac**

ASD  
VSD  
Intracardiac echogenic focus

### **CNS**

Choroid plexus cysts (unilateral or bilateral)  
Mild ventriculomegaly (defined by a lateral ventricle measurement of <1.5cm)  
Agenesis of the corpus callosum  
Arachnoid cyst

**Genito-urinary**

Pyelectasis

Hydronephrosis

Unilateral renal agenesis (normal AFI)

Pelvic kidney

Hypospadias

**Skeletal**

Achondroplasia (with normal thoracic circumference)

Clubbed foot (unilateral or bilateral)

**Other**

Echogenic bowel (Cystic fibrosis negative)

Polydactyly