

PRETERM PREMATURE RUPTURE OF MEMBRANES (PPROM) – ASSESSMENT AND MANAGEMENT GUIDELINE

1. OPTIMAL OUTCOMES

- Timely and accurate diagnosis of PPRM
- Antenatal corticosteroids administered to woman with PPRM occurring between 24 and 34 weeks gestation
- Maternal and fetal sequelae of chorioamnionitis are avoided
- Woman receives individualised counselling regarding management options for PPRM and expected neonatal outcomes

2. PATIENT

- Pregnant woman with suspected rupture of membranes <37 weeks' gestation who is not in labour

3. STAFF

- Medical officers
- Registered midwives
- Student midwives

4. EQUIPMENT

- Sterile speculum
- Liquor detection kit
- Sterile vaginal swab
- Sterile gloves
- Light source
- Cardiotocograph (CTG) machine

5. CLINICAL PRACTICE

- Perform midwifery admission
- Organise obstetric review
- Take and document history including:
 - Gestational age and method for dating of pregnancy
 - Date and time of suspected rupture of membranes
 - Fluid volume, colour and odour
 - Presence of uterine contractions
 - Infective symptoms e.g. fever, rigors, dysuria, offensive vaginal discharge, uterine tenderness
 - Group B strep (GBS) status if known
 - Fetal lie
 - Placental location
- Perform abdominal palpation and determine fetal lie and presentation and assess uterine tenderness
- Perform CTG if gestation 24 weeks or greater
- Perform sterile speculum examination, take swabs for liquor detection test and high and low vaginal swabs for microscopy and culture
- Perform digital vaginal examination only if no contraindications exist and either:
 - premature labour is suspected on clinical history or examination or
 - cervix appears effaced or dilated on speculum
- Discuss findings with woman and document

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Approved by
Quality & Patient Safety Committee
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CLINICAL POLICIES, PROCEDURES & GUIDELINES**PRETERM PREMATURE RUPTURE OF MEMBRANES (PPROM) – ASSESSMENT AND MANAGEMENT GUIDELINE cont'd**

Once PPROM is confirmed:

- Perform ultrasound
- Perform baseline full blood count (FBC) and mid-stream urine (MSU)
- Assess likelihood of pre-existing chorioamnionitis:
 - maternal signs: temperature >37.8, tachycardia, offensive vaginal discharge, leucocytosis (taking into account normal range for pregnancy and whether steroids have been given) and uterine tenderness
 - Fetal signs: fetal tachycardia
- Discuss with obstetric consultant:
 - regarding immediate induction of labour (IOL) if high likelihood of pre-existing chorioamnionitis
 - ongoing management according to gestational age if low likelihood of chorioamnionitis

Gestational age <20 weeks

- Counsel woman with spontaneous PPROM and severe oligohydramnios (amniotic fluid index <2) regarding poor pregnancy prognosis and maternal risks of conservative management
- Offer and advise induction of labour
- Give antibiotic cover during induction or conservative management
- Offer second opinion from maternal fetal medicine (MFM) specialist if woman requesting conservative management
- Offer social work support

Gestational age 20-24 weeks

- Counsel woman with spontaneous PPROM and severe oligohydramnios (amniotic fluid index <2) regarding poor pregnancy prognosis and maternal risks of conservative management
- Offer second opinion from MFM specialist
- Offer induction of labour and give antibiotic cover during induction
- Offer social work support
- Advise the following if conservative management is chosen:
 - admit woman for monitoring including temperature, maternal pulse and pad checks at least three times a day
 - give oral erythromycin 400mg qid for 10 days unless contraindications exist
 - check fetal heart rate daily
 - avoid vaginal or speculum examination unless preterm labour is suspected or induction of labour is planned
 - advise induction of labour if clinical signs of chorioamnionitis
- Offer neonatal consultation at 23-24 weeks to discuss administration of antenatal corticosteroids and plans regarding neonatal resuscitation
- Advise the woman to avoid tampons, sex and immersion in water

Gestational age 24-37 weeks

- Counsel woman regarding maternal and fetal risks of PPROM, expected latency period, and management
- Administer antenatal maternal corticosteroids if between 24 and 34 weeks gestation at presentation
- Commence oral antibiotics (erythromycin 400mg qid for 10 days unless contraindications exist)
- Consider tocolysis if indicated to achieve steroid cover
- Inform Newborn Care Centre and request neonatal consultation
- Offer social work support

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- Admit woman for monitoring, including:
 - temperature, maternal pulse and pad checks at least three times a day
 - fetal heart rate monitoring at least once per day
 - repeat ultrasound in one week for measurement of amniotic fluid volume, then fortnightly for growth
 - weekly low vaginal swab and FBC or more frequently if clinically indicated
- Avoid vaginal or speculum examination unless preterm labour or cord complications suspected, or induction of labour planned
- Advise delivery if clinical signs of chorioamnionitis
- Consider possibility of abruption if new-onset vaginal bleeding: review maternal and fetal status promptly
- Consider alternative management options between 32 and 37 weeks' gestation including:
 - expectant management vs induction of labour
 - outpatient management
- Advise the woman to avoid tampons, sex and immersion in water

6. HAZARDS/SUB-OPTIMAL OUTCOMES

- Diagnosis of PPRM delayed or not made
- Antenatal corticosteroids not administered to woman with PPRM occurring between 24 and 34 weeks gestation
- Maternal and fetal morbidity/mortality secondary to chorioamnionitis
- Woman does not receive individualised counselling regarding management options for PPRM and expected neonatal outcomes

7. DOCUMENTATION

- Integrated clinical notes

8. EDUCATIONAL NOTES

- Preterm premature rupture of membranes (<37 weeks gestation) occurs in 2 percent of pregnancies and is responsible for approximately 40% of preterm births.⁵
- Maternal morbidity
 - chorioamnionitis in 37%, postpartum endometritis in 11%, and sepsis in 1%³.
 - placental abruption in at least 2%, with substantially higher risk if chorioamnionitis is present.²
 - caesarean delivery, including classical Caesarean for the very preterm infant or a malpresentation
 - Retained placenta
- Fetal/neonatal morbidity and mortality
 - cord prolapse, risk of cord prolapse is 1-2% in PPRM with cephalic presentation and up to 11% in PPRM with non-cephalic presentation.⁹
 - pulmonary hypoplasia, is associated with gestational age <26 weeks at time of PPRM, but is not universal even where PPRM occurs at <20 weeks gestation¹². There is no absolute antenatal predictor of the presence or absence of pulmonary hypoplasia.
 - neonatal mortality is strongly associated with lesser gestational age at PPRM, presence of pulmonary hypoplasia at birth, and shorter latency period from PPRM to delivery. Quoted mortality rates vary widely: for infants with pulmonary hypoplasia mortality rates of 70-95% have been reported, and as regards antenatal prediction, the combination of PPRM at <25 weeks and severe oligohydramnios for >14 days carries a mortality rate of approximately 90%.¹²
 - prognosis is improved in:
 - pregnancies with PPRM after amniocentesis, which have higher likelihood of membrane resealing and fluid re-accumulation³
 - pregnancies where amniotic fluid index remains ≥ 2 after PPRM: survival rates of up to 85% if the pregnancy continues to a viable gestation are reported³.

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- There are no universal diagnostic criteria for chorioamnionitis and no one sign or investigation has adequate sensitivity or specificity for diagnosis. The criteria for the diagnosis of clinical chorioamnionitis include: maternal pyrexia, tachycardia, leucocytosis, uterine tenderness, offensive vaginal discharge and fetal tachycardia.⁵ The sensitivity of leucocytosis ranges from 29-47% (a mildly elevated white cell count is normal in pregnancy), the sensitivity of vaginal swabs is 53% with a false positive rate of 25%¹³. In a systematic review of 8 studies on the use of CRP as a predictor of chorioamnionitis in PPRM (with CRP cut-off values ranging between 5 and 40), only 3 of the 8 studies found that CRP had clinically useful predictive value.¹¹
- Following corticosteroids administration there will usually be a transient rise in white cell count for 48 hours.
- Some clinicians would recommend the use of regular CRP as part of the evaluation of chorioamnionitis
- The use of antibiotics following PPRM is associated with an approximate 40% reduction in chorioamnionitis (relative risk 0.57, 95% confidence interval 0.37-0.86), a 30% reduction in neonatal infection, and a 20% reduction in abnormal neonatal head ultrasound scan prior to discharge from hospital.⁸ There is also a 30% reduction in number of babies born within 48 hours and 20% reduction in number of babies born within 7 days.
- Erythromycin is recommended as the first choice antibiotic as it was used in the single largest randomised controlled trial on antibiotics for PPRM⁶, and does not appear to increase neonatal morbidity or childhood disability at 7 year follow-up.⁷ Amoxicillin-clavulanate is not recommended as it has been found to increase the rate of neonatal necrotising enterocolitis.⁶
- Antibiotic administration following PPRM has not been shown to eradicate intrauterine infection and does not prevent intrauterine infection from establishing.⁴
- Neonatal mortality is reduced by approximately 40%, respiratory distress syndrome by 30%, and cerebroventricular haemorrhage by 50% in infants of women who are given antenatal corticosteroids within 24 hours of PPRM. Administration of antenatal steroids in the setting of PPRM does not increase the likelihood of fetal death, maternal death, maternal fever, chorioamnionitis or puerperal sepsis.¹⁰
- The proportion of women remaining undelivered 10 days after PPRM is not higher in those given tocolysis than in those receiving none.⁵ As uterine contractions may be an indicator of chorioamnionitis in PPRM, tocolysis should only be considered for the purposes of transfer to a tertiary centre or to allow a course of antenatal corticosteroids to be completed.
- One or two digital internal examinations versus no digital examinations has not been found to worsen maternal or fetal outcome¹, however it is associated with a shorter time from PPRM to delivery (3 vs 5 days).
- For viable fetuses it is currently unclear at what gestational age immediate induction (rather than expectant management) should be offered. The incidence of neonatal respiratory distress syndrome is lower following PPRM beyond 34 weeks gestation (but still up to 10%), while maternal chorioamnionitis is approximately 2-3 times more common in expectantly managed versus induced women at 34-37 weeks gestation.⁵ There are currently randomised controlled trials examining this issue.

9. RELATED POLICIES/ PROCEDURES/CLINICAL PRACTICE GUIDELINES

- Admission: midwifery
- ACTIM PROM: qualitative diagnosis of preterm premature rupture of membranes
- CTG policy – antenatal
- Estimation of Due Date
- Fetal heart rate monitoring
- Preterm labour suppression
- Vaginal swab – high
- Syntocinon induction or augmentation of labour
- Vaginal examinations in labour

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