Preterm Prelabour Rupture of Membranes

Preterm prelabour rupture of membranes (P-PROM) is the rupture of membranes prior to the onset of labour, in a patient who is at less than 37 weeks of gestation.

Premature rupture of membranes (PROM) refers to rupture of the membranes occurring prior to the onset of labour and can occur from 37 weeks of gestation onwards.

Most women go into spontaneous labour within 24 hours of rupturing their membranes but 6% of women will not be in spontaneous labour within 96 hours. However, the earlier in gestation the rupture occurs, the less likely that the onset of labour will be within a specified time period.

Epidemiology

- PROM occurs in 6-19% of term pregnancies.[1]
- P-PROM occurs in 2% of all pregnancies.[2]
- P-PROM is associated with 40% of preterm deliveries and can lead to significant morbidity and mortality.

Risk factors

Risk factors for P-PROM are:

- Smoking: heavy cigarette smoking increases the risk of P-PROM. The increased risk is greatest at gestational ages lower than 28 weeks.[3]
- Previous preterm delivery.
- Vaginal bleeding (at any time during the pregnancy).
- There is an association between lower genital tract infection and P-PROM.
- Around a third of women with P-PROM have positive amniotic fluid cultures.[2]

Presentation

The mother may give history of a 'popping sensation' or a 'gush' with continuous watery liquid draining thereafter. Their underwear or pad may be damp.

Investigations

Do not routinely perform a digital vaginal examination, as this will increase the risk of ascending infection.

The earliest clinical signs of ascending infection are fetal tachycardia and a mild increase in maternal temperature. An offensive vaginal discharge may also be present in some women.

- Diagnosis of rupture of membranes:[4]
  - Actually seeing amniotic fluid draining from the cervix and pooling in the vagina after the woman has been lying down for 30 minutes is the most accurate test.[5] Sterile speculum examination: check for liquor and for the umbilical cord.
  - Testing for insulin-like growth factor binding protein-1 or placental alpha-microglobulin-1 may aid diagnosis but results should not be considered in isolation.
  - Nitrazine testing is no longer recommended, as urine, semen and other contaminants may give a false positive test result.
- Regular pad checks.
- The Vision Amniotic Leak Detector (ALD) is a non-invasive diagnostic liner that can be attached to underwear. Its use in the community to prevent unnecessary and inconvenient admissions to hospital is encouraged.\(^5\)

- Ultrasound may be useful to check for gestation and liquor volume.
- Temperature monitoring at least 12-hourly for ascending infection:
  - High vaginal swab.
  - If infection is suspected, check FBC (for WCC), CRP, MSU and blood cultures; start appropriate antibiotic treatment if tests, along with clinical signs, confirm intrauterine infection.

- Fetal monitoring.

\(^\text{NB}\): regular weekly vaginal swabs and/or maternal blood tests (eg, CRP) are not usually indicated but evidence is lacking to guide management in this situation.

**Management\(^2\)**

- Refer urgently to hospital if:
  - P-PROM is suspected.
  - Ascending infection is suspected: maternal or fetal tachycardia, temperature, abdominal tenderness.

- Women are usually seen in hospital and admitted for the first 48 hours. After this time, management at home - which includes taking 4- to 8-hourly temperatures - may be possible for some women.

- Antibiotic administration:
  - Prophylactic antibiotics for P-PROM appear to reduce complications due to preterm delivery and postnatal infection.\(^6\) However, there is no evidence of long-term safety from this strategy and benefits in a high-income healthcare setting may be small.\(^7\)
  - In the UK, the National Institute for Health and Care Excellence (NICE) recommends the use of erythromycin 250 mg qds for 10 days (or until labour is established if this is sooner) following the diagnosis of P-PROM (unlicensed use).\(^4\)
  - If Group B streptococcus is isolated from a swab or if erythromycin is contra-indicated then penicillin or clindamycin is usually recommended.\(^7\)
  - Co-amoxiclav should not be used for prophylaxis in P-PROM.

- Tocolytics - eg, atosiban, nifedipine or ritodrine - are no longer recommended, as they do not significantly improve perinatal outcome.
- Amnioinfusion is not currently recommended for routine clinical management of P-PROM.\(^8\)
- Antenatal steroids should be given if gestation is between 24⁴⁰ and 34⁴⁰ weeks. Antenatal steroids are associated with a significant reduction in rates of neonatal death, respiratory distress syndrome and intraventricular haemorrhage and are safe for the mother.\(^9\)

**Delivery or expectant management?**

- There is currently insufficient evidence to guide clinical practice on the benefits and harms of immediate delivery compared with expectant management for women with P-PROM.\(^10\)
- Delivery should usually be considered at 34 weeks.
- If the pregnancy continues over 36 weeks then the mother should be informed that she has an increased risk of chorioamnionitis and a reduced risk of respiratory problems for the neonate.
- It is recommended that women with PROM at term should not exceed 96 hours following membrane rupture.\(^11\) The risk of maternal and fetal infection increases with longer time between the rupture of membranes and the onset of labour.

**Complications**

- The three main causes of neonatal mortality associated with P-PROM are prematurity, sepsis and pulmonary hypoplasia.
- Umbilical cord prolapse.
- Placental abruption.
- (Early in pregnancy) may lead to oligohydramnios.
- Increased incidence of retained placenta and primary and secondary postpartum haemorrhage.

**Prevention**

Both intravaginal progesterone and cervical cerclage are used prophylactically to prevent P-PROM in different circumstances, although evidence is lacking on which is more effective and the relative costs and benefits of each. In the UK, NICE has the following recommendations for women who, on a transvaginal ultrasound scan between 16⁴⁰ and 34⁴⁰ weeks, have a cervical length of <25 mm:\(^4\)

- Women who have previously had a preterm birth or pregnancy loss between 16⁴⁰ and 34⁴⁰ weeks, should be offered either intravaginal progesterone or cervical cerclage.
- Women with no history of a preterm birth or pregnancy loss between 16⁴⁰ and 34⁴⁰ weeks, should be offered intravaginal progesterone.
Women who have had P-PROM in a previous pregnancy or have a history of cervical trauma, should be offered cervical cerclage.

Further reading & references

- Intrapartum care: care of healthy women and their babies during childbirth; NICE Clinical Guideline (Dec 2014)
- Induction of labour; NICE Clinical Guideline (July 2008)
- Preterm Prelabour Rupture of Membranes; NICE Clinical Guideline (November 2006 - minor amendment October 2010); Royal College of Obstetricians and Gynaecologists
- Preterm labour and birth; NICE Guidelines (November 2015)
- Vision Amniotic Leak Detector to assess unexplained vaginal wetness in pregnancy; NICE Medical Technology Guidance (July 2013)
- Prevention of Early Onset Neonatal Group B Streptococcal Disease; Royal College of Obstetricians and Gynaecologists (2012)
- Antenatal Corticosteroids to Reduce Neonatal Morbidity and Mortality; Royal College of Obstetricians and Gynaecologists (October 2010)

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