

Managing PROM and PPRM

Prelabour rupture of membranes (PROM) is defined as the spontaneous rupture of membranes at term prior to the onset of labour. Premature prelabour rupture of membranes (PPROM) is defined as the spontaneous rupture of membranes from viability to 37 weeks prior to the onset of labour. These two conditions sound very similar and yet the likely pathophysiology, management and prognosis are poles apart. Weighing up the benefits of keeping the fetus in utero to prolong gestation versus the intrauterine environment and the ease of delivery is central to obstetric management and is the crux in both conditions.

PROM

Aetiology and Diagnosis

PROM occurs in 19 per cent of pregnancies. It is more common in women with previous PROM, polyhydramnios and malpresentations, eg occipitoposterior. The aetiology is uncertain, although an 'ill-fitting' presenting part has been traditionally implicated.

Most women present with a history of a sudden gush of fluid sometimes preceded by a 'pop' sensation. Fluid continues to leak. The main differential diagnosis is urinary incontinence, which maybe secondary to a UTI. Diagnosis is usually obvious by examination of a vaginal pad, although sterile speculum maybe indicated if not clear-cut. An HVS can be taken when a sterile speculum is performed. Liquor is usually clear and colourless, though may be pink or meconium stained. If the presenting part is not engaged or there are fetal heart rate concerns, a sterile speculum should be performed to exclude cord prolapse.

Management

The management of PROM is not clear cut. The options include:

- conservative management for a defined period of time;
- conservative management for a defined period of time with

- antibiotics instituted at a particular time;
- induction of labour with syntocinon; or
- induction of labour with prostaglandins.

Which management is chosen varies from unit to unit, obstetrician to obstetrician and woman to woman. This doesn't even include the complication of group B streptococcus screening/risk assessment and treatment!

Timing of delivery

The Cochrane review shows that immediate induction of labour versus waiting up to four days increases the number of labour inductions required as expected (over 6000 women randomised). However, there is no difference in neonatal outcomes from immediate induction of labour or waiting. The rate of caesarean section is the same whether labour is induced immediately or the decision is to wait, but there is a reduction in maternal febrile morbidity from early induction of labour. Of note, 85 per cent of women will labour within 24 hours of PROM. If conservative management is being followed, six-hourly temperature checks (at home or in hospital) are indicated.

Method of induction of labour

In the large Hannah study, women were randomised to oxytocin or prostaglandins. There was no difference in maternal or neonatal outcomes, even when sub-analyses were performed comparing favourable to unfavourable cervixes.

Use of antibiotics

There is no evidence that routine use of antibiotics improves neonatal outcomes in the absence of an indication for group B streptococcus prophylaxis (Cochrane review). If there is prolonged rupture of membranes (>18 hours) in the absence of recent negative swabs to detect group B streptococcus (36+ weeks), mathematical modelling suggests that routine antibiotic prophylaxis will reduce the risk of neonatal group B streptococcus. However, the risk of penicillin allergy needs to be considered and the number needed to treat to avoid one death from Group B streptococcus is 10,000 (RCOG guideline).



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PROM Summary

- Immediate induction of labour or waiting up to 96 hours is indicated depending on local facilities. Early induction of labour is associated with a significant reduction in maternal febrile morbidity.
- Consider waiting at least 24 hours as 85 per cent will deliver spontaneously.
- Induction of labour method depends on local and individual preferences and availability.
- Antibiotics are not routinely indicated, though if there is not a policy of group B streptococcus screening, antibiotics at 18 hours will prevent neonatal death in one in 10,000 cases.

PPROM

Aetiology and Diagnosis

PPROM occurs in three per cent of pregnancies and accounts for a third of all pre-term births. It is more common in women with previous PPRM, previous pre-term-labour, previous cervical surgery, uterine abnormalities, bacterial vaginosis carriage and recurrent bleeding.

The aetiology of PPRM is uncertain, though probably multifactorial. The final common pathway usually involves a sub-clinical chorio-amnionitis following infectious organisms ascending the cervical canal. This maybe facilitated via cervical changes leading to a loss of integrity of the canal or particular organisms being present in the vagina allowing overgrowth of unwanted organisms. The effect is a cascade of biochemical changes in the fetal membranes and decidua which ultimately lead to prostaglandin and cytokine release and up-regulation of intra-cellular messengers. In turn, these changes lead to cervical ripening and membrane disruption and PPRM. Increased uterine activity is often not far behind.

There is probably a sub-group of women where there is a different aetiology which results in membrane disruption but not the inflammatory changes. These are the cases which are often secondary to procedures such as amniocentesis and cases where there has been a sub-chorionic bleed. In these cases, the prognosis may be better.

Diagnosis is often more difficult than PROM as the amount of fluid is smaller than at term and the index of suspicion is not as high. Women usually present with a sudden fluid leak, though not necessarily as dramatic as PROM. Fluid will continue to leak, though may be intermittent. As in PROM, UTI needs to be considered. On examination, the fetal presentation needs to be assessed as there is a high chance it may not be cephalic. A sterile speculum should be performed and an HVS taken. Per vaginum (PV) examination should be avoided. Liquor is usually clear and colourless, though maybe pink. Ultrasound may provide information on liquor volume where the diagnosis remains uncertain.

Management

Rationale

As mentioned, there is an inflammatory mediated pathway resulting in the PPRM. Effectively there is a low grade chorioamnionitis. One of the major aims of the management of PPRM is to correctly identify when a significant clinical chorioamnionitis is evolving and deliver the fetus. Attempting to wait in this situation can result in serious septicaemia for the mother and sepsis and possible white matter brain damage in the fetus. Often uterine activity will increase though not always.

Initial management and daily care

As part of the initial assessment, HVS, MSU and full blood count should be performed. A scan will provide information on presentation, placental position, fetal weight and, if possible, fetal sex to assist in planning for delivery and counselling on neonatal outcomes.

A ten day course of erythromycin is given as it has been shown in the ORACLE study to benefit neonatal outcomes. A recent Cochrane meta-analysis has confirmed that antibiotics improve neonatal outcomes. If the HVS shows group B streptococcus, there is little evidence to guide management. There is no compelling evidence to switch antibiotic regime as it has not been shown that penicillin can effectively eradicate group B streptococcus carriage from the vagina. Steroids should be administered where gestation is <34 weeks.

Temperature and pulse observations should be performed six to eight hourly. These are crude late indicators of evolving chorioamnionitis but are easily performed and non-invasive. White cell count and C reactive protein (CRP) have been investigated as possible better predictors of evolving chorioamnionitis, but are not reliable. There is more positive data for CRP and some units have included this in their protocols on a once to twice weekly basis. When interpreting CRP, the trend is more useful than the absolute level.

Daily CTG or FHR is usually performed to assess for fetal tachycardia. USS is usually performed one to two weekly to assess biometry and liquor volume.

'Eighty-five per cent of women will labour within 24 hours of PROM'

After admission, where possible, neonatal staff should be involved in the counselling and a tour of the neonatal unit arranged for the family. In general, the woman is managed as an inpatient initially but in some cases of PPRM care, at home may be negotiated. The main concern with home-based care is that sepsis can develop very rapidly and fetal compromise can also be rapid, requiring quick delivery.

Timing of delivery

In the absence of fetal or maternal compromise, traditional management has been to deliver at 34 weeks. The rationale is that at this gestation, neonatal outcomes are very good and the risk of infection is no longer thought to be greater than the risk of neonatal complications.

This premise has been recently questioned and there is an RCT to address this question being performed in Australia and New Zealand (coordinated by Professor Jonathan Morris in Sydney). In the study, women are randomised to induction or waiting between 34-37 weeks gestation.

Mode of delivery

In the absence of fetal or maternal compromise, where the presentation is cephalic, vaginal delivery is usually indicated. Obviously, other obstetric factors may need to be considered. In many pre-term births the presentation is non-cephalic. Where the presentation is breech, there is no evidence to suggest that caesarean section improves neonatal outcomes. Generalisation is difficult and decisions need to be individualised.

Where there is evidence of fetal infection, unless delivery is imminent, caesarean section is usually indicated, though at very early gestations with little liquor this may end up being a difficult classical caesarean section. In some cases, at very early gestation the decision may be taken by the obstetrician and family not to perform a difficult caesarean section and allow 'nature to take its course'.

Outcomes

There are many factors to consider when trying to predict neonatal outcome. Generally, outcome is related to gestation, weight and fetal sex, as with all pre-term births. In PPRM in particular, fetal/neonatal sepsis will result in worse outcomes. If there has been PPRM at 18-24 weeks (canalicular phase of lung development), this can be detrimental if there has been no liquor throughout this timeframe. The development of the lungs can be affected and

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