Prelabour rupture membrane (PROM)
PRETERM PROM (P-PROM)

PROM refers to rupture of the membranes with leakage of amniotic fluid in the absence of uterine activity.

Pre-term PROM (PPROM) occurs when rupture of membranes occurs before 37 weeks' gestation.

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At term, approximately 75 per cent of women will labour within 24 hours of membrane rupture.

The latency period tends to be longer with decreasing gestational age: at 26 weeks, only half of women are in labour within 1 week; at 32 weeks, half will labour within 24–48 hours

INCIDENCE

PROM occurs in approximately 8 percent of term pregnancies.

PPROM complicates 2–3 per cent of pregnancies that have not reached 37 weeks' gestation.

PPROM is associated with approximately one third of all deliveries before 37 weeks' gestation.

AETIOLOGY

The pathophysiology of PROM is not well understood but probably includes a variety of mechanical, infective and constitutional mechanisms.

The main risk factors for PPROM include

- a history of PPROM in a previous pregnancy,
- genital tract infection,
- antepartum bleeding
- smoking.

Term PROM

Rupture of the membranes at term usually reflects *physiological process*.

As term approaches, uterine activity is known to increase and Braxton–Hicks contractions are prominent.

Such repetitive stretching of the membranes may lead to weakening via several mechanisms.

First, it induces focal thinning of the membranes.

Second, it leads to strain hardening, a biomechanical phenomenon associated with materials becoming less elastic and less able to withstand stress.

Such stretch-induced weakening will be most likely at the internal cervical os, where physiological ripening of the cervix will allow a degree of membrane prolapse

PPROM

In contrast to the *'natural'* phenomenon occurring at term, PPROM usually has *pathological origins*.

1-Ascending infection appears to be one of the major causes. That chorioamnionitis can be associated with preterm PROM is easily understood. As with preterm labour, the majority of these infections are subclinical and give few signs or symptoms until fluid loss has occurred.

2-antepartum haemorrhage, particularly when it occurs recurrently.

3-A weak cervix can also predispose to early membrane rupture. It will fail as a barrier to ascending infection and, by allowing membrane prolapse, will allow localised biomechanical weakening, as described for term PROM.

4-maternal smoking ,which is dose dependent.

CLINICAL ASSESSMENT

The correct diagnosis of PROM, either preterm or at term, is crucial. Many interventions will be based upon the diagnosis. If undertaken unnecessarily, these interventions will undoubtedly increase maternal and fetal morbidity.

A- History

- A history from the mother of ‘a gush of fluid’ followed by recurrent dampness will correctly identify over 90 per cent of cases of PROM.
- Fetal movement
- Urinary symptoms
- symptoms suggestive of chorioamnionitis

1. Fever/malaise.
2. Abdominal pain, including contractions.
3. Purulent/offensive vaginal discharge

the **differential diagnosis** of leaking liquor includes

- leakage of urine (urinary incontinence);
- excessive vaginal discharge, such as physiologic discharge or bacterial vaginosis;
- cervical mucus (show) as a sign of impending labor.

Examination

- Maternal vital signs.
- Uterine (tenderness, contractions)
- Cardiotogography is useful - fetal tachycardia is used in the definition of clinical chorioamnionitis
- sterile speculum examination, performed after the mother has rested supine for 20–30 minutes.
- Amniotic fluid can be seen pooling in the posterior fornix, either spontaneously or after fundal pressure.
- The absence of any pooling is an equally important finding.
- The cervix can usually also be seen, allowing assessment of length and dilatation.

The presence of meconium should be noted.

- At preterm gestations, meconium is suggestive but not diagnostic of intra-amniotic infection.
- at term, it is a relative contraindication to expectant management.

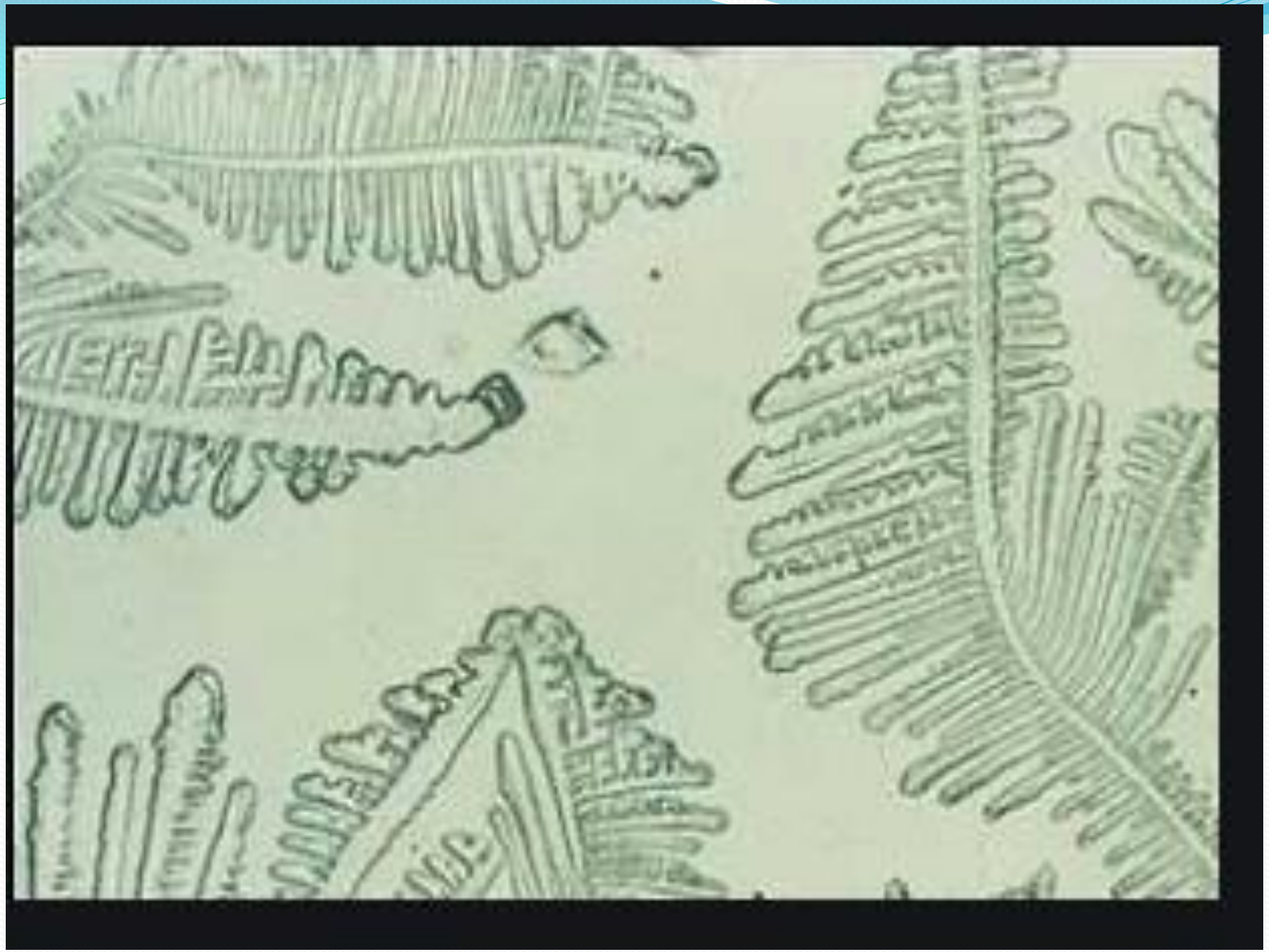
digital examination must be avoided unless the patient is thought to be in established labour, as it is known to increase the incidence of:

- chorioamnionitis;
- postpartum endometritis;
- neonatal infection.

decreases the length of the latent period before the onset of labour, with the greatest decreases seen at the earliest gestations.

Investigations

- FBC, CRP (raised WCC and CRP indicate infection).
- Swabs (high vaginal swab (HVS), low vaginal swab (LVS)).
- MSU.
- USS for fetal presentation, EFW, and liquor volume
- nitrazine sticks (relying on the higher alkaline pH of amniotic fluid) The false-positive is 17% due to contamination with urine, blood or semen,
- ferning pattern seen when amniotic fluid is dried onto a glass slide and then viewed under a microscope owing to its sodium chloride and protein content. The false-positive is 6% due to cervical mucus



- more specialised and technologically advanced tests that are rapidly able to detect amniotic fluid proteins present in cervico-vaginal discharge utilize the high concentration of either insulin-like growth factor binding protein-1 (IGFBP-1) or placental alpha micro-globulin-1 (PAMG-1) within amniotic fluid compared to other body fluids. Both tests have appreciably lower false-positive and false-negative rates than that achievable with history and examination alone.

reported a sensitivity and specificity of 96.0 per cent and 98.9 per cent respectively for the PAMG-1 test.

- . fFN testing has been shown to become negative in some women after membranes have been ruptured for more than 12 hours if liquor is not seen on speculum examination.
- It should be noted that none of these technologically advanced tests for the detection of PROM have been evaluated against the **true gold standard for the detection of PROM: the amnio-dye test.**

Management

_ balances the risk of prematurity (if delivery is encouraged) versus the risk of maternal and fetal infection (if delivery is delayed).

In general, conservative management is followed in PPROM before 34 weeks' gestation unless there is evidence of chorioamnionitis or contraindications to prolongation of pregnancy.

- At term, the outcomes for women with PROM are as good in women induced immediately as in those managed conservatively. Where possible, women should be offered the choice.
- women known to be colonised with GBS should be encouraged to allow immediate delivery of labour.
- early induction appears to reduce perinatal infection and shorten hospital stay without increasing operative intervention.

Conservative management includes

- intensive clinical surveillance for signs of chorioamnionitis including

1-regular recording of maternal temperature,heart rate,

2-cardiotocography

3- maternal biochemistry, with a rising white cell count or a rising C-reactive protein indicating development of chorioamnionitis.

4- Lower genital tract swabs are routinely taken, but cultures do not correlate well with the risk of chorioamnionitis.

The criteria for the diagnosis of clinical chorioamnionitis include:

- maternal pyrexia (>38°C), and at least two of either:
- maternal tachycardia >100 bpm;
- fetal tachycardia >160 bpm;
- uterine tenderness;
- raised C-reactive protein;
- offensive vaginal discharge.

The frequency of maternal temperature, pulse and fetal heart rate auscultation should be between every 4 hrs.

- Antibiotic Erythromycin oral 250 mg four times daily for 10 days following the diagnosis of rupture membrane

co-amoxiclav increase the risk of neonatal necrotising enterocolitis and is best avoided. Erythromycin or penicillin appears the antibiotic of choice PPROM.

- Antenatal corticosteroids.
- Prophylactic or therapeutic tocolysis in women with PPROM is not recommended.
- Delivery should be considered at 34 weeks of gestation.

Hospital versus outpatient monitoring:

women presenting with PPROM and subclinical intrauterine infection deliver earlier than non-infected patients.

It is reasonable to keep woman in hospital for at least 48 hours before a decision is made to allow her home.

This method of management should be individualised and restricted to certain women.

Women should be instructed to take regular temperature recordings at home every 4–8 hours.

Pre-viable PROM below 23–24 weeks' gestation

There are significant risks of lethal pulmonary hypoplasia, These risks are highest early in the mid-trimester

As there are additional risks of chronic pulmonary morbidity, fetal limb contractures and extreme preterm birth with consequent co-existent morbidity and mortality, many parents will opt for termination of pregnancy.

Researchers have investigated the role of minimally invasive surgery and membrane sealants in this situation, as the prognosis is otherwise very poor, but results have proved disappointing

Risks to mother from PPROM

- **Infection endometrits,myometrits,wound infectin sepsis even death**
- **Placental abruption (APH,PPH)**
- **Caesera n section**

Risks to fetus from PPROM

- Prematurity.
- Infection.
- Pulmonary hypoplasia.
- Limb contractures.

Cord prolapse