

## Premature/Pre-Labor Rupture of Membrane

### Definitions

Premature/ pre-labor rupture of membrane PROM (premature/pre labor rupture of membranes) is rupture of membranes (ROM) before the onset of labor (regular uterine contractions)

- Latency period: - is the interval between the rupture of membranes(ROM) & the onset of labor
- Prolonged PROM is rupture of membranes for > 12 hrs
- Term PROM is rupture of membranes after 37 completed weeks of gestation
- Pre term PROM: - is rupture of membranes before 37 completed weeks of gestation

### Diagnosis

An accurate diagnosis is crucial to the management of suspected ROM Most cases can be diagnosed on the basis of the history & physical examination.

Digital examination should be avoided as it increases the risk of ascending infection

### History

- Most commonly the patient presents with history of a **large gush of fluid from the vagina followed by persistent uncontrolled leakage** .
- Some patients have only small, intermittent leakage
- May soak clothing or bedding
- Fluid may be seen on clothing or on sanitary pads
- Fluid can usually be seen at the introits
- Typical odor of amniotic fluid confirm the diagnosis

### Physical examination

- **General examination to rule the presences of maternal and fetal infection**
- **Speculum examination** - using high level disinfected or sterile instruments may help to confirm the diagnosis, & may reveal
  - Glistening, washed out vagina
  - Fluid pooling in posterior fornix

- Free flow of fluid from cervix! presence of meconium/vernix
- Ask the women to cough' this may cause a gush of fluid

In addition during speculum examination note the following

- Rule out the presence of a cord prolapse
- Asses the state of the cervix (effacement and dilatation)

### **Additional test to confirm diagnosis**

**Pad test** can be helpful when there is no pooling & no leakage from cervix .

- Place a vaginal pad over the vulva & examine it an hour later visually & by odor
- Wetting with no urine and no vaginal discharge (vaginitis) may suggest PROM
- If the diagnosis remains in question, do two tests, if available

### **Nitrazine paper test**

- Depends upon the fact that vaginal secretions & urine are acid while amniotic fluid is alkaline
- Hold a piece of nitrazine paper in a hemostat & touch it against the fluid pooled on the speculum blade. A change from yellow to blue indicates alkalinity (a PH > 6-6.5) (amniotic fluid 7.0-7.5, vaginal secretion 4.5-6)
- The test is accurate in 90-98% of cases
- Urine PH should be obtained simultaneously
- **False positive** results of nitrazine testing, may occur in the presence of
  - Blood or semen contamination
  - Alkaline antiseptics, or
  - Bacterial vaginosis
- **False negative** results occur with prolonged leakage & minimal residual fluid.

### **The fern test**

- Obtain fluid by swabbing the posterior fornix, avoiding cervical mucus
- Spread some fluid on a slide & let it dry. Examine it with a microscope
- Amniotic fluid crystallizes & may leave a fern-leaf pattern (arborization), which suggests membrane rupture
- The test accurately confirms PROM in 85-98% of cases
- False negatives are frequent
- False positive test can result from the collection of cervical mucus

- The test is unaffected by, meconium, changes in vaginal PH & blood: Amniotic fluid ratio of  $\leq 1: 10$  (may not fern in heavy contamination of blood)

#### **Ultrasound examination,**

- **Ultrasound examination** may be useful, when the Clinical history or physical examination is unclear, to document **oligohydramnios**. PROM is less likely if fluid volume is normal.

#### **Dye test**

- Ultrasound guided trans-abdominal installation of indigo carmine dye (1 ml in 9 ml sterile N/S) followed by observation for passage of blue fluid from the vagina within 30 min.
- The test is seldom indicated. Methylene blue should not be used

## **Management of PROM**

### **Natural history of PROM**

The duration of PROM (latent period) is inversely related to the gestational age at the time of rupture of membranes.

- <26wks GA: - 30-40% gain at least 1 week and 20% gain at least > 4weeks
- 28-34wks: - 70 -80% deliver within 1<sup>st</sup> week and >1/2 of these within 1<sup>st</sup> 4 days
- At term: - 80% go into labor within 24hrs of rupture of membrane

### **ii) General Management**

- Confirm the diagnosis, & once the diagnosis is confirmed admit the woman to a hospital.
- Assess -maternal & fetal well being & check for signs of labor
- Determine gestation age from the last normal menstrual period, milestones of pregnancy or ultrasound
- Determine Fundal height which will mostly be less than gestational age
- Ascertain Fetal presentation
- Determine cervical status- by sterile speculum examination (avoid digital examination)
- Do cervical swab may be taken this time (if not for immediate delivery) &

determine CBC

- Check for signs of intra-amniotic infection (chorioamnionitis) including
  - Maternal fever
  - Fetal tachycardia ((FHB > 160 beats per minutes)
  - Tender uterus
  - Purulent cervical discharge
  - Leukocytosis &/or positive bacterial culture (if later in the course)

NB some suggests 2 peaks for infection after PROM

- 1-12 hours & 72 hrs after the ROM

If there are signs of uterine infection at any time during the pregnancy, Manage as chorioamnionitis:

- 1) Start treatment with broad-spectrum, high dose. IV antibiotics
  - (in adequate doses to cover gram-positive, gram negative & anaerobes)
  - Penicillion, Gentamycin & Metronidazole is a good combination)

Doses - Ampicillin 2gm IV Q 6 hrs for 7-10 days

- Gentamycin 80mg IV Q 8hrs for 7-10 days
- Metronidazole 500mg P.O Q 8hrs (IV is best, if available)

Alternatives for Metronidazole could be

- Clindamycin 900mg IV Q 8hrs (best, if available)
- Chlorapmhenicol 1gm IV Q 6hrs

Single agent treatment with Ceftriazone 19m IV Bid/10 days

- 2) Induce labor & expedite delivery, without any delay despite the GA; consider cesarean section if abnormal labor occur.
- 3) Continue antibiotics post partum, at least for 24hrs after the mother becomes non Febrile

Further management of PROM, without evidence for infection, depends upon the gestational

age.

iii) Management of Term PROM (>37wks GA)

At term, PROM complicates approximately 8% of pregnancies & is generally followed by onset of labor & delivery. Half of all term PROM will delivery after 5 hrs and 95% will deliver within 28hrs of ROM.

The information now available, from the "Term PROM Trial", showed no difference in any major outcome measure whether the chosen management was immediate induction, using oxytocin or vaginal prostaglandin, or expectant Management.

Therefore, our management approaches, in term PROM should be:

Expedite delivery with out delay; in presence of suspected or evident intrauterine infection, abruption placenta, or evidence of fetal compromise.

Route of delivery depends on other obstetric conditions

If the cervix is favorable (on speculum examination)

- Consider induction, especially if duration of ROM is > 12-16hrs (Without onset of labor}
- Institute prophylactic anti-biotic when the duration of ROM> 12hrs

If the cervix is unfavorable (in absence of other needs for immediate delivery)

- Start on expectant management (described below) & consider prostaglandin for cervical ripening (if possible)

iv) Management of near term PROM (34-37 wks GA)

- In this gestational age range, induction or expectant management are acceptable management options depending on local resources (similar to the Management of term PROM)
- Consider antenatal steroids & prostaglandin for cervical ripening, if possible, before induction (or while on expectant Management)

v) Management of Pre term PROM( under 34 wks)

- At this gestational age , expectant management is preferred (in absence of chorioamnionitis), because of the significant risks associated with pre- maturity; & attempts should be made to prolong the latent period.

**NB:** - It is important to re-emphasize here again that, there is almost a universal agreement that delivery should be expeditiously undertaken regardless of the GA, when clinical Chorioamnionitis is diagnosed.

### **Expectant management**

Expectant management, when chosen at any gestational age, consists of the following Principles.

- Avoid digital cervical (pelvic ) examination
- **Advise bed-rest**, to potentially enhance amniotic fluid re- accumulation & possible delay onset of labor.
- **Complete pelvic rest-** to avoid infection
- **Use of steroids**, as in pre term labor, to accelerate fetal lung maturity are indicated unless there is evidence of chorioamnionitis (except for term PROM). One can use either
  - Betamethasone 12mg IM q 24hrs, for 2 doses (or every 12 hrs)
  - or
  - Dexamethasone 6mg IV q 12hrs for 4 doses (or every 6hrs)

**NB:** - Even an incomplete course of steroids may still be beneficial

- **Provide prophylactic antibiotics**
  - Advantages possibly include
    - Increased latency period
    - Decreased incidence of maternal & neonatal morbidity & mortality
  - Antibiotics & dose for prophylaxis
  - Give Amoxicillin 500 mg & Erythromycin 500 mg P.O. every 8hrs for 7 days, if delivery doesn't occur (may be started as Ampicillin 2gm IV QID & Erythromycin 500 mg IV QID for 48 hrs).

If there is no sign of uterine infection, discontinue antibiotics after delivery

- Consider transfer to a higher care center with newborn intensive care, if possible
- Implement- surveillance for infection when duration of PROM exceeds 12 hrs, which may include monitoring the following:
  - Maternal pulse & temperature- every 4-6hrs
  - FHR every 4-6hrs (& if possible CTG 2x daily)
  - Uterine tenderness or irritability (or pain)
  - WBC count & differential- changes, daily
  - Amniotic fluid appearance & odor (if pussy & foal smelling)
  - If possible liquor is sent every 12-24 hrs for gram stain & -culture ( if possible additionally examine for phosphatidyl glycerol daily)

**Indications for delivery (i.e. termination of expectant Management) include:**

1. Onset of labor
2. Gestation age  $\geq$  37wks or the presence of phosphatidyl glycerol daily (indicates fetal lung maturity)
3. Evidence for fetal distress
4. Evidence for intra uterine infection.

All infants who are symptomatic require antibiotic therapy & appropriate septic work ups.

