PURPOSE: The sterile speculum exam with microscopic examination of amniotic fluid is used to assist the practitioner to determine if amniotic membranes have ruptured.

DEFINITIONS: Amniotic fluid contains a high amount of a salt called sodium chloride. If drops of the fluid are spread on a glass slide, allowed to dry, and examined through a microscope, a characteristic palm leaf pattern can be seen. This is why it is sometimes called "arborization" or the fern test.

KNOWLEDGE BASE: Substances
• The presence of blood, urine or cervical mucous can result in a false positive fern test.

Specificity and Sensitivity
• The fern test has proved to be more specific than vaginal pH, fetal cells and fetal fibronectin methods for the detection of premature rupture of membranes (PROM).

Before you Begin:
Specimen must be obtained from the posterior vaginal pool. The presence of blood, urine or cervical mucous can result in a false positive fern test.

PROCEDURE:
EQUIPMENT:
Sterile speculum
Sterile gloves
Sterile cotton tip swabs
Microscope slides (2)
Slide specimen carrier (1)
Patient identification labels (Cerner)
Lab requisition form

1. Universal Precautions must be observed at all times when handling body fluids.
2. Position patient in the dorsal lithotomy position.
3. Avoid the use of any lubricants or antiseptics.
4. Place sterile speculum into vaginal vault.
5. Obtain a sample of vaginal secretions from the posterior vaginal pool using a sterile swab. Be sure not to touch the mucus plug.
6. Place fluid on glass slide frosted side up spreading specimen evenly so that a thin smear is formed. Do not cover slide. Repeat process with second slide.
7. Allow slides to **air-dry**. This will require about 5 minutes.
8. **Do not apply heat**.
9. Label the specimens. Label the specimen slides with date/time/initials with the proper patient identification on the frosted edge of the slide. If patient ID labels are used do not place on the bottom side of the slide.
10. Place lab order in computer.
11. Place labeled slides in carrier with computer requisition completed and Tube to lab for STAT analysis.

**EXCEPTIONS:**

- **False negatives** may result during prolonged rupture of membranes (longer than 24 hrs) or if only a small quantity of amniotic fluid has leaked.
- False positives can result from the collection of cervical mucus.
- Both fingerprint stained slides and dried saline irrigation solution samples have been reported to cause falsely positive arborization patterns.
- Seminal fluid may also cause false results.

**EXPECTED OUTCOME:**

**Test Principle**

- This test is based on the ability of amniotic fluid to form a fern pattern when air-dried on a glass slide; this phenomenon in part is due to the fluid’s protein and sodium chloride content. A vaginal liquid pool specimen is obtained, allowed to dry completely in room air, and examined microscopically. A positive screen is depicted by the presence of fern-like patterns characteristic of amniotic fluid crystals.

**REFERENCES:**

- Addison, Lois Anne, Laboratory Medicine, AObstetrical Ferning Test@, pg. 451, July 1999 Vol. 30, No. 7.

AUTHORS:

Debbie Dietz, MSN, APN, Labor and Delivery
Felice Baron, MD, Director, Maternal Fetal Medicine
Dana Rickard BS, MT(ASCP), Manager, Laboratory Services