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48667.281 Fern Test (Amniotic Fluid Crystallization Test for Ruptured Membranes)

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Approval and Periodic Review Signatures

Type	Description	Date	Version	Performed By	Notes
Periodic review	Designated Reviewer	3/22/2021	2.0	Barbara Haller, MD, PhD Barbara Haller	
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Signatures from prior revisions are not listed.

Prior History

Version History

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2.0	Approved and Current	Major revision	9/16/2019	9/27/2019	Indefinite

Author: Original: Margaret Fong, CLS and Kathleen Flanagan, RN; Revising: Caroline Tolman-Salinas, CLS
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FERN TEST
(AMNIOTIC FLUID CRYSTALLIZATION TEST FOR RUPTURED MEMBRANES)

PURPOSE

Detection of fern-type amniotic fluid crystallization is used as an aid in detection of ruptured amniotic membranes in pregnant patients. The test is often used in conjunction with vaginal pH.

PRINCIPLE

Microscopic examination of vaginal fluid: Amniotic fluid crystallizes in a fernlike pattern when left to dry on a glass slide. The typical pattern is readily observed microscopically. In contrast to cervical mucus, which also crystallizes in a fernlike pattern at times when estrogen is elevated, the “ferning” of amniotic fluid involves the entire smear, while “ferning” of cervical mucus occurs in a linear fashion.

TESTING PERSONNEL

- Qualified physicians, nurse practitioners, physician assistants, and midwives may qualify to enroll in the PPMP program. NOTE: residents and fellows with 2 years or more of residency training and a current California medical license may qualify to enroll in the PPMP program.
- Interns, residents and fellows enrolled in an ACGME approved training program may perform the Fern Test when supervised by a qualified, licensed provider.
- Testing personnel are required to take the initial training and competency assessment. Competency assessment (using 6 methods) must be completed after initial training and before technical duties are performed, six months after completion of initial training and annually thereafter.

SPECIMEN

A. Conditions for preparation of patient:
   1. Sterile speculum examination is performed to collect vaginal fluid.
   2. In equivocal cases, repeat the sterile speculum exam after the patient is in a recumbent position for one hour to determine if pooling of additional fluid in the vagina has occurred.
   3. In cases where gross fluid is notable on the perineum, peripad, or bedding, a slide can be obtained from that source.

B. Type of specimen, amount and acceptable containers:
   Direct smear made from vaginal fluid; allow to air dry at least 10 minutes.

C. Stability:
   Fresh specimen should only be used.

D. Criteria for unacceptable specimen and action to be taken:
Obtain another specimen if the smear cannot be interpreted.

E. Specimen labeling is not required when testing is performed in the presence of the patient and only the sample from one patient is tested at a time. If there is the potential for specimen mix-up, the sample must be labeled with the patient's full name and medical record number.

EQUIPMENT

A. Bright field microscope

B. Sterile vaginal speculum

C. Sterile cotton swab

D. Sterile gloves

E. Microscope glass slide

QUALITY CONTROL

A. Follow the procedure using sterile technique and clean supplies.

B. Preventive cleaning and maintenance of the microscope is performed annually by Biomed Services.

C. On each day of microscope use, perform a microscope check or check a positive QC slide.

D. An acceptable microscope check is when the image is clear and the view is free of debris caused by dirty lenses. If the lenses are dirty, clean them with lens paper and lens cleaner.

PROCEDURE

A. Using two patient identifiers verify patient identity and explain procedure to the patient and/or family.

B. Observe universal precautions; wear gloves and other personal protective equipment as appropriate.

C. Insert vaginal speculum, moistened with warm water, into the patient's vagina. Do not use any other lubricant because it may interfere with analysis.

D. Collect a sample of fluid from the posterior vaginal fornix onto a sterile cotton swab.

E. If the specimen is being collected from the perineum, peripad or bedding, the slide itself can be pressed to the surface or the fluid can be collected with a cotton swab.

Note: ***Avoid the cervix because cervical mucus will yield false-positive results.***

E. Roll the swab on a clean glass microscope, creating a thin film. Set the slide aside to air dry.

F. Allow the slide to dry completely before examining under the microscope.

Note: ***Air drying the slide for a minimum of 10 minutes (versus for 3 minutes only) is preferred because it increases the sensitivity for detection of "ferning".***

G. Examine the air-dried smear under the microscope **without a coverslip** and using low power magnification (10x magnification).

I. Dried amniotic fluid produces a microscopically visible crystallization in a "fern" pattern. Dried normal vaginal fluid does not produce a "fern" pattern.

REPORTING RESULTS:

Document result (fern pattern present <or absent>) in the electronic medical record system or on a results form.

Reference range: No fernlike crystallization observed

LIMITATIONS

- Fern testing is intended for use by qualified medical and Allied Health Staff (e.g., advanced practice RNs and Physician Assistants) only as an aid to professional diagnosis and treatment.

- **False-positive results**: "Ferning" is not specific for amniotic fluid. Other fluids (e.g., blood, cervical mucus, semen and some urine specimens) when dried can also yield microscopic crystallization in a "fern" pattern.

- **False-negative results**: Prolonged rupture of membranes (greater than 24 hours) or slow, minimal leaks can yield false negative results.

REFERENCES:

1. Lowe, S., Saxe, J.: Microscopic Procedures for Primary Care Providers. Lippincott. Philadelphia, 1999; pp180-184.

2. Ferron M, Bilodeau R. Amniotic fluid crystallization test for ruptured membranes. Canad. Med. Assoc. J. Nov. 23, 1963, Vol. 89.

DISTRIBUTION

A. Point of Care Testing Master Manual
B. Approved Point of Care Testing locations via POCT Website www.SFGH-POCT.org