# A BED SIDE TEST FOR DETECTING RUPTURE OF THE FETAL MEMBRANES

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SUMMARY

**A method for detecting rupture of the fetal membranes, first described by Lannetta in 1984 and evaluated by Schiotz H. in 1986, has been tested. The test is based on the heating of endocervical material on a clean glass slide to evaporate water. This leaves a white residue if amniotic fluid (AF) is present and a brown residue if it is not. The method is simple, quick and inexpensive. The study shows that the method is reliable if the result is positive. Owing to the presence of certain false negative cases interpretation may be difficult unless test is clearly positive. Positive results can be obtained as early as 26 weeks gestation. This method may prove to be an additional test to detect rupture of the fetal membranes.**

## *Introduction*

Rupture of the membranes (ROM) with its accompanying problems has been a matter of debate as far as its diagnosis and management is concerned. The problem becomes worse when occurs prematurely, at the gestational age at which fetus cannot enjoy good health in the external world. A number of tests for detecting ROM are known. Not a single test is perfect and some are invasive like amniocentesis and require sophisticated laboratory facilities. The need of the day was a simple test. Thus, a new test was described by Lannetta- "The evaporation test". The test is based on heating an endocervical specimen over an alcohol burner to evaporate water. The simplicity of the test lies in the fact that it can be done at the bedside, takes only a minute to carry out an provides an immediate result. The underlying principle is that the electrolytes in the amniotic fluid precipitate as the water evaporates. This study evaluates this test in some of the patients.

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## *Material and Methods*

The study was conducted at J.N.M.C. Hospital AMU, Aligarh.

*The test* : A per speculum examination is made to expose the cervix and to inspect the vagina and the cervix for evidence of ROM. The cervix is cleaned with a dry swab to remove mucus and moisture. A sterile plastic syringe with a plastic cannula attached at its tip is used to collect a few drops of endocervical material

from about 1 cm. above the external os. The material is spread on a clean glass slide and heated over an alcohol burner. The heating time range can be 30 seconds to 1 minute. Excessive heating causes difficulty in reading as it makes the sample dark. 30 secs. were found to be sufficient for adequate evaporation as was also found in Schiotz (1987) Study.

*Reading the test :* After evaporation, if amniotic fluid is present, the residue on the slide turns white or gray and the test is taken as positive. If the sample contains cervical mucus but very little or no, amniotic fluid, the residue turns brown or black due to charring of the protein in the mucus. The test is then taken as negative.

### *Patients and Results*

The study group consists of patients taken at random. They were grouped as follows - groups 1-3, to test the method in cases of known diagnosis and group 4, comprises of cases for which the test is intended.

*Group 1 :* AF from 10 women collected by directly drawing from amniotic sac during elective cesarean section in gestation weeks 35-40. All tests were positive.

*Group 2 :* 30 women admitted in weeks 28-41 with ROM as judged by positive history and AF seen at vaginal inspection. All cases accepted into this group, were clinically certain. All 30 test were positive.

*Group 3 :* 30 women in weeks 28-40 with no history of ROM, supported by ultrasound and clinical examination including perspeculum examinations. Group included 15 patients examined before elective caesarean section, 9 patients from routine ante-natal clinic and 6 patients admitted for pre-eclampsia, growth retradation or anaemia. All 30 tests were negative.

*Group 4 :* 30 patients were taken who were admitted for suspected ROM in gestational weeks 26-40 where the diagnosis was not confirmed by history, smell or vaginal examination.

Diagnosis of ROM was excluded in 9 patients on the basis of negative evaporation tests, clinical examination, and subsequent development of their pregnancies till term. Repeat tests taken after 2-4 hours of initial examination were also proved negative in these cases.

In 21 patients, ROM was confirmed. Confirmation was based on positive evaporation tests, carefully obtained history and subsequent termination of their pregnancies. All patients with a positive test developed definite signs of labour within 12-18 hours.

Of these 21 women, initial test was positive in 18 of them and 3 were negative. Repeat test after 3 hours became positive in one but other 2 remained negative. These patients developed labour pains after sometime and delivered normal babies after 14 hours and 9 hours, respectively. These were false-negative results.

Statistically, results give (18/21) 85.71% true positive test, (3/21) 14.29% false negative tests, (9/9) 100% true negative test and no false positive tests in group 4 patients.

### *Discussion*

The present study was done without any comparision with other methods. The test is simple, quick, cheap and can be performed at the bedside also. It is helpful for gestations as early as 26 weeks, and it may work for earlier gestations as well.

Samples collection from inside the cervix is easy, does not cause any harm to the pregnancy or any discomfort to the patient and avoids contamination by vaginal secretions. The only problem is to collect enough sample which is sometimes difficult. False negative results can be explained on the basis of probable contamination by cervical mucus, which turns brown on heating. High true positive rate and no false positive results indicate that other tests may be avoided in cases of positive results. Considering false negative cases, the tests may not be reliable unless it is clearly positive, and therefore, additional test(s) are required. The results are totally in accord with those reported by Lannetta 1984, and Schiotz H., 1986.

### *Conclusion*

The bed-side evaporation test may be used as firstline approach for detecting ROM, as it can be performed without much effort during the initial examination of the patient, and other simple vaginal tests for ROM can be performed at the same time.

### *References*

1. *Lannetta O.: Obstet. Gynec. 63:575, 1984.*
2. *Schiotz H.: Acta Obstet. Gynec. Scand. 66:245, 1987.*