



---

## False And True ROM

**Corresponding Author:**

Ms. Judy Cohain,  
CNM, Independent researcher, Alon Shvut 37, 90433 - Israel

**Submitting Author:**

Ms. Judy S Cohain,  
CNM, Independent Researcher, Alon Shvut 37, 90433 - Israel

**Article ID:** WMC001355

**Article Type:** Case Report

**Submitted on:** 12-Dec-2010, 11:42:43 AM GMT **Published on:** 13-Dec-2010, 02:59:54 PM GMT

**Article URL:** [http://www.webmedcentral.com/article\\_view/1355](http://www.webmedcentral.com/article_view/1355)

**Subject Categories:** OBSTETRICS AND GYNAECOLOGY

**Keywords:** Rupture Of Membranes, Meconium, Chorioamnionitis

**How to cite the article:** Cohain J. False And True ROM . WebmedCentral OBSTETRICS AND GYNAECOLOGY 2010;1(12):WMC001355

**Source(s) of Funding:**

No funding. Out of authors pocket.

**Competing Interests:**

No competing interests or conflicts of interest

# False And True ROM

**Author(s):** Cohain J

## Abstract

**Background:** It is estimated that in 15% of term PROM only the chorion breaks. No diagnostic test can distinguish whether one or both layers of sac are broken. Definite Differential diagnosis is only possible if leaking stops (False ROM) or if meconium is present (True ROM). Research evidence is lacking about False ROM. Evidence and a mechanism for an increased risk of chorioamnionitis or endometritis associated with False ROM is also lacking.

**Case:** of False ROM is presented

**Conclusion:** The term False ROM is introduced as well as avenues for future research.

## Introduction , Case, Comment

Currently it is assumed that when membranes are ruptured, both layers of the sac are broken, increasing the risk of chorioamnionitis or endometritis, justifying induction and prophylactic antibiotics.

The English language has up to now no term for only the chorion breaking, however the German language has a name for it. When only the chorion breaks, it is referred to Falscher Blasensprung or False ROM. When the amnion subsequently breaks, it is known as Doppelter Blasensprung or Double ROM. The German term for a high leak when a woman is leaking but still a palpable "bubble" at the presenting part is Hoher Blasensprung. High leak can be False or True ROM depending if it involves only the chorion or both layers. If a high leak is a break only of the chorion, the leaking stops after some time, whereas, if it is a break in both the amnion and chorion, it continues leaking and the hole enlarges with time. Doppelter Blasensprung or Double ROM is used when a high leak ruptures again in front of the presenting part.

The difficulty in distinguish between False ROM and ROM questions the logic behind prophylactic antibiotics for the perhaps 10-20% of ROM in which only the chorion breaks. In the absence of evidence to the contrary, an intact amnion, the thicker and therefore perhaps more effective amniotic membrane, may be an indication of low risk of infection. Therefore, it is compelling to correctly diagnose when the amnion is ruptured.

No test differentiates between ruptured chorion or ruptured amnion unless meconium is observed. Nitrazine paper, ferning, pooling, and Amnisure and other immunological tests each have false positive and false negatives, due to contamination with blood, semen, antiseptics, vaginitis or cervicitis; fingerprints on glass slide, cervical mucus, if there is scant fluid, as well as because of False ROM. Most ROM is currently diagnosed by history, despite the fact that 40% of births are first births, in women who have never experienced ROM before.

Often the woman presents complaining of a small leak. Leakage is usually vaginal discharge, lubrication from the Bartholin glands, or urine. During the second half of pregnancy, 26.3% of women are incontinent of urine (1). When a leak tests positive as amniotic fluid, it may be a high leak in the membranes, not in front of the presenting part. Not infrequently, a woman stops leaking amniotic fluid, and it is commonly believed that a high leak can close up. There is no physiological explanation for how a hole in a sac with a liter of water pushing against it can close up. A more logical explanation for this case would be that only the chorion broke. Electron microscopy has never given evidence of an amnion with a scar from where it closed a high leak.

The chorion and the amnion are not connected and are formed from different layers of the embryo- the chorion arising from the mesoderm and the amnion from the ectoderm. Starting from when they are formed around the 7th day after conception, there is a sac of water between them but slowly and gradually the amnion distends, engulfing the embryo, and near the end of the first trimester the amnion is brought in contact with the chorion. Therefore it is fully possible for water to remain between the two membranes.

In 1868, tests of the tensile strength i.e. testing resistance to tearing and rupture found the chorion gave way long before the amnion (2). The amnion is still thought to be more structurally robust than the chorion (3). The amnion consists of a single layer of epithelial cells on a thick basement membrane which lies upon layers of collagenous tissue interspersed with mesenchymal cells. The compact and fibroblast layers of connective tissue beneath the basement membrane form the main fibrous skeleton of the amnion. Interstitial collagens predominate and form parallel bundles of collagen fibrils that maintain the mechanical integrity of the amnion. The amnion has no muscle, nerve cells, blood vessels, or lymphatic

channels.

In addition to high leaks that stop, False ROM would also explain blatant ROM at the presenting part, that stops leaking after 2 to 8 hours. Where expectant management of PROM is used, in my practice among 400 private consecutive births, about 2% of term births, or 13% of term PROM, experience ROM which stops or False ROM. More typically, this phenomenon is documented in multiparous women who know what ROM feels like. This phenomenon will only be observed in an setting where induction, vaginal exams, and AROM are rarely used.

#### Case study

Upon returning from a week long vacation with her husband and three kids, 34 year old woman, 37+2 weeks, spent the day unpacking & ordering the house. At 5 pm, her water broke, causing 1 ½ cups of pink-tinged fluid to run down her leg and pool on the floor. Water came out more slowly for the next 1 ¾ hours, filling up pads every 20- 30 minutes, without any sign of meconium. After 5 hours, no more liquid came out. No contractions for 30 hours. Subsequently, nipple stimulation was used to bring on labor. Six hours later when a vaginal exam was done, the cervix was dilated 8 cm and a larger, pressured bulging bag of waters palpated. The sac was ruptured to augment the labor, and 2 cups of amniotic fluid flowed out onto plastic sheet. Upon standing, the fluid continued to flow.

#### Comment:

No other explanation can explain the case other than False ROM. The amnion is not strong enough to have a large hole, yet completely stop leaking for 30 hours, despite containing close to a liter of fluid, and then expel the fluid suddenly when another hole was made in it artificially. The German language confirms it.

The presumption of an increased risk of infection due to a rupture of the sac has been complicated by evidence from amniocentesis that in the presence of intact membranes approximately 20% have pathogenic bacteria in their amniotic fluid (4,5). More recently amniocentesis showed 15% of pregnancies have live bacteria, molds and viruses growing inside the intact amniotic sac.(6) Only 6% of those women delivered prematurely, and 94% go on to deliver at full term.

The knowledge that bacteria often get into intact membranes complicates the simplistic view that ROM is the vector for infection. Perhaps the presence of bacteria growth is less important than the factors or conditions which make it possible for them to become virulent. Low levels of Vitamin C and Vitamin E in the amniotic fluid, may be associated with increased premature rupture of membranes.(7) Several theories

have been proposed to explain this observation: Vitamins C and E antioxidant qualities serve to scavenge reactive oxygen thereby protecting the sac; or perhaps protect collagen from metalloproteinases that degrade collagen; or stimulates fibroblasts in the chorioamnion to produce collagen and stabilizes the cross-linkages in the collagen triple helix that provide strength to the collagen.(7) Perhaps Vitamin C infusions into the amniotic fluid may be effective prophylactics against infection. A lack of an explanation for preterm labor (8) may be lacking because of our lack of understanding of the physiology of the sac. Do microorganisms enter the intact sac thru the filtered placental blood or do they have a virulence factor which slips them thru the sac? Which molecules in addition to prolactin enter the sac preferentially? The cytokine-stimulated collagenase production in the fetal membranes is responsible for the reduction of their tensile strength and may in theory be associated with rupture of the membranes, but leaves a question why sometimes only the chorion ruptures.(9) Despite the common presence of cytokines and bacteria, most go on to deliver healthy term infants. Does maternal stress, drug addiction, smoking or obesity break down the ability to keep out bacteria or the ability to keep them in check?

The following questions suggest future research:

How do bacteria enter a sealed amniotic sac?

When does a pocket of water accumulate between the chorion and amnion?

Why do some women seem to have a large amount of fluid between amnion and chorion and others not?

At what stages of pregnancy are there more likely to be fluid between the membranes?

Does the chorion produce amniotic fluid?

Is there such a thing as a high leak or is it a rupture in the chorion?

If there is such a thing as a high leak in both layers of membranes, can they sometimes both close themselves up? If so, what is the mechanism?

When and why does the amnion produce prostaglandins, interleukin, cytokinins?

What is the cause(s) of preterm labor?

How often does the chorion break before the amnion?

Is 2% of term births, or 1% of PROM fairly accurate?

Why does the chorion sometimes break before the amnion?

How can we reliably test for True ROM vs rupture only of the amnion? (aside from when meconium is clearly seen)

Is there an increased risk of infection of the fetus or mother when only the chorion breaks or if there is a high leak?

Amniotic fluid is a easy source for stem cells(10). Why does the body provide large numbers of stem cells in the amniotic fluid?

What is the rate of successful induction vs CS for women with False ROM vs True ROM? Anecdotally, False ROM has a lower rate of successful induction.

## References

---

1. Huebner M, Antolic A, Tunn R. The impact of pregnancy and vaginal delivery on urinary incontinence. *Intl J Gyn Ob* 110(3):249-51.
2. Willams Obstetrics 2001. 21st edition. page 312.
3. Connon CJ, Nakamura T, Hopkinson A, Quantock A, Yagi N, et al. (2007) The Biomechanics of Amnion Rupture: An X-Ray Diffraction Study. *PLoS ONE* 2(11): e1147. doi:10.1371/journal.pone.0001147
4. Watts, D.H., Krohn, M.A., Hillier, S.L., Eschenbach, D.A., 1992. The association of occult amniotic fluid infection with gestational age and neonatal outcome among women in preterm labor. *Obstet. Gynecol.* 79, 351–357.
5. Cox, S.M., Bohman, V.R., Sherman, M.L., Leveno, K.J., 1996. Randomized investigation of antimicrobials for the prevention of preterm birth. *Am. J. Obstet. Gynecol.* 174, 206–210.
6. DiGiulio DB, Romero R, Amogan HP, Kusanovic JP, Bik EM, et al. (2008) Microbial Prevalence, Diversity and Abundance in Amniotic Fluid During Preterm Labor: A Molecular and Culture-Based Investigation. *PLoS ONE* 3(8): e3056.
7. Pressman EK, Thornburg LL, Glantz JC, Earhart A, Wall PD, Ashraf M, Pryhuber GS, Woods JR Jr. Inflammatory cytokines and antioxidants in midtrimester amniotic fluid: correlation with pregnancy outcome. *Am J Obstet Gynecol.* 2010 Oct 13 in press.
8. Wei SQ, Fraser W, Luo ZC. Inflammatory cytokines and spontaneous preterm birth in asymptomatic women: a systematic review. *Obstet Gynecol.* 2010 Aug;116(2 Pt 1):393-401.
9. Winkler M, Rath W. [The role of cytokines in the induction of labor, cervical ripening and rupture of the fetal membranes] *Z Geburtshilfe Neonatol.* 1996;200 Suppl 1:1-12.
10. Phermthai T, Odglun Y, Julavijitphong S, Titapant V, Chuenwattana P, Vantasasiri C, Pattanapanyasat K. A novel method to derive amniotic fluid stem cells for therapeutic purposes. *BMC Cell Biol.* 2010;11(1):79.

## Disclaimer

This article has been downloaded from WebmedCentral. With our unique author driven post publication peer review, contents posted on this web portal do not undergo any prepublication peer or editorial review. It is completely the responsibility of the authors to ensure not only scientific and ethical standards of the manuscript but also its grammatical accuracy. Authors must ensure that they obtain all the necessary permissions before submitting any information that requires obtaining a consent or approval from a third party. Authors should also ensure not to submit any information which they do not have the copyright of or of which they have transferred the copyrights to a third party.

Contents on WebmedCentral are purely for biomedical researchers and scientists. They are not meant to cater to the needs of an individual patient. The web portal or any content(s) therein is neither designed to support, nor replace, the relationship that exists between a patient/site visitor and his/her physician. Your use of the WebmedCentral site and its contents is entirely at your own risk. We do not take any responsibility for any harm that you may suffer or inflict on a third person by following the contents of this website.