

**Premature Rupture of Membranes (PROM)?**

Spontaneous rupture of the amniotic membranes before the onset of labor occurs in about 8% of term pregnancies. Approximately 60% to 80% of women with premature rupture of membranes (PROM) at term will enter spontaneous labor within 24 hours, while 3% to 4% of women with PROM do not begin labor for several days after rupture of membranes (Kappy, Cetrulo, Knuppel, Ingardia, Sbarra, Scerbo, et al., 1982).

Many aspects of the **management of premature rupture of membranes are controversial.** The practice to consistently provide information about the options of expectant management verses immediate induction of labor to women with term PROM, and to involve them in the decision-making process is congruent with midwifery hallmarks and philosophy of care. In addition, it is explicitly supported by Cochrane reviewers and the Term PROM researchers.

The **risk of maternal and neonatal infections increases following rupture of the membranes**, but the etiology of infection following premature rupture of membranes can be difficult to ascertain because pre-existing infection can cause premature rupture. If it is determined that an infection is present, transfer to a hospital would be warranted.

The primary clinical decision related to premature rupture of membranes at term is whether or not to induce labor in an effort to reduce perinatal infection risk. Practice patterns vary considerably, and certainty regarding optimal management remains elusive.

Studies in the 1960s documented an increased incidence of perinatal infection in women with PROM (Lanier, Scarbrough, Fillinim & Baker, 1965; Bryans, 1965; Gunn, Mishell & Morton, 1970; Shubeck, Benson, Clark, Berendes, Weiss & Deutschberger, 1966; Taylor, Morgan & Bruns, 1961; and Naeye, 1977). *These studies found an increase in maternal and perinatal infection and perinatal mortality in women who had rupture of membranes greater than* **24 hours.** The recommendation for immediate labor induction and a management goal of birth within 24 hours of rupture were based on these early investigations. These studies have limited relevance today. Many of these studies did not use standardized criteria for determining perinatal infection, and they lacked randomization.

In addition, they included women with both term and preterm gestations. **Preterm newborns are more likely to acquire infection and have greater morbidity when compared to term newborns**; therefore, the true incidence of neonatal morbidity following 24 hours of PROM in women at term is less than noted in these studies. *Finally, it is important to remember that antibiotics effective for the treatment of anaerobic microorganisms were not available in the 1960s*; because of this, both maternal and neonatal infections were associated with significant morbidity. Contemporary advances such as screening for group B streptococcus, the treatment of infection, fetal surveillance, and neonatal care have significantly improved outcomes.

Subsequent PROM research in the 1970s and 1980s evaluated management options. **Comparisons of immediate induction and expectant management in women with PROM at term found no difference in maternal and neonatal infection rates between the two management options**. There was a significantly higher rate of cesarean sections in women who were induced. The contrast with the earlier studies and concerns about rising cesarean section rates prompted many clinicians to consider a less aggressive management approach to term PROM.

A number of additional prospective studies comparing induction and expectant management followed (Guise & Duff, 1992; Natale, Milne, Campbell, Potts, Webster & Halinda, 1994; Shalev, Peleg, Eliyahu & Nahum, 1995; Grant, Serle, Mahmood, Sarmandal & Conway, 1992; Wagner, Chin, Peters, Drexler & Newman, 1989; Marshal, 1993; Alcalay, Hourvitz, Reichman, Luski, Quint, Barkai et al, 1996; and Chua, Arulkumaran, Sailesh, Selamat, Ratnam, 1995). Results of these studies vary considerably regarding rates of neonatal and maternal infection and cesarean section rates. *These differences and significant inconsistencies in treatment protocols and research methodologies make it difficult to draw conclusions about the best management.* In an effort to address these issues, the large International Multicentre Term Prelabor Rupture of Membranes Study (the TERMPROM study) was conducted between 1992 and 1995, the largest study focusing on the management of PROM to date.

Findings of this landmark study were strengthened by its large, multicenter, randomized sample. However, findings were also limited by several factors, most importantly that all women in the study had digital vaginal examinations at the time of PROM diagnosis, exposing women to a significant risk factor for infection. Logistic regression analysis determined that number of vaginal examinations was most predictive for the development of chorioamnionitis. Of the women who had < 3 vaginal examinations, 2% had clinical chorioaminionitis, whereas the incidence of chorioamnionitis increased to 20% in women who had more than 8 vaginal examinations during labor. The women in the oxytocin induction group had the lowest rate of infection and the fewest vaginal examinations.

The authors calculated that to avoid one case of chorioamnionitis, 50 women with PROM would need to be induced. There was no difference in rates of neonatal infection between groups; however, neonates from the expectant management group were more likely to be admitted to the NICU. This effect was only significant when prostaglandin and oxytocin results were pooled. No difference was found in rates of infection between planned and expectant management of PROM at term in trials where a strict protocol of avoiding digital exams was enforced (n = 1951).

The Cochrane collaboration subsequently published a review of the management options for women with term PROM that concluded that the differences in outcomes between induction and expectant management are not substantial, and women should be informed of risks and benefits of each option to make an informed choice (Dare, Middleton, Crowther, Flendady & Varatharaju, 2006).

**Why do membranes rupture prior to labor?**

It is theorized that preterm premature rupture of membranes is associated with a different pathological mechanism than premature rupture at term. More recent studies suggest the membranes simply weakened prior to labor, while other proposed mechanisms include an overabundance of amniotic fluid (polyhdramnios) or multiple fetuses. Small case controlled studies have repeatedly found that PROM at different gestations appears to have different origins. It has been surmised that women with PROM who do not go into spontaneous labor after a long latent period may have deficient prostaglandin production or prostanoid biosynthesis pathways (Enkin, Keirse, Neilson, Crowther, Duley, Hodnett, & Hofmey, 2000). Twenty-six percent of women who had PROM with their second pregnancy, had PROM in their previous pregnancy. This same study found a positive correlation between smoking and PROM (Gosselink, Ekwo, Moawad, & Long, 1993 & Naeye, 1982). Other evidence has demonstrated no relevance to urinary tract infections, chorioamnionitis, chlamydial or gonorrheal infections and lower respiratory infections to PROM (Ontario Midwives, 2010).

**What are signs of infection in my uterus (chorioamnionitis)?**

* Signs and symptoms of chorioamnionitis includes;
* maternal fever >101 degrees
* uterine tenderness
* maternal or fetal tachycardia
* foul smelling or purulent amniotic fluid.

Clinical chorioamnionitis complicates approximately 1% of all pregnancies. The incidence of chorioamnionitis in women with PROM is estimated to be 6% to 10%.

**What are the risks to my baby?**

Fetal complications of PROM include cord prolapse, cord compression and neonatal infection. Prolapsed cord occurs in approximately 0.3% to 0.6% of all pregnancies and the risk is only slightly increased with PROM. The incidence of cord prolapse is 0.3% to 1.7% in pregnancies with PROM at all gestations, but is of greater concern with Prolonged Premature Rupture of Membranes (PPROM).

Rupture of membranes is associated with an increased risk of neonatal infection, as bacteria may ascend into the uterine cavity once the barrier of the membranes is no longer present. The incidence of neonatal infection for women with PROM is approximately 2% to 2.8% (Hannah, Ohlsson, Wang, Matlow, Foster, Willan, et al., 1997). Clinical presentation of neonatal sepsis varies and includes: diminished spontaneous activity, less vigorous sucking, apnea, bradycardia, temperature instability, respiratory distress, vomiting, diarrhea, abdominal distention, jitteriness, seizures and jaundice. Diagnosis is clinical and usually based on culture results.

**What does the Florida Statute Chapter 467 for Licensed Midwives, Rule 64B24-7.008 state for PROM?**

Florida Licensed Midwives have a law to follow with specific outlined rules. The law regarding PROM states “(4) Risk factors shall be assessed throughout labor to determine the need for physician consultation or emergency transport. The midwife shall consult, refer or transfer to a physician with hospital obstetrical privileges if the following occur during labor, delivery or immediately thereafter: Premature rupture of membranes, meaning rupture occurring more than 12 hours before onset of regular active labor.” All clients should be informed that if regular active labor does not occur after 12 hours of rupture, a consultation, referral or transfer to a physician with hospital obstetrical privileges may be warranted.

**What approach do the Florida Licensed Midwives at Growing Families take in managing PROM?**

All clients are asked to call the on-call midwife with any indication that their amniotic bag has ruptured (water broke). The midwife will assess on the phone if the rupture seems evident or inconclusive. If evident, she will ask the time of suspected rupture, the color of the amniotic fluid, the smell and amount of fluid, and whether or not the fluid continues to leak. The Midwife will also inquire about your baby. Is s/he moving in a consistent pattern? Your midwife will then determine the management plan based on whether you are a carrier of GBS or not, your contraction pattern, presence of bleeding, and fetal position. Your midwife will also encourage you to read this informed consent again, so you will be prepared with any questions in the event labor does not commence for *Twelve Hours*.

If it is unclear whether your amniotic sac has ruptured or not, your midwife will either ask that you be seen in the clinic or send a midwife to your home for an assessment of both mother and the baby.

After twelve hours of no progression, your midwife will discuss with you the option to continue with expectant management, inducing labor at home, or transferring to the hospital for induction.

One important component of the management provided by the midwives at Growing Families is the **limited sterile vaginal exams after the rupture of membranes**, until birth is imminent or unless doing so would change the management plan. **Numerous studies have identified the number of digital vaginal examinations as a risk factor for perinatal infection.** The timing of the first digital examination may also be significant.

**What are my options?**

Clients are encouraged to utilize optimal fetal positioning exercises, chiropractic care and acupuncture. Clients are also responsible for monitoring signs of infections, and notifying the midwife with any concerns.

**These signs include:**

• new onset meconium,

• frank vaginal bleeding,

• maternal fever above 101,

• foul-smelling amniotic fluid,

• uterine tenderness, and/or

• decreased fetal movement.

Clients more than 37 weeks pregnant and ruptured more than twelve hours are offered the option of expectant management in the absence of abnormal findings after agreed consultation with obstetrician or transfer to hospital will be warranted for induction of labor. It should be understood that induction of labor at home is controversial and fewer induction options are far more limiting than in the hospital. Your midwife will discuss these options with you and assist you with determining the safest and most satisfying options for your individual circumstance.

In collaboration with your Midwife, alternative options for induction may prove helpful. These methods of induction include nipple stimulation, homeopathics and/or herbs. Alternatively, castor oil or an enema have been thought to stimulate contractions.

**How long can my water be broken before I am at risk**?

*There is no definitive length of the latent period at which the risks of PROM become significantly increased, although studies do indicate* **risk factors for infection as gradually increasing with duration of rupture.** The most important single predictive factor for chorioamnionitis was multiple vaginal exams. The long-held belief that infection sharply increases after twenty-four hours is unfounded and unsupported in evidence. The Term PROM study did not show any difference in the overall rate of neonatal infection between the induction or expectant management groups.

Management decisions in effort to ensure birth prior to 24 hours have not proven to decrease infection, but have been associated with a higher cesarean section rate in women with term PROM. The Ontario Midwives (2010) support expectant management for up to 96 hours before IOL. There is no specific reason to induce at this point, but also no evidence to quantify any potential increase in risks to mother and baby beyond this point.

**What are my risks?**

Maternal colonization of GBS adds another layer of complexity to the management of women with term PROM, and the reason the midwives of The Birth Nest are strong advocates of screening prenatally. Colonization with GBS is a known risk factor for neonatal and maternal infection. GBS and PROM together may have a synergistic affect.

In the Term PROM study, the GBS protocol was inconsistent and in most cases, a culture was not obtained prior to delivery. In addition, the majority of women who were GBS-positive did not receive antibiotic prophylaxis; therefore, this study does not provide guidance.

A positive GBS culture is often thought to indicate immediate induction in women who have term PROM, but this recommendation is not specified in the GBS guidelines from the Centers for Disease Control and Prevention (CDC). The CDC guidelines simply state, “At the time of...rupture of membranes, intrapartum chemoprophylaxis should be given to all pregnant women identified as GBS carriers.” Neither the ACNM Clinical Bulletin nor the ACOG Committee Opinion on GBS prevention offer specific recommendations regarding management of term PROM in GBS-positive women beyond the recommendation that antibiotic prophylaxis should be offered.

Gaps in research exist regarding the most effective approach to preventing early onset GBS disease in infants born to GBS carriers who experience term PROM. Consistent with the midwifery model of care, your midwife will discuss antibiotic options with each couple and assist in making the best decision for you and your family. However, each couple should be aware that the community standard for premature rupture of membranes with the presence of GBS colonization is early intravenous antibiotic treatment and immediate induction.

**References:**

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**Informed Consent:** I have read and understand this information and have had an opportunity to ask questions. I am aware of the risks of PROM, and am responsible for and have freely chosen to take the following action:

Please initial next to your choice:

\_\_\_\_\_\_\_\_\_I have chosen expectant management of an out-of-hospital birth and understand the importance of monitoring for signs and symptoms of infection, notifying my midwife with any concerns. I understand that after premature rupture of membranes, nothing should enter my vagina and minimal sterile vaginal exams should be performed. I also understand that I need to abstain from sexual intercourse. I understand that if signs and symptoms of infection do arise, hospital transfer is warranted. I understand that under the Florida Statue of Licensed Midwives Chapter 467, if regular active labor does not occur after 12 hours of rupture, a consultation, referral or transfer to a physician with hospital obstetrical privileges may be warranted.

\_\_\_\_\_\_\_\_I have chosen to disregard expectant management of an out-of-hospital birth and transfer to the hospital for medical management by a physician for possible induction of labor.

Date of Consent: \_\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_\_\_\_

Client’s Printed Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Client’s Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Midwife’s Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_