Outcomes of Pregnancies Complicated by PPROM Between 20-24 weeks of Gestation


Epidemiology:

Previable PPROM complicates 0.4% of pregnancies (1/250) → translated to RHJN about 6 cases per year

Neonatal survival in the literature is 20-60% and severe morbidity 30-100%

Objective: To assess outcomes in pregnancies complicated by previable PPROM

Methods: Retrospective study of singleton/twin pregnancies with previable PPROM between 20 and 23 6/7 weeks over a 10 year period at a single tertiary center who chose expectant management. Maternal and neonatal charts were reviewed up to a correct age of 18 and 21 months.

Inclusion Criteria: As above, with a sterile speculum exam showing amniotic fluid passing from the cervix or pooling and a positive nitrazine and ferning test as necessary.

Exclusion Criteria: Patients who elected termination and fetuses with major anomalies

Outcomes Measured: Neonatal survival, neonatal morbidity (Bronchopulmonary Dysplasia, severe neurological injury, or severe retinopathy of prematurity), long term morbidity (cognitive scores, neurosensory deficits, and motor impairments). Maternal risks were also measured (chorioamnionitis, sepsis, abruption)

Management: All patients were counseled on the natural history of PPROM, risk, and management options including termination compared with expectant management. All patients had consultations with MFM and Neonatal teams. Women were eligible for expectant management if there was no active labor, evidence of chorioamnionitis, placental abruption or fetal distress. Out of 140 patients, 11 terminated (7.8%) and 104 patients (74%) chose expectant management. 7.8% of patients had PPROM <20 weeks, and 7.1% had major anomalies. All patients were admitted with daily monitoring of vital signs and uterine tenderness, BID NST, x2 weeks BPP, and 250 mg of oral erythromycin every 6 hours for 10 days. GBS cultures were taken and prophylaxis given during labor. If patients had a cerclage, there was a discussion on risk and benefits of removal (clear evidence is lacking). Patients chose age at which they desired resuscitation 23 weeks and beyond. Based on plan, 2 doses of 12 mg betamethasone were given 4 hours apart 48 hours prior to the age chosen. If still pregnant, women underwent labor induction between 34-35 weeks (26.9% made it beyond 26 weeks).

Our Management: MFM and NICU consult, Daily temperatures, monitor for uterine tenderness, foul smelling discharge, possible antibiotics, and steroids. We admit at viability (23 or 24 weeks), antibiotic prophylaxis, magnesium, etc.

Results: 11% ended in stillbirth, 25% were previable, and 63.5% survived.

The average maternal age was 33.

The average age of PPROM was 22.6 weeks and the gestational age at birth was 24.8 weeks.

50% delivered within a week

Of those who survived, 50% survived until discharge.
53% of those who survived to discharge went on to have IQ of 99, no cases of cerebral palsy, and only 5% neurosensory deficits.

Of the 47% that had severe morbidity at birth (30% had contractures, 21% had BPD, and 30% had neurological injury), 39% went on to have long term morbidity including CP and neurosensory deficits.

61% of infants with severe morbidity at birth went on to have no long term morbidity.

Maternal outcomes included rates of 42.3% chorioamnionitis, 4.8% sepsis, 17.3% abruption, 5.8% cord prolapse, and csection rate was 35% (likely due to presentation).

All infants who survived were 500 grams at birth.

If the gestational age at PPROM was 22 weeks or greater they were 12 times more likely to survive and if the latency period was greater than 7 days they were 10 times more likely to survive, and 5 times more likely to survive without severe morbidity.

Nulliparity, twin pregnancy, presence of cerclage, chorioamnionitis, and presence of severe oligohydramnios were not associated with neonatal survival.

Interestingly enough, 31/104 had a cerclage and only 11 survived (study did not comment on whether cerclage was removed)

**Conclusions:**

**Limitations:** small study and retrospective in nature, characteristic of prior studies

**Advantages:** one of the largest series on preivable PPROM, with long term follow up and relatively narrow range of gestational age

The average age of delivery was 24.8 weeks, with a 63.5% survival. **ACOG Society for Maternal-Fetal Medicine consensus on Perivable Birth report a survival of 23-27% survival at 23 weeks, 42-59% at 24 weeks, and 67-76% at 25 weeks**

The overall survival for PPROM more than 22 weeks was 58.4% and 22.2% if rupture was less than 22 weeks.

**Waters and Mercer review reported a survival if rupture was more than 22 weeks was 59.7% while 14.4% if rupture was < 22 weeks.**

**50% delivered within the first week, and rates in the literature report 40-50%.**

Those who were still pregnant were delivered at 34 weeks.

In comparison to Waters and Mercer, this study had 4.8% sepsis vs 1.3% in their study with similar rates of abruption. This study produced a rate of chorioamnionitis of 42.3% whereas Waters and Mercer produced 37%.

**Currently, broad spectrum antibiotics (erythromycin and amoxicillin) can be given as early as 20 weeks per Perivable birth consensus statement and ACOG PPROM practice bulletin. Perhaps erythromycin was not adequate.**

The rates of neurological injury after birth was 30%, whereas Waters and Mercer was 11.4%, perhaps **supporting the use of magnesium for neuroprotection on admission**, as this study did not.
Steroid administration was similar to other studies and can be given as early as 22 weeks and 5/7 days.

Testing for GBS should be performed and prophylaxis given on admission.

A gestational age of 500 grams appears to increase survival, which supports other studies.

Overall, outcomes including overall survival and survival without major neonatal morbidity are best for PPROM at 22 weeks or greater with a latency period of greater than 7 days. In addition, severe neonatal morbidity is an important predictor of long-term morbidity among survivors. Reassurance could be given to couples in instances of prolonged latency period and in cases of neonates who survive without major complications during the neonatal period.

**Added tool MFM use:**


Go to tools, then outcomes estimator

Input gestational age, sex, EFW, singleton (yes/no), and if steroids given within 7 days of delivery

Outcomes include survival, survival without profound neurodevelopmental impairment, without moderate to severe, death, death or profound impairment, death or moderate to severe impairment

**REFERENCES:**

