OBSTETRICS

Outcomes of expectantly managed pregnancies with multiple gestations and preterm premature rupture of membranes prior to 26 weeks

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OBJECTIVE: The objective of the study was to determine the obstetric and neonatal outcomes of expectantly managed multifetal pregnancies complicated by early preterm premature rupture of membranes (PPROM) prior to 26 weeks.

STUDY DESIGN: This was a retrospective cohort of all multifetal pregnancies complicated by documented PPROM occurring before 26 0/7 weeks and managed expectantly by a single maternal-fetal medicine practice between July 4, 2002, and Sept. 1, 2013. Neonatal and maternal outcomes were assessed and comparisons made between the fetus with ruptured membranes and the first fetus to deliver with intact membranes.

RESULTS: Twenty-three pregnancies (46 fetuses) were analyzed with a median gestational age at PPROM of 22.9 weeks; 74% experienced PPROM at less than 24 weeks' gestation. A median latency of 11 days was achieved with expectant management. Of the 46 neonates, 20 (43%) survived to hospital discharge. Of these, 12 (60%) experienced severe neonatal morbidity defined as defined as grade III or IV intraventricular hemorrhage, bronchopulmonary dysplasia, pulmonary hypoplasia, necrotizing enterocolitis requiring surgical intervention, and/or grade 3 or 4 retinopathy of prematurity. Eight neonates survived to hospital discharge without severe neonatal morbidity. The multiple with ruptured membranes was more likely to experience intrauterine demise but otherwise had similar outcomes as the multiple with intact membranes. Maternal morbidity was considerable, with 7 of 23 pregnancies (30%) complicated by clinical chorioamnionitis, 12 of 23 (52%) delivering by cesarean, of which 3 of 12 (25%) were classical cesarean deliveries.

CONCLUSION: Overall, neonatal survival to hospital discharge was 43%, but only 17% survived without significant neonatal morbidity. These data provide a basis for counseling and management of women with multifetal gestation complicated by very early PPROM.

Key words: latency, multiple gestation, neonatal morbidity, periviable, preterm premature rupture of membranes

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Preterm premature rupture of membranes (PPROM) complicates 3-4.5% of all pregnancies and accounts for approximately 30% of preterm births.[1] PPROM is defined as rupture of the fetal membranes prior to 37 weeks' gestation and prior to the onset of labor. The frequency of PPROM is higher in multifetal gestations,[2,3] with 1 study reporting this complication in 11% of twins, 19% of triplets, and 20% of quadruplets.[3] Pakrashi and Defranco[3] reported that PPROM also occurs at an earlier gestational age among multiple gestations with 36% of twin PPROM, 28% of triplet PPROM, and 50% of quadruplet PPROM occurring at less than 28 weeks.

The earlier that PPROM occurs during pregnancy, the higher the risk for early preterm delivery and therefore the poorer the prognosis for intact neonatal survival. Additionally, risks of maternal morbidity increase as the gestational age at the time of PPROM decreases. Women who experience PPROM at less than 23-24 weeks (prior to fetal viability) without

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overt evidence of intrauterine infection at the time of diagnosis are generally offered termination of pregnancy or expectant management.

Traditionally, expectant management of PPROM prior to viability has been associated with a poor chance of neonatal survival and a high rate of severe, long-term neonatal morbidity among survivors. However, recent advances in perinatal and neonatal medicine suggest improved outcomes; in a recent cohort study of 159 women with singletons pregnancies complicated by PPROM at less than 24 weeks, neonatal survival was 56%, and 48% survived without major neonatal morbidity.[4] Although the fetus within the ruptured sac may face risks approximately equivalent to those of a singleton fetus of an equivalent gestational age with PPROM, the same may not be true for the other fetuses in multifetal pregnancies.

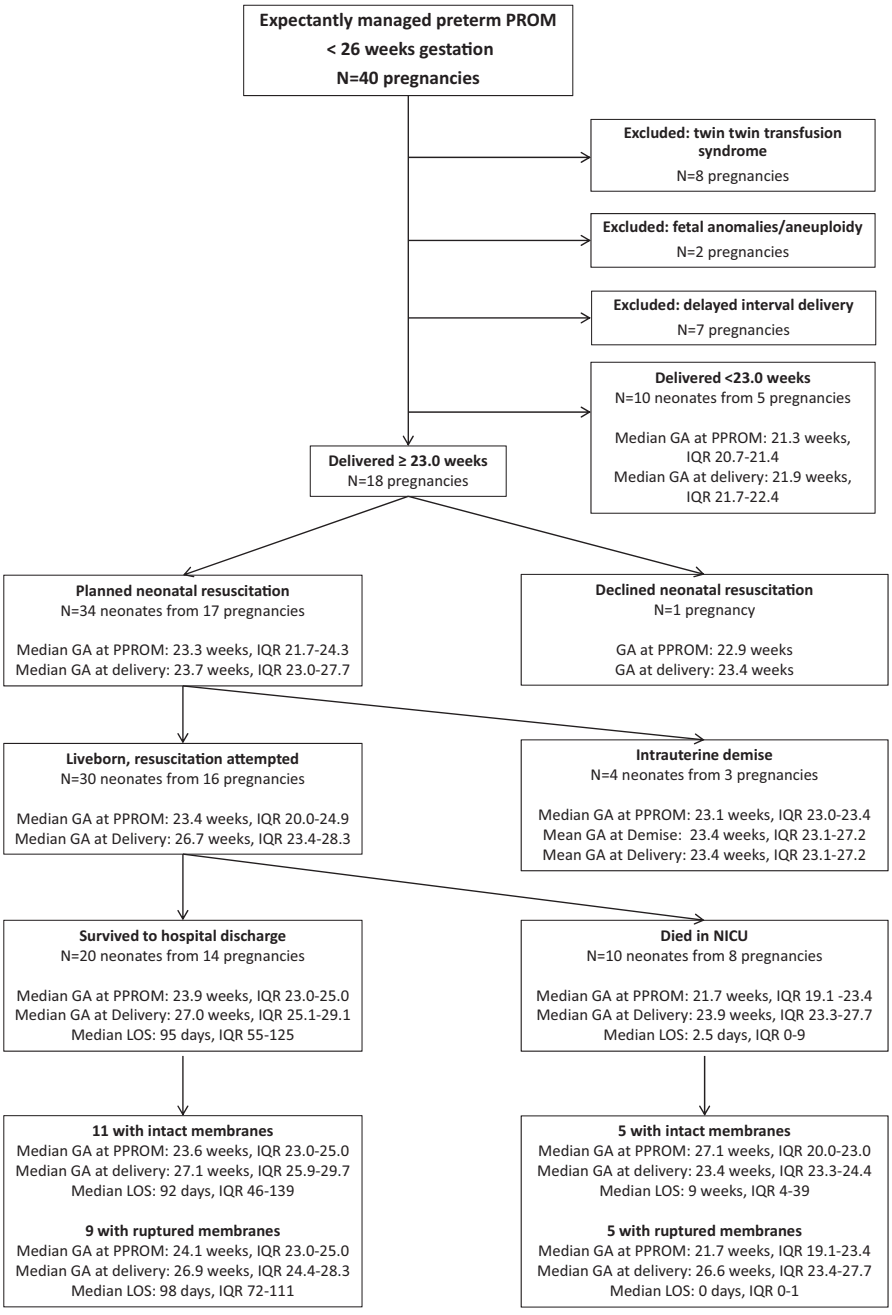
There are few studies with regard to obstetric and neonatal outcomes of multifetal gestations following PPROM, particularly at a very early gestational age. Thus, the purpose of this study was to report obstetric and neonatal outcomes of expectantly managed multifetal pregnancies complicated by early PPROM prior to 26 weeks and to compare outcomes between fetuses in the ruptured vs intact amniotic sac.

Materials and Methods

This was a retrospective cohort of all multifetal pregnancies complicated by documented PPROM occurring before 26 0/7 weeks and managed by a single group of perinatologists at the University of Utah and Intermountain Healthcare Hospitals between July 4, 2002, and Sept. 1, 2013. These dates were selected based on the availability of centralized data of good quality. Cases were identified through *International Classification of Diseases*, ninth revision, searches, review of established obstetric databases, and chart review. Data were collected and managed using REDCap (Research Electronic Data Capture) electronic data capture tools hosted at the University of Utah Center for Clinical and Translational Science.[5]

PPROM was confirmed if at least 2 of the following were present: pooling, ferning, nitrazine, visible fetal parts seen on speculum examination without overlying membrane, and/or deepest vertical pocket of fluid on ultrasound examination less than 2 cm. The date and time of membrane rupture was reported by the patient. In cases in which an exact time could not be recalled, the date and time of rupture was designated as the time of rupture

FIGURE
Study enrollment



GA, gestational age; *IQR*, interquartile range; *LOS*, length of stay; *NICU*, neonatal intensive care unit; *PPROM*, preterm premature rupture of membranes; *PROM*, premature rupture of membranes.

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