

Perinatal outcomes after previable prelabor rupture of membranes following fetoscopic intervention

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OBJECTIVE

- Preterm prelabor rupture of membranes (PPROM) complicates over one-third of fetal interventions (FI) with PPROM at < 24 weeks (pPPROM) accounting for one-third of these cases.
- Limited data exist regarding perinatal outcomes following pPPROM after FI.
- This study aimed to compare perinatal outcomes among FI cases with pPPROM, PPROM at ≥ 24 weeks, and no PPROM.

METHODS

- A secondary analysis of 969 FI cases at the UTHealth Houston Fetal Center between 2011 and 2024 was conducted.
- Exclusions included triplet or monoamniotic gestations, TRAP sequence, ≥ 1 procedure per gestation, selective reduction, termination, or FI at ≥ 24 weeks.
- Perinatal outcomes were compared between pPPROM, PPROM ≥ 24 weeks, and no PPROM groups.
- Statistical comparisons were made using Wilcoxon rank sum, Welch's t-test, χ^2 , and Fisher's exact tests.

RESULTS

Table 1. Comparison of obstetric and neonatal outcomes among cases complicated by pPPROM, PPROM ≥ 24 weeks, and no PPROM.

	pPPROM (n=100, 14%)	PPROM ≥ 24 weeks (n= 206, 29%)	No PPROM (n=410, 57%)	p value
GA at PPROM	20.1 $\pm$ 2.2	29.3 $\pm$ 3.1	-----	< 0.001
FI to PPROM (days)	8.8 $\pm$ 11.1	66.3 $\pm$ 25.0	-----	< 0.001
GA at delivery	24.7 $\pm$ 5.4	30.6 $\pm$ 2.9	32.2 $\pm$ 4.0	< 0.001
PPROM to delivery (days)	31.8 $\pm$ 38.3	9.4 $\pm$ 13.3	-----	< 0.001
FI to delivery (days)	40.6 $\pm$ 40.2	75.8 $\pm$ 24.7	85.6 $\pm$ 32.3	< 0.001
Chorioamnionitis	23 (23%)	16 (7.8%)	9 (2.2%)	< 0.001
Preterm labor	52 (52%)	100 (48.5%)	122 (29.8%)	< 0.001
Abruption	16 (16%)	40 (19.4%)	39 (9.5%)	0.002
Mode of delivery				< 0.001
Vaginal	53 (53%)	33 (16%)	74 (18%)	
C-section	45 (45%)	168 (81.6%)	320 (78%)	
Both	2 (2%)	3 (1.5%)	8 (2.0%)	
Interval fetal demise				
Donor	23/99 (23.2%)	30/205 (14.6%)	60/404 (14.9%)	0.10
Recipient	19/98 (19.4%)	5/204 (2.5%)	20/403 (5%)	< 0.001
Dual	11 (11%)	0	13 (3.2%)	< 0.001
Dual neonatal survivors	35 (35%)	164 (79.6%)	325 (79.3%)	< 0.001
Donor neonatal demise	39/76 (51.3%)	5/175 (2.9%)	16/344 (4.7%)	< 0.001
Recipient neonatal demise	37/79 (46.8%)	2/199 (1%)	11/383 (2.9%)	< 0.001
NICU LOS (days)	33.1 $\pm$ 47.5	49.2 $\pm$ 34.9	32.4 $\pm$ 36.1	< 0.001
Neonatal adverse composite	90/155 (58.1%)	186/374 (49.7%)	312/727 (42.9%)	0.001
RDS	49 (31.6%)	181 (48.4%)	264 (36.3%)	< 0.001
BPD	16 (10.3%)	47 (12.6%)	25 (3.4%)	< 0.001
IVH	16 (10.3%)	22 (5.9%)	35 (4.8%)	0.03
Sepsis	6 (3.9%)	22 (5.9%)	28 (3.9%)	0.28
NEC	3 (1.9%)	18 (4.8%)	13 (1.8%)	0.01

Abbreviations: BPD, bronchopulmonary dysplasia; FI, fetal intervention; GA, gestational age; IVH, intraventricular hemorrhage; LOS, length of stay; NEC, necrotizing enterocolitis; pPPROM, previable preterm prelabor rupture of membranes; PPROM, preterm prelabor rupture of membranes; RDS, respiratory distress syndrome

RESULTS

- Of 716 eligible cases, 43% (306) had PPROM at a mean GA of 26.7 $\pm$ 5.4 weeks.
- Among surviving pPPROM neonates, there was an increase in adverse outcomes (respiratory distress syndrome, bronchopulmonary dysplasia, intraventricular hemorrhage, sepsis, necrotizing enterocolitis) when compared to no PPROM (p<0.05) but not when compared to PPROM ≥ 24 weeks.

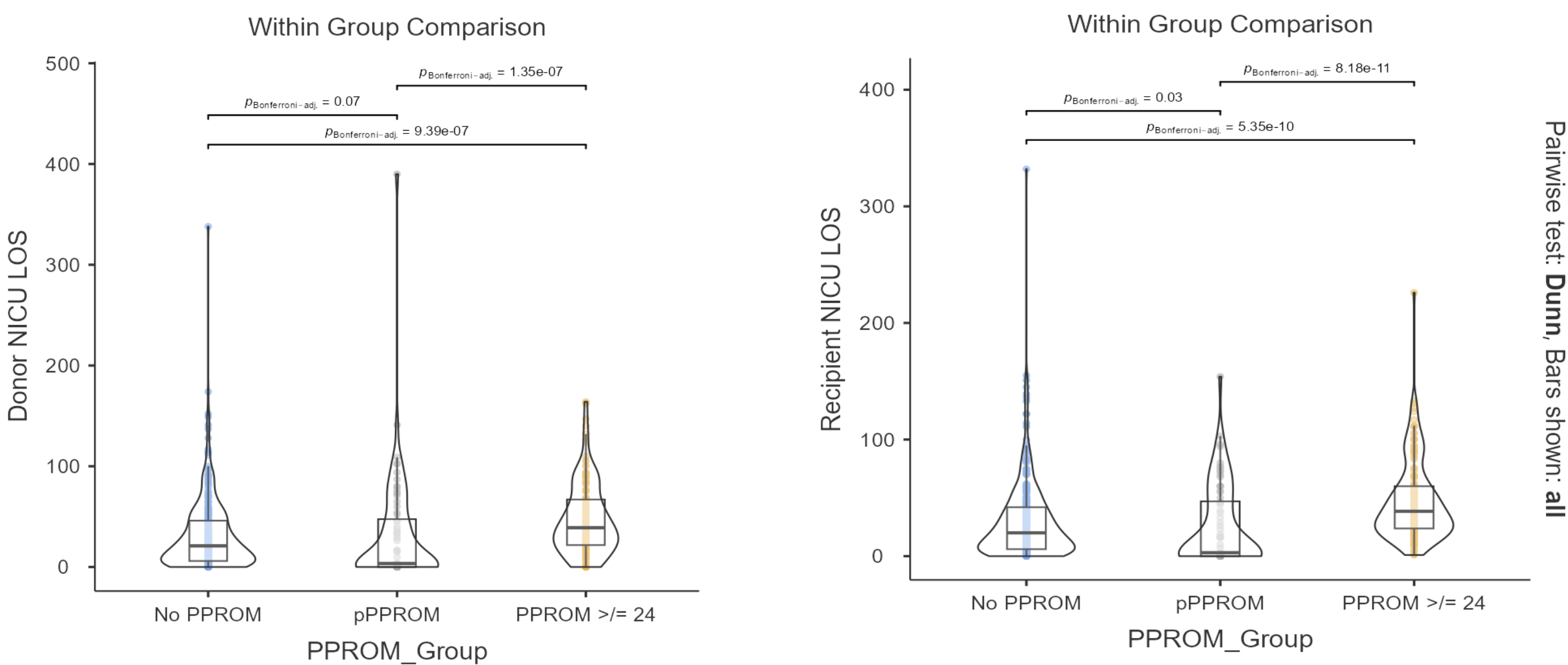


Figure 1. Comparison of neonatal intensive care unit (NICU) length of stay (LOS; days) among cases complicated by previable preterm prelabor rupture of membranes (pPPROM), preterm prelabor rupture of membranes (PPROM) ≥ 24 weeks, and no PPROM.

CONCLUSION

pPPROM after FI is associated with adverse obstetric outcomes and increased perinatal mortality. **pPPROM decreases dual neonatal survival rates by approximately half compared to PPROM at ≥ 24 weeks or no PPROM and, despite survival, increases neonatal morbidity.**

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