



Neonatal outcome of pregnancies complicated by PPROM between 34 and 37 weeks of gestation

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INTRODUCTION:

- PPROM complicates 1-5% of preterm pregnancies
- Accounting for 30-40% of all preterm deliveries
- Associated with an increase in fetal morbidity

Since 2000 the Dutch Perinatal Registry Foundation combines three separate databases (the national midwifery and obstetrician databases on gestation and births and the neonatal admission database) into one overall database, the perinatal register (PRN).

This study analyzes neonatal outcome in singleton women with PPROM between 34 and 37 weeks GA over the period 2005/2006.

MATERIAL AND METHODS:

- Data were obtained from the national PRN from 2005/2006.
- **Inclusion criteria**
 - ♦ **PPROM group**
 - ♦ Pregnancies complicated by PPROM
 - ♦ Interval between PPROM and birth of > 24 hours
 - ♦ GA between 34 and 37 weeks
 - ♦ **Controls**
 - ♦ Deliveries not complicated by PPROM between 34 and 37 weeks
- **Exclusion criteria**
 - ♦ Non-cephalic position at birth
 - ♦ Congenital malformation
 - ♦ Pre-eclampsia or HELLP syndrome
- Data recorded were:
 - ♦ Mode of delivery ; neonatal sepsis; RDS; Apgar score (5 min); neonatal death; admission to NICU or HC; days of CPAP treatment; antibiotic use in neonate

Statistical analysis was done between groups as well as subdivided according to gestational age (34-35 weeks GA, 35-36 weeks GA and 36-37 weeks GA).

RESULTS:

- From January 1st 2005 until December 31st 2006 340,288 women delivered in the Netherlands
- PPROM group 1,498 patients
- Control group 7,394 patients
- Complete neonatal record were available for 4220 cases (48%)

Table 1 – Baseline characteristics

	PPROM (n=1,498)	Controls (n=7,394)	RR
Maternal age (yrs,SD)	30,2 ± 5,1	30,0 ± 5,0	ns
First pregnancies (n,%)	714 (47,7%)	3,359 (45,4%)	1.0
Nullipara (n,%)	929 (62,0%)	4,095 (55,4%)	1,1
Ethnicity (n,% Dutch)	1,198 (80,0%)	5,986 (81,0%)	1.0
GA at birth (wks,SD)	35,4 ± 0,8	35,4 ± 0,7	ns

* p < 0.05

- Neonatal sepsis had an overall (population) risk of 2.5 (95%-CI 1.9 to 3.3) in PPROM.
- According to GA the corresponding incidences in PPROM were 10.8%, 4.7% and 3.9% at 34, 35 and 36 weeks GA respectively and in controls 5.0%, 2.2% and 1.2%.
- Respiratory distress syndrome was 1.9% in PPROM vs. 2.2% in controls (RR 0.84, 95%-CI 0,57 to 1.3).
- Neonatal death occurred once in the PPROM group (0.1%) vs 19 (0.3%) in controls (RR 0.3; 95%-CI 0.03 to 1.9).
- Still birth and death during labor occurred 0.2% in the PPROM group vs 1.8% in controls (RR 0.11, 95%-CI 0.03 to 0.35). This difference may partly be due to the fact that intra uterine deaths were not excluded from the register.

Table 2 - Mode of delivery

	PPROM (n=1,498)	Controls (n=7,394)	RR
Spontaneously (n,%)	1,219 (81.4%)	5,781 (78.2%)	1.0
VE/FE*	173 (11.6%)	664 (9.0%)	1.3
Elective CS	17 (1.1%)	557 (7.5%)	0.15
Secondary CS	89 (5.9%)	392 (5.3%)	1.1

* Vacuum or forcipal extraction

Table 3 - Neonatal outcome

	PPROM (n=1,498)	Controls (n=7,394)	RR
Neonatal sepsis	79 (5.3%)	154 (2.1%)	2.5*
RDS	28 (1.9%)	164 (2.2%)	0.84
Apgar 5 min <7 **	29 (1.9%)	106 (1.5%)	1.3
Neonatal death	1 (0.1%)	19 (0.3%)	0.26
Admission NICU hospital	164 (11.0%)	597 (8.1%)	1.4*
Full medical record	927 (61.9%)	3,294 (44.5%)	1.4*

* p < 0.05, ** Apgar 5 min < 7 only for live birth, PPROM n=1,494; Controls n=7,263

- After PPROM neonates had a 1.4 times higher risk to be admitted to a NICU hospital (95%-CI 1.2; 1.6).

Table 4 – Neonatal admission ¹

	PPROM (n=927)	Controls (n=3,294)	RR
Admission NICU	57 (6,1%)	235 (7,1%)	0.86
Days on NICU (mean, SD)	3.4 (± 2.7)	3.8 (± 4.5)	
Admission HC (n,%)	182 (19.6%)	593 (18.0%)	1.1
Days on HC (mean, SD)	4.4 (± 3.7)	4.8 (± 4.6)	
Treatment with CPAP	64 (6.9%)	283 (8.6%)	0.80
Days on CPAP (mean, SD)	2.5 (±2.3)	2.1 (± 1.4)	
Antibiotics (%)	317 (34.2%)	596 (18.2%)	1.9*

¹ Based on available neonatal medical records, * p < 0.05,

CONCLUSION:

- PPROM (>24h before birth) increases the risk of neonatal sepsis (RR 2.5).
- PPROM did not increase the risk of RDS.
- Induction of labor in patients with PPROM may reduce the risk of neonatal sepsis.
- However this study is retrospectively and limited by incomplete databases, a prospective study is needed to confirm our conclusions.

