

CERVICAL CERCLAGE FOR PREVENTION OF PRETERM BIRTH AND ADVERSE PERINATAL OUTCOME IN TWIN PREGNANCIES: SYSTEMATIC REVIEW AND META-ANALYSIS

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OBJECTIVE

- ▶ To determine the role of cervical cerclage in preventing preterm birth (PTB) and adverse maternal or perinatal outcomes in twin pregnancies.

METHODS

- ▶ Medline, Embase and Cochrane databases were searched in July 2022. The inclusion criteria were studies in which twin pregnancies were allocated to cerclage for the prevention of PTB or to a control group (e.g. placebo or treatment as usual). The primary outcome was PTB prior to 34 weeks of gestation. Secondary outcomes were PTB prior to 37, 32, 28, 24 weeks, gestational age at birth, the interval between diagnosis and birth, preterm premature rupture of the membranes (PPROM), chorioamnionitis, perinatal loss, Apgar score <7 at 5 minutes, birthweight less than 2500 grams, birthweight less than 1500 grams, respiratory distress syndrome (RDS), intraventricular hemorrhage (IVH) (grade III and IV), necrotizing enterocolitis (NEC), retinopathy of prematurity, neonatal sepsis, admission to neonatal intensive care unit (NICU), length of stay in NICU (days), and composite neonatal morbidity. Head-to-head meta-analyses were used to analyze the data.

RESULTS

- ▶ Thirty-eight studies were included. Emergency cervical cerclage in women with a twin pregnancy with a short cervix at ultrasound or cervical dilatation at physical examination was associated with a reduced risk of PTB <37 (OR: 0.63, 95% CI 0.44-0.89; p=0.001), <34 (OR: 0.41, 95% CI 0.22-0.77, p=0.005), <32 (OR: 0.42, 95% CI 0.23-0.77; p=0.005), <28 (0.35, 95% CI 0.19-0.67; p=0.001) and <24 (OR: 0.34, 95% CI 0.14-0.82, P=0.016) weeks of gestation.
- ▶ Emergency cerclage was also associated with a reduced risk of composite neonatal morbidity (OR: 0.34, 95% CI 0.17-0.69; p=0.003), perinatal loss (OR: 0.35, 95% CI 0.19-0.66, p=0.001), Apgar score <7 at 5 minutes (OR: 0.27, 95% CI 0.14-0.51; p<0.001), grade III or IV IVH (OR: 0.25, 95% CI 0.10-0.72; P=0.010), neonatal sepsis (OR: 0.31, 95% CI 0.16-0.60; p<0.001), necrotizing enterocolitis (OR: 0.27, 95% CI 0.13-0.59; p=0.001), birthweight <1500 grams (OR: 0.37, 95% CI 0.16-0.85; p=0.020) and admission to NICU (OR: 0.39, 95% CI 0.23-0.68; p=0.010), but not of RDS (p=0.781) or ROP (p=0.460). The association between cerclage and reduced risk of adverse maternal and perinatal outcomes was maintained when considering women with cervical dilatation at physical examination, or ultrasound cervical length <15 mm, but not for women with cervical length between 15 and 25 mm.

Pooled odd ratios (OR) for the maternal outcomes explored in the present systematic review (95% confidence intervals between parentheses) stratified according to the type of publication (RCT or observational)

Outcome	Studies	Cases (n/N vs n/N)	Pooled OR (95% CI)	I ² (%)	P value
Women with shorth cervix and/or cervical dilatation					
All studies					
PTB <37 weeks	9	310/461 vs 270/343	0.63 (0.44-0.89)	18.6	0.011
PTB <34 weeks	15	306/648 vs 316/486	0.41 (0.22-0.77)	69.7	0.005
PTB<32 weeks	16	238/695 vs 273/540	0.42 (0.23-0.77)	72.5	0.005
PTB <28 weeks	14	116/574 vs 172/474	0.35 (0.19-0.67)	63.6	0.001
PTB <24 weeks	11	41/328 vs 76/289	0.34 (1.14-0.82)	61.6	0.016
PPROM	12	135/509 vs 148/406	0.62 (0.36-1.06)	53.7	0.081
Chorioamnionitis	9	47/461 vs 29/306	1.35 (0.54-3.39)	51.4	0.523
Randomized controlled trials					
PTB <37 weeks	3	22/24 vs 18/24	3.33 (0.59-18.62)	0	0.313
PTB <34 weeks	4	27/41 vs 19/37	1.78 (0.15-21.25)	71.4	0.649
PTB<32 weeks	4	22/41 vs 167/37	1.68 (0.14-20.08)	64.9	0.681
PTB <28 weeks	4	15/41 vs 12/37	1.97 (0.16-23.51)	69.1	0.594
PTB <24 weeks	4	10/41 vs 11/37	1.54 (0.03-67.09)	78.9	0.821
PPROM	3	16/38 vs 9/36	2.06 80.70-6.06)	0	0.188
Chorioamnionitis	3	12/38 vs 137/36	0.71 (0.01-34.02)	88.8	0.862
Observational studies					
PTB <37 weeks	6	288/437 vs 252/319	0.57 (0.40-0.83)	0	0.004
PTB <34 weeks	11	279/607 vs 297/449	0.32 (0.18-0.59)	67.2	0.013
PTB<32 weeks	12	216/654 vs 257/503	0.34 (1.18-0.63)	73.9	0.036
PTB <28 weeks	10	101/533 vs 160/437	0.28 80.15-0.52)	62.3	<0.001
PTB <24 weeks	7	31/287 vs 65/252	0.29 (0.13-0.66)	56.4	0.0035
PPROM	9	119/471 vs 139/370	0.49 80.28-0.86)	52.4	0.013
Chorioamnionitis	6	35/423 vs 16/270	1.52 (0.77-3.02)	0	0.223

CONCLUSION

- ▶ In twin pregnancies, emergency cerclage for cervical dilation or short cervical length <15 mm is associated with a reduction in PTB and improved perinatal outcomes.