Elective cervical cerclage for prevention of preterm birth: a systematic review

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CRD summary
This review assessed elective cervical cerclage for the prevention of pre-term birth. The authors concluded that the intervention was effective in preventing spontaneous pre-term birth before 34 weeks' gestation in comparison with standard treatment without cerclage. Overall, the authors' conclusion is consistent with the evidence reviewed and would appear to be robust.

Authors' objectives
To determine the effectiveness of cervical cerclage in preventing spontaneous pre-term birth before 34 weeks' gestation.

Searching
MEDLINE (from 1996 to 2002), EMBASE (from 1980 to 2002), the Cochrane Library (Issue 1, 2002) and the Science Citation Index (from 1974 to 2001) were searched without any language restrictions; the search terms were reported. In addition, the reference lists of primary studies and review articles were searched for further relevant studies.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies that assessed cervical cerclage in comparison with standard treatment without cerclage were eligible for inclusion.

Participants included in the review
Women who were at risk for spontaneous pre-term birth were eligible for inclusion.

Outcomes assessed in the review
Studies that assessed delivery before 34 weeks' gestation were eligible for inclusion. Data on adverse events were also assessed in the included studies.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed the full manuscripts of papers to determine the relevance of the primary studies.

Assessment of study quality
The validity of the included trials was assessed on the basis of adequacy of sequence generation, allocation concealment, blinded data analysis and intention-to-treat analysis. Two independent reviewers assessed the validity of each of the included studies.

Data extraction
Two independent reviewers extracted the data in duplicate. Data on the occurrence of spontaneous pre-term birth before the 34th and 37th weeks were extracted from the individual studies and used to calculate an odds ratio (OR). Data on adverse events were also extracted from individual studies.
Methods of synthesis
How were the studies combined?
The studies were combined in both a meta-analysis and a narrative review in which they were grouped according to study quality.

How were differences between studies investigated?
Heterogeneity was assessed graphically using forest plots and statistically using chi-squared tests. These differences were further explored graphically using forest plots. An exploration of the causes of heterogeneity, using variation in features of the population (inclusion and exclusion criteria), intervention (methods of cerclage), outcome (clinical heterogeneity) and study quality (methodological heterogeneity), was planned.

Results of the review
Seven RCTs (total n=2,354) were included.

No statistical heterogeneity between the studies was observed. However, the authors stated that there were considerable differences in the characteristics and the quality of the studies, which made a meta-analysis inappropriate. These differences were further explored graphically using forest plots.

The authors stated that, overall, the differences in the quality of the studies did not have a large effect on the pooled summary estimate. The pooled estimates for a reduction in spontaneous pre-term birth before 34 and 37 weeks were OR 0.75 (95% confidence interval, CI: 0.59, 0.96) and OR 0.86 (95% CI: 0.71, 1.05), respectively. In the four studies that reported on adverse events, perinatal death, ruptured membranes, chorioamnionitis and puerperal pyrexia were more common in patients receiving cervical cerclage than in the controls.

Authors' conclusions
Elective cervical cerclage has a significant effect in preventing spontaneous pre-term birth before 34 weeks' gestation.

CRD commentary
The review question was clear in terms of the participants, intervention, study design and outcomes. Several relevant sources were searched and although attempts were made to minimise language bias, no attempts were made to reduce publication bias. Methods were used to minimise bias in the study selection, validity assessment and data abstraction processes. Adequate data on the primary studies were presented in tabular format. Data were appropriately explored for heterogeneity and then combined in a narrative review. Differences between the studies were also thoroughly explored. Overall, the authors' conclusion is consistent with the evidence reviewed and would appear to be robust.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further research should focus on clarifying the possible complications associated with cervical cerclage, and with the identification of risk factors and tests that identify high-risk women who are most likely to benefit from this procedure.

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