Influence of experience, case load, and stage distribution on outcome of endoscopic laser surgery for TTTS: a review  
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CRD summary
This review concluded that laser surgery for twin-to-twin transfusion syndrome resulted in an average survival of at least one twin of 81.2% and of overall survival of 63.9%. There was no evidence of any impact on outcomes of high caseload, disease severity and improvements in technique. Data came largely from retrospective studies. The conclusions should be treated with caution.

Authors' objectives
To assess the effects of laser surgery in people with severe twin-to-twin transfusion syndrome (TTTS).

Searching
MEDLINE and The Cochrane Library databases and Google Scholar were searched from 1995 to June 2009. Search terms were reported. Reference lists and relevant journals were handsearched. No language restrictions were applied. Only studies reported in journals with an impact factor greater than one were eligible for inclusion.

Study selection
Randomised controlled trials (RCTs), non-RCTs, uncontrolled and retrospective studies that investigated endoscopic laser ablation of placentic vessels for severe TTTS were eligible for inclusion. Studies had to report sufficient information about the surgical procedure, inclusive dates and on overall survival and survival of one twin. Outcomes of interest were overall survival, survival of one twin and dual survival (survival was defined as survival to one month).

Two authors independently performed the literature search. The authors did not state how many reviewers selected studies for inclusion. Where necessary, authors were contacted to clarify information relevant to inclusion criteria.

Assessment of study quality
Study quality was assessed using Newcastle-Ottawa Quality Assessment Scale to assess items related to participant selection, comparability of groups and assessment of outcomes. Scores were allocated; details of the scale and the maximum score were not described.

The authors did not state how validity assessment was performed.

Data extraction
Average incidence were calculated together with 95% confidence intervals (CI) using the Wald method.

The authors did not state how data were extracted.

Methods of synthesis
Pooled averages and 95% CI were calculated using a random-effects model. Heterogeneity was assessed using $I^2$ statistic. To investigate possible influences on outcomes, studies were ranked according to number of participants, gestational age at delivery, date of publication and proportion with advanced disease (Quintero stage III and IV). Univariate analysis was used to determine possible differences in survival of at least one twin related to: study characteristics (50 or fewer participants versus more than 50 participants); publication up to 2004 versus after 2004; and up to 60% stage III/IV disease versus 60% or more). Publication bias was assessed using a funnel plot.

Results of the review
Nineteen studies (1,484 mothers) were included. Two studies were multicentre RCTs and only the treatment arms of
these were included in analyses. Study size ranged from 16 to 200 participants. Quality scores ranged from 3 to 7. Funnel plot showed a "relative absence" of publication bias.

Average neonatal survival of at least one twin was 81.2% (95% CI 79.1 to 83.2, I²=47.4%) and for both twins was 48.2% (95% CI 41.8 to 54.6, I²=81%). Overall survival ranged from 45% to 79% (average 63.9%).

Plotting survival of at least one twin against study size, stage classification, and gestational age showed no correlations.

Univariate analysis of case load, stage classification, or date of publication failed to show any trends in overall survival of at least one twin.

Authors' conclusions
Survival of at least one twin averaged 81.2% and overall survival averaged 63.9%. There was no evidence of any impact on outcomes of high caseload, disease severity distribution and improvements in technique.

CRD commentary
The review addressed a clear question with defined inclusion criteria. The search covered several sources. No language restrictions were applied, which was likely to have reduced any risk of language bias. The decision to exclude any study not published in a high-impact journal meant that it was possible that publication bias may have affected the review results. The methods of data extraction and quality assessment were not described and it was unclear how many authors selected studies for inclusion; therefore, it was not possible to say whether the methods used were aimed at reducing reviewer error or bias. Quality was assessed. However, a scoring system was used and the authors gave no indication of the maximum achievable score and the implications of study scores reported, so it was difficult to comment on the reliability of included data. Little information was given about the included studies or participants, which may have implications for the generalisability of results. Study designs were not described clearly for individual studies, but it appeared that data came from only the treatment arms of controlled studies and from observational studies that appeared mainly to be retrospective. As the authors acknowledged, use of from these types of studies diminished the quality of the review as it was possible that other confounding factors may have affected outcomes. The conclusion should be treated with caution.

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

Research: The authors implied that further prospective controlled studies were needed to investigate the effects of laser surgery for TTTS and the influence of experience on outcomes.

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