

Meta-analysis of perinatal outcomes after fetoscopic laser surgery for TTTS in triplet pregnancies

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Objective

The aim of this systematic review was to quantify the perinatal outcome and neurological morbidity in triplet pregnancies complicated by twin-to twin transfusion syndrome (TTTS), which were treated with fetoscopic laser ablation of placental anastomoses.

Methods

Medline, Embase, Cinahl and Cochrane were searched electronically utilizing combinations of the relevant medical subject heading (MeSH) terms, key words, and word variants for "Triplet pregnancies", "Twin-To-Twin Transfusion Syndrome" and "outcome". The outcomes observed were: overall fetal and perinatal loss, survival of at least one, two or all three triplets, survival of donor, recipient and the non-affected triplet, abnormal neurological outcome. All of these outcomes were analyzed in dichorionic-triamniotic (DCTA) and monochorionic-triamniotic (MCTA) pregnancies. Meta-analyses of proportions were used to derive pooled outcome data.

Results

A total of 8 studies (126 triplet pregnancies, 104 DCTA and 22 MCTA) treated with fetoscopic laser ablation of placental anastomoses for TTTS were included in this review. The rates of fetal and perinatal loss in DCTA triplets were 18.9% (95% CI 13.8-24.6) and 23.6% (95% CI 19.1-28.4), respectively. The incidence of preterm birth <28 and <32 weeks' gestation was 16.9% (95% CI 8.2-27.9) and 50.0% (95% CI 36.8-63.2), respectively. The proportions of fetal survival of at least one and at least two triplets were 95.4% (95% CI 89.3-99.0) and 81.8% (95% CI 72.0-89.8), respectively, while in 55.9% (95% CI 44.1-67.3) of cases all three fetuses survived to birth. The rates of perinatal survival of at least one, at least two and all three triplets were 94.1% (95% CI 89.0-97.7), 80.2% (95% CI 72.3-87.1) and 51.0% (95% CI 41.6-60.2), respectively. The incidence of abnormal neurological outcome was 6.4% (95% CI 2.0-13.0). In MCTA pregnancies, the overall rates of fetal and perinatal loss were 28.9% (95% CI 7.4-57.4) and 75.0% (95% CI 50.5-89.8), respectively. The incidence of preterm birth <28 and <32 weeks' gestation was 37.1% (95% CI 20.7-55.1) and 69.5% (95% CI 51.0-84.6), respectively. The proportions of fetal survival of at least one and at least two triplets were 88.9% (95% CI 72.8-98.3) and 68.3% (95% CI 27.6-96.8), respectively, while in 48.4% (95% CI 19.0-78.5) all three fetuses survived to birth. The rates of perinatal survival of at least one, at least two, and all three triplets were 83.2% (95% CI 67.7-94.3), 61.9% (95% CI 29.5-89.3) and 48.7% (95% CI 31.0-66.6), respectively. Finally, the incidence of abnormal neurological outcome was 14.0% (95% CI 5.9-24.9).

Conclusion

In view of the limited available literature, this meta-analysis provides valuable data for counselling parents with triplet pregnancies complicated by TTTS. The outcome following laser treatment was worse in MCTA than in DCTA triplet pregnancies.