

Right Ventricular Outflow Tract Obstruction in Twin-to-Twin Transfusion Syndrome: A Systematic Review and Meta-analysis

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Abstract

Objective: We aimed to investigate the incidence, prenatal factors, and outcomes of twin-to-twin transfusion (TTTS) with right ventricular outflow tract obstruction (RVOTO). **Search Strategy:** A systematic search was conducted to identify relevant studies published until February 2023 in English using the databases PubMed, Scopus, and Web of Science. **Selection Criteria:** Studies reporting on pregnancies with TTTS and RVOTO were included. Primary outcome was survival including fetal demise, neonatal death, and 6-months survival. Secondary outcomes were incidence and prenatal risk factors. **Data Collection and Analysis.** The random-effect model pooled the mean differences or odds ratios (OR) and the corresponding 95% confidence intervals. Heterogeneity was assessed using the I^2 value. **Results:** 17 studies encompassing 4332 TTTS pregnancies of which 225 cases had RVOTO were included. Incidence of RVOTO at time of TTTS diagnosis was 6%. 134/197 (68%) had functional pulmonary stenosis (PS) and 62/197 (32%) had functional pulmonary atresia (PA). 27% resolved following laser and 55% persisted after birth. Of those persisting, 27% required cardiac valve procedures. Risk factors were TTTS stage III (53% vs 39% in no-RVOTO), stage IV TTTS (28% in RVOTO vs 12% in no-RVOTO), and DV reversed a-wave (60% in RVOTO vs 19% in no-RVOTO). GA at laser and GA at delivery were comparable between groups. Survival outcomes were also comparable between groups including fetal demise of 26%, neonatal death of 12%, and 6-months survival of 82% in RVOTO group. Findings were similar when subgroup analysis was done for studies including head-to-head analysis. **Conclusions:** RVOT occurs in about 6% of the recipient twins with TTTS, especially in stages III and IV and those with reversed DV a-wave. The findings from this systematic review support the need of a thorough cardiac assessment of pregnancies complicated by TTTS, both before and after laser in order to maximize perinatal outcome and the importance of early diagnosis of TTTS and timely management. **Tweetable abstract:** Meta-analysis shows that the incidence of right ventricular outflow tract obstruction among TTTS pregnancies is 6%, among which 68% had functional pulmonary stenosis and 32% had functional pulmonary atresia. Of these pregnancies, 27% resolved after laser therapy and 55% persisted after birth. Of cases persisting after birth, 27% required cardiac valve procedures. Significant risk factors were TTTS stage III-IV and ductus venosus a-wave reversal. Survival outcomes including fetal demise, neonatal death, and 6-months survival were similar compared to those without RVOTO.

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RVOTO manuscript.docx available at <https://authorea.com/users/669015/articles/669971-right-ventricular-outflow-tract-obstruction-in-twin-to-twin-transfusion-syndrome-a-systematic-review-and-meta-analysis>

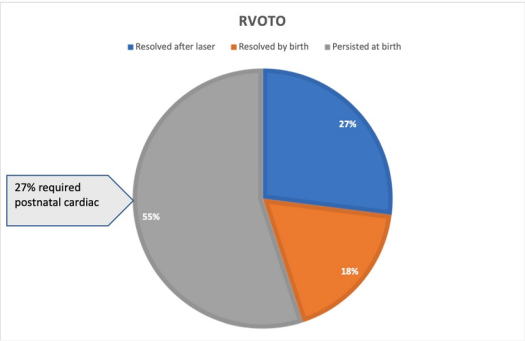


Figure 1. PRISMA Flow diagram for the search and selection process

