Outcome and intrathoracic changes after full laser ablation of the feeding artery in bronchopulmonary sequestration

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Objective
To assess the outcome and longitudinal intrathoracic changes after fetal laser surgery in fetuses with bronchopulmonary sequestration (BPS) with hydrops and/or hydrothorax.

Methods
The presence of intrafetal fluid effusions, lung mass volume ratio (CVR), and the observed/expected lung-to-head ratio (O/E-LHR) of both lungs were weekly evaluated in a cohort of BPS fetuses with hydrops and/or hydrothorax treated with full laser ablation of the feeding artery (FLAFA). The outcome and the longitudinal changes in intrafetal fluid effusions, lung mass volume, and pulmonary growth were analyzed by survival and multilevel analysis against days after FLAFA.

Results
FLAFA was successfully performed in 15 cases at a median gestational age of 26.9 weeks. A complete disappearance of the hydrops and hydrothorax was observed at a median interval of 7.5 and 21 days after fetal intervention, respectively. A progressive decrease in the CVR and an increment in the size of both lungs were observed after FLAFA. The O/E-LHR of the contralateral and ipsilateral lung to the side of the BPS became normal at on average 8 and 10 weeks after FLAFA, respectively. All children were delivered liveborn at a median gestational age of 38.6 (35.0–40.6) weeks, resulting in 100% perinatal survival.

Conclusion
In fetuses with BPS, percutaneous intrafetal laser ablation of the feeding artery may be of benefit in improving lung growth and perinatal survival by inducing a lung mass regression and fetal fluid effusions disappearance and normalization of the lung growth.