

Pulmonary artery sling repair: Single center experience with analysis of risk factors

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Objectives: Left pulmonary artery sling is a rare vascular anomaly causing respiratory failure. It is often associated with tracheal stenosis and intracardiac anomalies which mainly determine outcomes. There is a paucity of risk stratification in groups with pulmonary artery sling and similarly, there is very little correlation with coexistent hypoplasia of lung. The aim of this study is to review our experience and stratify risk factors for mortality and surgical outcome of all LPA sling repairs, including complex cases.

Methods: A monocentric retrospective analysis of patients between 2000 and 2017 was performed. Demographics, operative and perioperative data were collected. Univariate and multivariate analysis was performed for mortality and surgical outcome.

Results: Seventy nine consecutive children were operated. Median age at surgery was 5 months (interquartile range (IQR): 3-9.1 months). Surgical approaches include thoracotomy and sternotomy with a large amount of tracheal (n = 35) and intracardiac interventions (n=3), or a combination of both (n=28).

There were 7 early (8.8%) deaths. Two patients needed surgical revision of the left pulmonary artery anastomosis. The median intensive care stay and hospital stay were 11 (IQR: 9.2-24.8) and 17.9 (IQR: 4.3-19.8) days, and were considerably longer for those with associated tracheal surgery ($p = 0.002$). There were three late deaths (3.8%) after 2, 10 and 17 months after surgery. Univariate analysis showed abnormal lung morphology and coexistent structural heart disease as statistically significant risk factors for mortality. Multivariate analysis revealed CPB time as an independent risk factor for overall mortality

Conclusion: Complex pulmonary artery sling repair can be performed with an acceptable surgical outcome. Abnormal lung morphology, associated cardiac lesions and long CPB time are risk factors for mortality. The approach should be patient tailored. Acceptable results are possible with simultaneous repair of the different lesions.