INTRODUCTION

• Congenital Pulmonary Airway Malformation (CPAM) is a rare developmental abnormality of the lower respiratory tract.

• CPAMs are lesions comprised of cystic and adenomatous elements, which arise from tracheal, bronchial, bronchiolar, or alveolar tissue.

• These lesions do not participate in gas exchange and large lesions can cause mediastinal shift, cardiac compression, and compromise alveolar growth and development.

• Risks associated with general anesthesia and CPAM include lesion expansion with positive pressure ventilation, which places patients at risk for pneumothorax, airway collapse, and cardiovascular collapse.

• Given the anesthetic challenges of these cases and a recent adverse event, a quality improvement initiative was undertaken to study the anesthetic management of CPAM resection at our hospital for an internal educational setting.

METHODS

• IRB approval has been obtained.

• Fetal center records were reviewed from 2010 – 2015 for children who had resection of CPAM.

• Data were analyzed for age at the time of surgery, anesthesia induction technique, side of CPAM, surgical technique (open vs. thoracoscopic), use and techniques of lung isolation, and outcomes.

RESULTS

• Ninety-six patients with prenatal CPAM diagnosis were referred through our fetal center between 2010-2015.

• Of these, 58 patients ranging in age from 0 days to 5 years (median age 4 months), underwent CPAM resection.

• A total of 50 patients underwent CPAM resection in the operating room, 4 patients in the intensive care, and 4 patients had EXIT (ex utero intrapartum treatment)-to-resection procedure.

• Of the 50 patients who underwent resection in the operating room, there were 51 resections performed, as 1 patient underwent resection twice (Table 1).

• Most inductions were performed with sevoflurane (73%) and the others with intravenous techniques.

• Muscle relaxant was used in 50 resections (98%) prior to securing the airway.

• Most of the CPAM’s were right sided. Most of them were open thoracotomies (65%) and the others were thoracoscopic resections.

• The conversion rate from thoracoscopic to open resection was 28%.

• Lung isolation was performed in 37% of resections, and the most common technique used was as a single lumen endotracheal tube with endobronchial intubation.

CONCLUSIONS

• At our hospital, majority of CPAM resection cases were induced with sevoflurane and muscle relaxant followed by intubation.

• Most of the resections were performed with no lung isolation.

• In those cases that did utilize lung isolation, the use of a single lumen endotracheal tube to achieve lung isolation was more common than balloon tipped bronchial blockers.

Table 1: Anesthetic data on congenital pulmonary airway malformation resections (n=51)*

<table>
<thead>
<tr>
<th>Technique for ventilation</th>
<th>n (%)</th>
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<tbody>
<tr>
<td>Lung isolation</td>
<td>19/51 (37%)</td>
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<tr>
<td>Single lumen endotracheal tube</td>
<td>17 (10 left sided; 7 right sided)</td>
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<tr>
<td>Bronchial blocker</td>
<td>2 (one open; one thoracoscopic – 5 Fr size bronchial block in both)</td>
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</tbody>
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| Data from 50 patients and 51 resections (one patient had two resection) |

Correspondence: Rajeev.Subramanyam@cchmc.org