# What Is The Ideal Timing Of Elective Resection Of Asymptomatic CPAM Lesions?

## Evidence Level III

The treatment of patients with asymptomatic congenital pulmonary airway malformation (CPAM) is controversial, with questions regarding not only the necessity of elective resection, but what age is optimal for surgery. While most surgeons agree that surgical resection currently represents the best treatment for these patients, recommendations as to when surgery should occur vary widely.

We identified 14 studies. Five contained relevant data in the published report (Aziz 2004, Calvert 2007, Conforti 2009, Pelizzo 2009, Waszak 1999); for the other 9, we obtained useable data from the authors on CPAM patients who underwent elective surgery (Aspirot 2008, Beres 2011, Boubnova 2011, Chen 2010, Furukawa 2015, Kim 2005, Kongstad 2012, Laje 2015, Naito 2012).

Seven comparative studies examined the effect of operative age on patient complications. Meta-analysis results generally indicated that the odds of experiencing complications were not significantly different between younger and older patients undergoing elective resection of CPAM lesions, although older patients were favoured (Aspirot 2008, Aziz 2004, Boubnova 2011, Conforti 2009, Furukawa 2015, Kim 2005, Naito 2012). Data from 3 additional studies allowed for non-comparative assessment of complications following elective surgery, finding complications following surgery in 31% of neonates (Waszak 1999), 7% of patients younger than 4 months of age (Laje 2015), and 8% of patients undergoing surgery at an average of 12 months of age (Kongstad 2012). Older patients had shorter length of hospital stay and chest tube duration, but greater evidence of infection on pathology. All other outcomes were similar between age comparisons (need for ventilation, length of ventilation, blood loss, pulmonary function, and mortality).

We also identified 15 literature reviews on this topic (Andrade 2011, Chuang 2009, Di Prima 2012, Durkin 2009, Eber 2007, Fitzgerald 2007, Guidry 2012, Kotecha 2012, Laberge 2005, Lakhoo 2007, Lakhoo 2009, Puligandla 2012, Shanti 2008, Singh 2015, Wall 2014). Though varied in their recommendations, it was generally advised that surgery occur sometime between 3 and 12 months of age.

The majority of the literature available on this topic, however, is opinion-based. We identified 42 studies that provided recommendations based on personal experience, rather than an evaluation of data. While the most popular recommendation appears to be that resection should occur between 3 and 6 months of age, values range from the neonatal period to 3 years of age. You can view this table to see a summary of recommendations from opinion-based articles. In addition, two surveys of pediatric surgeons confirmed the lack of standardization in practice, with the majority of respondents preferring to resect after the neonatal period but before 12 months of age (Lo 2008, Peters 2013).

In conclusion, the literature published concerning the optimal age of elective resection of asymptomatic CPAM is largely opinion-based in nature. Even where evidence does exist, it is difficult to get an overall picture of how age influences clinical outcomes, as papers tend to limit their data to a single age evaluation/comparison. Based on the evidence, however, it would appear as though resection between 3 and 6 months is most commonly practiced, and that resection at this age is safe and effective.

Future studies that seek to evaluate the effect of age on clinical outcomes should be comparative and focus only on: a) CPAM and not combine data from different thoracic lesions, b) asymptomatic patients and not combine data from emergency and elective surgery, and c) evaluating multiple age comparisons rather than just one.

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The full systematic review can be found here.

## Non-Randomized Trials: Comparison Studies

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## Other Study Designs

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