

## Adenotonsillectomy for obstructive sleep apnoea in children with Down Syndrome - No magic bullet.

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### CITATION

Shidanihi, K Al; McNally, Paul (2017): Adenotonsillectomy for obstructive sleep apnoea in children with Down Syndrome - No magic bullet.. Royal College of Surgeons in Ireland. Journal contribution.  
<https://hdl.handle.net/10779/rcsi.10788830.v1>

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## Editorial

# Adenotonsillectomy for obstructive sleep apnoea in children with Down Syndrome – No magic bullet.

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Obstructive Sleep Apnea (OSA) is common in children with Down Syndrome (DS). Various studies report the prevalence of OSA in DS at 30-60 % while only 1-5% of healthy children have OSA<sup>1,2</sup>. In children with a diagnosis of OSA, the first step in clinical management involves a determination of whether OSA may be surgically reversible in the short term. The American Academy of Paediatrics (AAP) recommends adenotonsillectomy as the first line treatment for children with OSA and adenotonsillar hypertrophy. In otherwise healthy, non-obese children, the success rate of adenotonsillectomy is approximately 80%<sup>3</sup>. The very different risk factors for OSA in children with DS would suggest that adenotonsillectomy is likely to be less successful in this group. Clinically, the decision as to whether or not to perform adenotonsillectomy in a child with DS and OSA is difficult, with limited evidence to guide decisions. The most difficult question is usually whether or not to proceed with surgery in those with only mild enlargement of tonsils and/or adenoids. The alternative for this group is Continuous Positive Airway Pressure (CPAP) – not an insignificant undertaking in a child with DS. In their paper earlier this year in *Archives of Disease in Childhood*, Maris et al sought to assess the effectiveness of adenotonsillectomy for OSA in children with DS<sup>4</sup>. In this single centre retrospective study the primary outcome measure was the Obstructive Apnoea Hypopnoea Index (OAHI). The authors showed a significant reduction of mean OAHI in children with DS. The greatest benefit was seen in those with a high OAHI. A significant proportion of children, however still had an OAHI in the abnormal range after adenotonsillectomy.

This was the largest series of children with DS and OSA reported in the literature to date, and all patients in the study had undergone full polysomnography before and after adenotonsillectomy. The authors clearly describe their findings and demonstrate a significant reduction in mean OAHI without changes in sleep stage distribution or efficiency. The study however has several limitations that impact on its generalisability to the children with DS we care for in our clinics. The authors mention, but do not expand on, a score for tonsil size. Specifically, no effort is made to stratify children into groups based on adenotonsillar size or Mallampati classification of pharyngeal shape. This would be very useful clinically to help us to decide who may require surgery. Neither did the

authors make an effort to understand which clinical features, either on history or examination, were associated with successful reduction of OAHl. It is interesting to note that much of the reduction in mean OAHl in this study was explained by significant reductions in a few patients.

Although OAHl is an objective marker of obstructive sleep apnoea, significant night to night variability in OAHl is well recognised in children<sup>5</sup>. In addition to this, clinical practice in Europe in particular has evolved to understand that an isolated elevated OAHl alone is not sufficient to warrant treatment unless accompanied by typical symptoms of OSA. Clinical management of children with suspected OSA is therefore based heavily on clinical symptoms, both during sleep but also during the day. Unfortunately this was not something that was reported in this study. In healthy children with OSA without intervention, OAHl when measured serially is likely to decline with age after toddlerhood<sup>3</sup>. No similar data is available for children with DS. Therefore the lack of a suitable control group here leaves us guessing whether with watchful waiting a similar reduction of OAHl would have been seen.

Overall, therefore we are really no further on in our understanding of the natural history of OSA or requirement for adenotonsillectomy in individuals with DS. The current practice of individualized clinical judgement as to whether or not removal of adenotonsillar tissue is likely to result in improvements in a dynamic airway obstruction in a given patient during sleep is therefore not likely to change. A prospective randomised trial of adenotonsillectomy in children with DS is required. This would need high patient numbers and an array of clinically relevant endpoints in addition to OAHl.

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