Efficacy of Adenotonsillectomy for Obstructive Sleep Apnoea in Extreme Paediatric Obesity

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INTRODUCTION

- Adenotonsillectomy is a recognised treatment for paediatric obstructive sleep apnoea (OSA)^[1].
- Untreated, it is associated with behavioural, metabolic and cardiovascular sequelae^[2].
- Recent literature suggests poorer post adenotonsillectomy outcomes in children with paediatric obesity^[3,4].
- Paediatric obesity has reached epidemic levels, with an ever-growing incidence^[5].
- BMI Z-score (number of standard deviations above or below the mean) is used to stratify obesity in the paediatric population^[6].
- We sought to review the efficacy of adenotonsillectomy performed at our centre in patients diagnosed with extreme paediatric obesity.

METHODS

- Retrospective review of patients attending a multi-disciplinary paediatric obesity clinic at a tertiary centre from 2015 - 2017.
- Inclusion criteria: Patients with a BMI Z-score of 3 or above and had undergone adenotonsillectomy for OSA.
- Electronic notes and sleep study reports were analysed.

CONCLUSION

- Obese patients failed to demonstrate the same improvement in OSA post adenotonsillectomy as non-obese counterparts.
- In patients with extreme paediatric obesity, adenotonsillectomy does not remove the need for use of NIV.
- Treatment of OSA in this patient group requires expert management of obesity alongside any potential surgical intervention.
- Adenotonsillectomy alone is not efficacious in treating OSA, and may influence the decision to proceed with surgery.

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RESULTS

- Nine patients were referred to the obesity service with a BMI Z-score ≥ 3 (median Z-score 3.5) and had undergone adenotonsillectomy for OSA.
- Mean age at referral to the obesity clinic was 6.9 years
- All nine patients were commenced on non-invasive ventilation pre-operatively, average age of commencement was 7.8 years.
- Four patients had an underlying medical cause for obesity, the remainder were secondary to lifestyle factors.
- Zero patients had an underlying craniofacial or neuromuscular disorder.
- Post-operatively, eight patients (89%) required on-going non-invasive ventilation (BIPAP or CPAP), with evidence of persistent OSA on post-operative sleep studies (Figure 1).

Figure 1 - Requirement for NIV post- adenotonsillectomy

DISCUSSION

The aim of adenotonsillectomy is to overcome obstruction of airflow through the nasal and oral airways. In obese children obstruction of the airway still persists following surgery, suggesting that increased soft tissue surrounding the airway is responsible for persistent obstruction.

Management of OSA in this group may therefore involve a combination of NIV to prevent long-term sequelae, specialist management of the underlying obesity, surgical intervention (if indicated) and close outpatient monitoring. Given the disappointing success rate of adenotonsillectomy in the obese population, it is important to counsel the parents/caregivers during the consenting period. It is crucial to explain that whilst adenotonsillectomy may improve OSA, it is less likely remove the need for ongoing use of NIV.