Adenotonsillectomy versus adenopharyngoplasty in children with severe obstructive sleep apnea: a randomized controlled trial

Fehrm J1,2, Nerfeldt P1,2, Sundman J1,2, Friberg D1,3

1Department of Clinical Science, Intervention and Technology, CLINTEC, Karolinska Institutet, Stockholm, Sweden
2Department of Otorhinolaryngology, Karolinska University Hospital, Stockholm, Sweden
3Department of Otorhinolaryngology, Institute of Surgical Science, Uppsala University, Uppsala, Sweden

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New surgical procedure not necessary
• Obstructive sleep apnea (OSA) is common among children
• It is characterized by obstruction of the upper airway during sleep
• The primary treatment is surgery
• A new procedure, including closure of the tonsillar pillars, was not more effective than the traditional procedure

Introduction
• The obstruction of the upper airway is primarily caused by enlargement of lymphoid tissue, i.e. the tonsils and the adenoid.
• The obstruction disrupts normal breathing, fragments sleep and is associated with learning problems, concentration difficulties, poor growth and cardiovascular disease.
• The primary treatment is surgical removal of the tonsils and the adenoid by a method called adenotonsillectomy (ATE). However, some children still have persistent OSA after ATE.
• Previous studies have indicated that a modified ATE, with closure of the tonsillar pillars, might be more effective to treat OSA. We call this method adenopharyngoplasty (APP) (Figure 1).

Objective
To evaluate if APP is more effective than ATE for treating children with severe OSA.

Method
• A single center, blinded, randomized controlled trial.
• 83 otherwise healthy children, age 2–4 years, with severe OSA were randomized to APP or ATE.
• Respiratory events were recorded with a sleep study, polysomnography (gold standard).
• Change in OAH1, an index of respiratory events during sleep, was the primary outcome.
• Changes in quality of life were assessed with the validated OSA-18 questionnaire.
• Follow-up six months after surgery.

Results
• Seventy-four children (APP n = 30, ATE n = 44) completed the study (89%).
• Both groups had a significant decrease in OAH1 after surgery but there was no significant group difference, 0.7 (95% CI −4.8, 6.1, p = 0.81) (Figure 2).
• Both groups had significant improvements in quality of life, but there were no significant group differences.
• One patient from both groups was readmitted due to post-operative bleeding, but no other complications were seen.

Figure 1. Left: Removal of tonsils (ATE). Right: Closure of the tonsillar pillars after tonsillectomy with two sutures on each side.

Figure 2. Boxplots and line graphs for the ATE and APP group. Boxplots: Boxes include the median and the first to third quartile. Whiskers are within the 1.5 interquartile range, and circles are outliers. Line graphs: Lines connecting individual pre- and postoperative OAH1 scores.

Conclusion
This randomized controlled trial could not show that APP is more effective than ATE to treat severe OSA in otherwise healthy children. ATE should continue to be the primary treatment.