# Adenotonsillectomy May Not Resolve Sleep Apnea

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FORT LAUDERDALE, FLA. — Although adenotonsillectomy remains the first-line treatment for children with obstructive sleep apnea syndrome, only about 25%-30% will experience complete resolution of symptoms, according to a prospective study.

Another 25% or so of children will still have apnea severe enough to warrant continuous positive airway pressure (CPAP) therapy. Management of the rest, who end up better but not cured after tonsillectomy and adenoidectomy (T&A), remains unclear. About 45% of children won't be cured, but won't be worse "somewhere in the middle," said Dr. David Gozal, director of the division of pediatric sleep medicine, Kosair Children's Hospital Research Institute, University of Louisville (Ky.).

That figure comes from a prospective study of 110 consecutive children with obstructive sleep apnea assessed with polysomnography before and after T&A (J. Pediatr. 2006;149:803-8). Mean age was almost 7 years; 62% of patients were boys. A total of 37% was obese, mean body mass index was 24 kg/m$^2$, and average time between sleep studies was 6.4 months.

Outcome was measured as change in the obstructive apnea/hypopnea index (OAHI), defined as the number of instances of apnea and hypopnea per hour of total sleep time.

The overall OAHI before T&A was 24, and at a second polysomnography, it was 5.3. Although that was a statistically significant improvement, "it was not normal at all—don't expect it to normalize," Dr. Gozal said at a pediatric pulmonology meeting sponsored by the American College of Chest Physicians.

"It is very difficult to predict results in individual patients, but, globally, the percentage who had a normal respiratory pattern after T&A was less than 30%. That is a jolt [and] not the 80%-85% success rate from ENTs that we quote for parents," he said.

In the study, 28% of children scored an OAHI of 1 or less after surgery. Another 27% scored a postoperative OAHI of 5 or greater and were recommended for CPAP.

Because treatment options for the group with residual, mild sleep-disordered breathing after T&A are unclear, Dr. Gozal and colleagues launched another investigation (Pediatrics 2006;117:e61-6). They identified 22 children who had incomplete resolution of sleep apnea postoperatively on polysomnography at 10-14 weeks (an OAHI greater than 1 and less than 5) and treated them for 12 weeks with anti-inflammatory combination therapy. An additional 14 children not treated served as controls.

Patients received oral montelukast, because leukotriene modifiers have been demonstrated as effective for mild sleep-disordered breathing (Am. J. Respir. Crit. Care Med. 2005;172:364-70). They also received intranasal budesonide. Upper airway collapsibility and presence of mild sleep-disordered breathing after T&A might indicate residual upper airway inflammation that could respond to anti-inflammatory treatment, Dr. Gozal said.

Parameters measured during the polysomnography prior to anti-inflammatory therapy were not statistically different between treated and control children. The mean OAHI was 3.9 per hour of total sleep time (TST) in the treatment group and 3.6 per hour of TST in control patients. Researchers also noted similar nadir arterial oxygen saturations (87.3%) and respiratory arousal index findings (4.6 per hour of TST) for both groups. "Sleep fragmentation seems common in these children," Dr. Gozal said.

The posttreatment polysomnography, however, indicated some significant improvements in the treated group, compared with controls. In fact, 21 out of the 24 patients in the treated group normalized their sleep apnea, Dr. Gozal said. The treatment group showed significant improvements in OAHI (0.3 per hour of TST), in nadir arterial oxygen saturation (92.5%), and in respiratory arousal index (0.8 per hour of TST), whereas no significant changes were seen over time in the control group children.

"Although randomized, double-blind, placebo-controlled trials are needed to confirm the current findings, the present study clearly establishes the beneficial role of anti-inflammatory approaches for asymptomatic children with mild sleep-disordered breathing after T&A," said Dr. Gozal, who disclosed he is on the national speakers bureau for Merck & Co. ■



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