Identification of Children at Risk for OSA Using a Standardized Questionnaire Pilot Study

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**Background**
Sleep disordered breathing in children, including a spectrum of disorders from snoring to obstructive sleep apnea (OSA), has an overall incidence of 5%. Children with OSA have an increased sensitivity to opiates and an increased risk for postoperative complications. Patients with undiagnosed OSA might pose an even higher risk because preventive measures (dosage, postoperative monitoring) are not instituted. Due to the large number of children undergoing dental rehabilitation at our institution, we aimed to establish the incidence of the OSA in this population and to develop a pilot screening OSA questionnaire prior to their general anesthesia.

**Methods**
With IRB approval, the parents of all children scheduled for dental rehabilitation were asked to complete a 12-point paper questionnaire. Children with known OSA were excluded. The questionnaire asked parents if their child ever experienced:
1) snoring for more than half the sleep time, 2) loud snoring, 3) trouble breathing while sleeping, 4) apnea while sleeping, 5) bed-wetting, 6) difficulty waking in the morning, 7) daytime mouth-breathing, 8) morning headaches, 9) daytime somnolence, 10) daytime restlessness, 11) trouble focusing on tasks, 12) overweight.

Children scoring ≥ 6 on the questionnaire were referred to the otolaryngology (ENT) service for further evaluation. They then underwent (i) polysomnography (PSG) to confirm the diagnosis and adenotonsillectomy (T&A) if OSA was diagnosed, (ii) T&A without a PSG, or (iii) were referred back to the dental clinic without intervention. Statistical analysis was performed using the Statistics Toolbox™ within Matlab to calculate summary measures as well as Pearson correlation between apnea-hypopnea index (AHI) and questionnaire score.

**Results**
Over a 1-year period we enrolled 3638 patients. 146 patients (4%) scored ≥ 6 (9.1 +/- 19.6) on our questionnaire and were referred for ENT evaluation (Fig 1). 98 patients were evaluated by the ENT service for OSA (67% referral rate) with 26 patients (26%) undergoing PSG. Mean time to ENT evaluation was about 3 weeks. 16 patients (61%) were diagnosed with PSG-proven OSA with 12 patients (46%) having an AHI score 1-10 and 4 patients (15%) having an AHI score ≥ 10. A line fitted to the distribution of test scores and AHIs showed modestly positive correlation (r=0.2). Of the 26 patients who had PSG, 10 went on to have T&A. 23 patients were clinically identified as having OSA and had a T&A. 30 patients were identified as not having OSA and were referred back to the dental clinic.

**Conclusions**
Our pilot study assessing the feasibility of using a simple screening questionnaire for OSA was successful in identifying the at-risk population prior to general anesthesia. The incidence of OSA in this population (4%) is similar to previous reports of OSA in the general pediatric population. We are now adapting our pilot questionnaire to an electronic format in hope of identifying all previously undiagnosed patients with OSA.