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The safety of outpatient UPPP for obstructive sleep apnea: A retrospective review of 40 cases

Abstract

We retrospectively reviewed the outcomes of 40 patients who had undergone outpatient uvulopalatopharyngoplasty (UPPP) for the treatment of moderate to severe obstructive sleep apnea (OSA) in order to determine the safety of the procedure in an outpatient setting. Postoperatively, 36 of the 40 patients (90%) were discharged home the day of surgery without morbidity; 3 other patients stayed overnight for nonmedical reasons, and 1 patient who was already an inpatient remained hospitalized for unrelated medical issues. No postoperative complications occurred, and all patients reported a resolution of OSA symptoms and improvement in sleep. Based on a combination of our data and those of previous studies, we conclude that patients with significant OSA can safely undergo UPPP as an outpatient procedure. We recommend that guidelines regarding the perioperative care of patients with OSA be adjusted to include consideration of treatment in an outpatient setting.

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Introduction

The postoperative management of obstructive sleep apnea (OSA) following uvulopalatopharyngoplasty (UPPP) once routinely included admission to the intensive care unit (ICU) for monitoring of potential respiratory com-plications secondary to upper airway obstruction or narcotic administration.[1] Today, ICU admissions are rare; instead, patients are often observed in a monitored care setting. In a recent report of 117 cases and a literature review, Spiegel and Raval found that ICU monitoring was not necessary because complications were rare.[2] Moreover, when airway complications did occur, they were within the first hour after extubation. Spiegel and Raval recommended that patients be monitored for 2 to 3 hours postoperatively and then discharged home. In another study, Kezirian et al reviewed a Department of Veterans Affairs database to ascertain complication rates and 30-day mortality following UPPP (N = 3,130).[3] They found that the nonfatal complication rate was 1.5% and mortality was 0.2%. Again, when respiratory complications did occur, most were seen in the immediate postoperative period; the most common of these was a need for reintubation.

We performed a retrospective review of patients who had undergone UPPP with or without tonsillectomy or septoplasty. Our goal was to assess the safety of UPPP in the

outpatient setting in patients without significant medical comorbidities.

Patients and methods

With institutional review board approval, we examined the medical records of all patients who had undergone UPPP at our institution between Sept. 1, 1998, and July 31, 2006, and we recorded demographic data, clinical status, test results, and outcomes. Most of these patients had undergone concurrent tonsillectomy or septoplasty and turbinate reduction. All procedures were performed by the senior author (M.B.W.).

Results

During the study period, 40 patients—31 men and 9 women, aged 18 to 77 years (mean: 40)—had undergone UPPP. Thirty-four of these patients had undergone concurrent tonsillectomy (figure), and 2 patients had undergone a concurrent septoplasty and turbinate reduction.

Illustrations depict the appearance of the oropharynx preoperatively (A), following tonsillectomy (dashes indicate the planned UPPP) (B), and following UPPP (C).

Preoperatively, our patients' body mass index ranged from 20.1 to 44 (median: 27.1) (table). Most patients had moderate to severe OSA; among the entire group, both the respiratory disturbance index and the apnea/hy-popnea index ranged from 5 to 99 (median: 40 and 39.5, respectively; normal: <5). Moreover, the minimum O2 saturation level ranged from 60 to 96% on polysomnography (median: 88%). Finally, the sleep efficiency value ranged from 26.4 to 96% (median: 82%).

Selected preoperative findings

Finding	Range (median)
Body mass index	20.1 to 44 (27.1)
Respiratory disturbance index	5 to 99 (40)
Apnea/hypopnea index	5 to 99 (39.5)
Minimum O2 saturation	60 to 96% (88%)
Sleep efficiency value	26.4 to 96.0% (82%)

Thirty-six of the 40 patients (90%) were discharged home within hours of the procedure. Two patients were admitted because they had young children at home, and 1 patient was admitted because of a lack of transportation. All 3 of these patients were discharged home the next morning without complication. The fourth patient had already been an inpatient; he was being treated for significant comorbidities related to obesity, and he did not experience any complications related to UPPP.

All patients had been seen 3 to 4 weeks postoperatively for an assessment of postoperative complications, wound healing, and any remaining OSA symptoms. There were no emergency department visits related to bleeding, pain, or dehydration, and there were no postoperative complications related to bleeding or respiratory disturbances. One patient who had known lumbar disk disease required admission for back pain 3 days after the procedure. All patients reported a full recovery with adequate pain control and subjective improvement in their sleep patterns.

Discussion

OSA affects 4% of men and 2% of women.4 Its pathology is related to an anatomically and physiologically narrow pharyngeal airway that collapses during inspiration, resulting in an increased negative intrathoracic pressure, which exacerbates the condition. Affected patients experience cyclical awakenings during the night when complete obstruction prevents the flow of air to the lungs. As they awaken, muscle tone is restored to the upper airway, allowing for the passage of air. The fragmentation of sleep has considerable neurocognitive consequences. Patients experience considerable daytime fatigue and deficits in memory, learning, and executive processing; these effects may be caused by either the loss of sleep or the hypoxia itself. Additionally, correlations exist between OSA and cardiovascular disease, possibly related to the increased negative intrathoracic pressure. These cardiovascular conditions include atherosclerosis, hypertension, congestive heart failure, and stroke.4

A wide range of treatments is available for OSA. Initial treatment often includes weight loss, as obesity is a major contributor to OSA. Improved sleep hygiene and avoidance of alcohol and sedatives are also frequently recommended. Medical treatments include continuous positive airway pressure devices, which splint the airway by generating positive pressure during inspiration, and oral appliances, which advance the mandible to allow the airway to remain patent.4 Surgery is often reserved as a second-line option if

medical therapy fails. UPPP is the mainstay of surgical treatment; other procedures, including radiofrequency ablation, have not proven to be as effective. A new method of surgical treatment is the placement of implantable devices called *palatal pillars,* which can be inserted in the office; however, at this time, we have no adequate data regarding their efficacy in patients with moderate to severe OSA.

In the otolaryngology literature, reports of the safety of outpatient UPPP have emanated from multiple institutions. However, among anesthesiologists, there is continued concern regarding anesthetizing patients with OSA as outpatients, be it for sleep-disorder–related procedures or for surgical procedures that do not involve the airway. The severity of sleep apnea is often considered a major determinant in deciding whether a surgical procedure should be performed in an inpatient setting versus outpatient.[5]

In the anesthesiology literature, great concern is placed on the intubation and extubation of patients with OSA. Because patients with OSA typically have a “difficult airway,” minimal premedication is recommended and the ability to perform a fiberoptic intubation is necessary.[6] The rationale for an inpatient stay postoperatively is to monitor for postoperative airway obstruction and respiratory arrest. Recommendations include extubation in the operating room once the patient is fully awake and only minimal use of narcotics.[7] Although these measures could all be carried out in an outpatient surgical center, anesthesia guidelines recommend an overnight stay to observe the patient for desaturation or postobstructive pulmonary edema.

Riley et al reviewed the outcomes of 182 patients who underwent UPPP and related procedures at their facility.[8] Afterward, all patients were either admitted to the ICU or placed in a monitored bed. Most of the complications they reported were related to postoperative hypertension or the need for fiberoptic intubation. No episodes of postobstructive pulmonary edema occurred, and only 6 patients had a postoperative oxygen saturation level less than 90% (although none had desaturations less than 85%), and the desaturations were often attributable to narcotic administration.

Kieff and Busaba reviewed the cases of 86 patients who had undergone UPPP combined with nasal procedures.[9] Twenty-three of these patients met the criteria for same-day discharge: no comorbidities and an oxygen saturation level greater than 94%. The other 63 patients were admitted. There were no complications in the same-day-discharge group and only 3 minor complications in the admission group; none of these complications was related to airway compromise or cardiopulmonary events.

In 2006, Hathaway and Johnson described their experience with outpatient UPPP in 110 patients.[10] They reported an admission rate of 18%, with only 3% of patients being admitted for desaturation. The patients who had been admitted for desaturation had undergone a concurrent nasal procedure and had a mean desaturation level of 73% on preoperative polysomnogram. Patients who experienced significant desaturation postoperatively did not have oxygen saturation levels below the levels that had been measured during polysomnography. The overall postoperative complication rate was

10%; the postoperative hemorrhage rate was 6%. Overall, Hathaway and Johnson concluded that UPPP is safe as an outpatient procedure.[10]

Although our study was small (N = 40) and our results lacked statistical significance, our findings are consistent with those of previous studies conducted at other institutions. Because postoperative airway complications are so rare following UPPP, it is difficult to conduct a study that is adequately powered to achieve statistical significance; such a study would have to be performed at multiple institutions or over multiple decades. Even as evidence of its safety accumulates, outpatient UPPP remains controversial and inspires heated discussions. Yet outpatient tonsillectomy was also unheard of at one time, and it is now routine. In addition, outpatient thyroidectomy is not unusual currently. These developments follow the overall trend in modern medicine toward treating more patients as outpatients. Based on our data, we can suggest that UPPP is feasible as an outpatient procedure when deemed appropriate in the sound clinical judgment of a qualified surgeon. When we combine our data with those of other studies mentioned herein, we feel comfortable in recommending that surgeons reconsider current guidelines that mandate hospital admission after general anesthesia in patients with OSA and reserve admission for patients who have other significant comorbidities.

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Ear Nose Throat J. 2008 August;87(8):466-468