

# Complications of Tongue Base Somnoplasty

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**Background:** There are many therapeutic modalities to treat obstructive sleep apnea, and somnoplasty is one of the most widely used around the world. However, there are few reports about its complications.

**Methods:** The charts of consecutive patients who underwent tongue base somnoplasty were reviewed in the search for complications.

**Results:** The total number of patients was 237. We found only 2 postoperative complicated cases.

**Discussion:** Tongue base somnoplasty can be considered a safe procedure with a low incidence of complications.

**Key words:** base of the tongue, radiofrequency energy, somnoplasty

Obstructive sleep apnea syndrome (OSAS) has emerged in the last 20 years as a frequent condition that may lead to a number of cardiovascular and neurologic complications, as well as hypersomnolence. Its association with systemic hypertension, stroke, traffic accidents, and loud snoring has been clearly described.<sup>1,2</sup>

Depending on factors such as severity, kind of apnea, and site of obstruction and collapse, many therapeutic options may be used.<sup>3</sup> Positive airway pressure devices (continuous or bilevel positive airway pressure) remain the gold standard in the management of sleep-disordered breathing.<sup>4</sup> Nevertheless, a lack of tolerance is their main disadvantage because many patients are unable to use them for long periods. In some cases, surgical treatment is indicated. Surgery must be directed toward the site or sites of obstruction (turbinates, septum, adenoids, tonsils, uvula, palate, and/or tongue base), and a wide range of different procedures can be done, either in a uni- or a multilevel approach.<sup>5</sup>

## Received

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Tissue volumetric reduction with temperature-controlled radiofrequency energy, also known as somnoplasty (Gyrus ENT, Bartlett, TN), is a relatively new alternative to treat snoring and OSAS.<sup>6</sup> It has been successfully applied at the turbinates, palate, tonsils, and tongue base. Despite the fact that it is a very safe procedure, quickly and easily done on an office basis under local anesthesia, some complications have been reported, mainly when applied at the soft palate.<sup>7</sup> Stuck and colleagues, from Germany, reported their experience using somnoplasty at the palate and base of the tongue; they found it to be very safe, with a low rate of complications.<sup>8</sup>

The aim of this article is to present a series of patients who underwent somnoplasty at the tongue base, along with the complications we found in a Latin American population.

## Methods

We performed a retrospective, longitudinal, and descriptive study, with the approval of the Ethics and Research Board of the General Hospital of Mexico. The charts of 237 consecutive patients treated by the authors from July 2002 to July 2005 were reviewed. All of the patients underwent base of the tongue somnoplasty either as part of a multilevel somnoplasty approach for obstructive sleep apnea (base of the tongue, palate, and turbinates) or as a unique procedure.

The statistical data of the patients, as well as the presence of complications, are reported.

## Results

From the 237 cases, 196 were male and 41 female. Their ages ranged from 27 to 64 years, with an average of 42

years. All of them had an overnight sleep study, with a respiratory distress index from 3 to 63, for a mean of 41, and a snoring index ranging from 36 to 178, with a mean of 94. In 201 cases, the tongue procedure was part of a multilevel approach, and in 36 cases, the base of the tongue was the only treated level.

For the first 127 patients (group A), the procedure was performed under local anesthesia, using topical 10% spray lidocaine and infiltration with 2% lidocaine. In the second group (group B), somnoplasty was performed under local anesthesia plus sedation using intravenous fentanyl and midazolam.

The amount of radiofrequency energy used varied during the observation period but always at 85°C. On the first 143 cases, we applied 800 J in the midline, posterior to the vertex of the circumvalate papillae, 400 J in the midline anterior to the vertex, and 400 J on both sides of the tongue, but on the rest we used the “faster” modality, applying 300 J on the same four areas.

We found only two postoperative complications. Both of them were on patients with a very important gagging reflex and consisted of the presence of mucosal lesions on the sites of energy application (Figure 1), which took them to complain of dysphagia for 4 to 5 days. These two cases corresponded to group A, that is, patients who underwent only local anesthesia. None of the patients required hospital admission as they were treated with prophylactic clindamycin 300 mg by mouth trice a day and ketorolac 30

mg on a sublingual basis, trice a day for 4 days. No intraoperative complications were reported.

## Discussion

We did not find reports in the English literature focusing on the side effects of somnoplasty when applied at the base of the tongue. For that reason, the main objective of this study was to analyze the postoperative complications of the technique.

Their incidence seems to be low as only 2 of 237 patients presented with mucosal injuries after the procedure, and both cases just required conservative management. Dysphagia was the most important symptom, but it allowed the patients to eat even at the second postoperative day.

The gagging reflex has to be well assessed if local anesthesia is going to be used, given that all of the complications in this series were associated with it. On the other hand, sedation can make the procedure easier for the surgeon and more comfortable for the patient, so we should keep it in mind as an important tool, especially when treating anxious patients or when the gagging reflex represents an obstacle.

## References

1. Piccirillo JF, Thawley SE. Sleep-disordered breathing. In: Cummings CW, editor. Otolaryngology head-neck surgery, 3rd ed. St Louis: Mosby Year-Book; 1998.
2. American Thoracic Society. Sleep apnea, sleepiness and driving risk. *Am J Respir Crit Care Med* 1994;150:1463.
3. Kryger MH, Roth T, Dement WC. Principles and practice of sleep medicine. 4th ed. Philadelphia (PA): Elsevier; 2005.
4. Anand V, Ferguson PW, Schoen LS. Obstructive sleep apnea: a comparison of continuous positive airway pressure and surgical treatment. *Otolaryngol Head Neck Surg* 1991;105:382.
5. Riley RW, Powell NB, Guillenminault C. Obstructive sleep apnea syndrome: a surgical protocol for dynamic upper airway reconstruction. *J Oral Maxillofac Surg* 1993;51:742-7.
6. Powell NB, Riley RW, Troell RJ, et al. Radiofrequency volumetric tissue reduction of the palate in patients with sleep disordered breathing. *Chest* 1998;113:1163-74.
7. Terris D, Chen V. Occult mucosal injuries with radiofrequency ablation of the palate. *Otolaryngol Head Neck Surg* 2001;125:468-72.
8. Stuck BA, Starzak K, Verse T, et al. Complications of temperature-controlled radiofrequency volumetric tissue reduction for sleep-disordered breathing. *Acta Otolaryngol (Stockh)* 2003;123:532-5.



Figure 1. Ulcerations at the sites of energy application (arrow).

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