As seen in ENT News May/June 2007

Bipolar Radiofrequency (Sutter BM-780 II and CURIS®) of the Palate – Is one treatment session sufficient?

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Sleep disordered breathing (SDB) ranges from snoring, upper airway resistance syndrome (UARS) to obstructive sleep apnea (OSA). Snoring is due to the vibration of the soft palate, uvula, tonsils, tongue base, epiglottis and pharyngeal walls. Most sleep authorities believe that snoring is a symptom of an underlying OSA.
OSA is a common sleep disorder: Young et al. studied 602 state employees who underwent polysomnography in the sleep lab, and found that the incidence of SDB was 24% in men and 9% in women[1]. Most of these patients remain undiagnosed. It is estimated that up to 93% of females and 82% of males with moderate to severe OSA remain undiagnosed[2].

Many techniques have been introduced to treat snoring. The basis of each method is to create scar tissue, to incite fibrosis and to stiffen the palate. This decreases the vibration of the palate and diminishes snoring for reduced collapsibility and therefore fewer apneic episodes. Several of the newer methods involve the use of expensive implants or sophisticated equipment.
Powell and Riley (1997) first described the use of radiofrequency volumetric tissue reduction in the upper airway. The purpose was to stiffen the soft palate in order to treat primary snoring[3]. Radiofrequency offers the advantages of being minimally invasive, causing little pain and minimal complications and that it can be done under local anesthesia as an office-based procedure. A radiofrequency probe can also be applied to the inferior turbinates for relief of nasal obstruction and to the base of tongue for treatment of OSA.
We used the Sutter radiofrequency technology for the treatment of snoring, UARS and mild OSA in a single treatment session. Despite literature suggesting that multiple sessions are required with this technique for adequate subjective results, our data show fairly good subjective results after a single session.

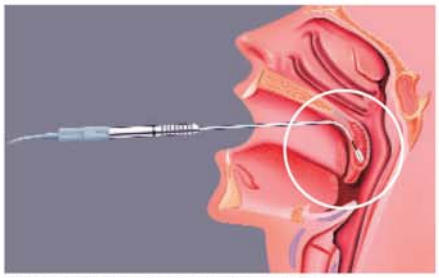

Illustration 1: Insertion of the bipolar probe into the soft palate

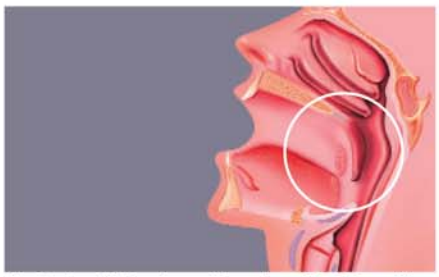

Illustration 2: Postoperative site with volumetric reduction and stiffened tissue

Illustration 3: CURIS® radiofrequency unit (Sutter Medizintechnik GmbH)

Seventy-four patients suffering from simple snoring, upper airway resistance syndrome and mild OSA were enrolled in our study. The inclusion criteria were: age > 18 years, BMI < 28, tonsil size grade 1 and 2, Mallampati grades I and II, minimal collapse of the tongue base (<25%) as seen on Muller's maneuver, simple snorers (AHI < 5) and patients with mild OSA.
All patients underwent a thorough clinical examination and an overnight polysomnography. The study protocol and methodology were reviewed and approved by the Institutional Review Board (IRB)/Ethics Committee. All procedures were performed by one surgeon. The results will be published soon as separate data on patients with simple snoring and OSA and patients with upper airway resistance syndrome.
The author has used both Sutter generators, the BM-780 II and the new CURIS® unit, for these procedures. The new CURIS® bipolar Radiofrequency generator operates in the RaVoR™ mode, has an automatic power shut-off feature (AutoStop), which meets the surgeon's needs and is very convenient. The audio-feedback mode is useful and adds safety to the unit's fundamental functions. It offers electrocautery options for both monopolar and bipolar use. It was found that the new CURIS® generator has been just as effective as its predecessor Sutter BM-780 II, but it is even more user friendly.
In general, 76.9% of the patients showed some improvement in their snoring while 40.4% reported "significant improvement" of their snoring levels. A number of 28 % of the patients and their sleeping partners subjectively reported "good improvement" regarding the reduction of the snoring intensity. Based on the VAS, patients who benefited from the procedure showed gradual reduction in the snoring intensity over time, ranging from a preoperative level of 8.9 (range 7.3 to 9.0) to a low of 3.4 (range 2.5 to 4.6) at 90 days postoperative ($p<0.05$).
Similar improvements were seen on the Epworth scale, which decreased from 14.6 (range 10 to 16) to 9.5 (range 5 to 12) postoperatively in 90 days. Subjectively, many patients felt that they were more alert during the day, slept better during the night and experienced less choking and gasping for air at night. Of 74 patients 82.7% reported some improvement in their overall quality of life (QOL). Pain was minimal: The procedure itself was painless, the post-procedure pain VAS revealed minimal pain and did not require significant analgesics. Most patients only reported a mean pain score (VAS) of 2.6 (range 1.3 to 4.9) that peaked on the second day. All patients had minimal odynophagia and there were no complications with post-operative hemorrhage, dysphagia nor velopharyngeal incompetence.
Bipolar radiofrequency volumetric tissue reduction with both Sutter systems shows promising results for patients suffering from snoring, upper airway resistance syndrome and mild OSA. One treatment session of the Sutter bipolar radiofrequency volume reduction (RaVoR™) yielded a significant reduction of the snoring intensity, an improvement of sleep quality as well as the quality of life, and a decrease in daytime sleepiness.

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References: 1. Young T, Palta M, Dempsey J, et al. The occurrence of SDB among middle-aged adults. N Engl J Med 1993;328:1230-1235. **2.** Young T, Evans L, Finn L, et al. Estimation of the clinically diagnosed proportion of sleep apnea syndrome in middle aged men and women. Sleep 1997;20:705-706. **3.** Powell NB, Riley RW, Troell RJ, Li KK, Blumen MB, Guilliminault C. Radiofrequency volumetric tissue reduction of the palate in subjects with sleep-disordered breathing. Chest. 1998;113(5):1163-74.