

Bipolar Radiofrequency Volume Reduction (RaVoR™) of the Inferior Nasal Turbinates – How I do it

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Snoring is a possible warning signal of obstructive sleep apnea (OSA). Increased public awareness of snoring, sleep-related breathing disorders and OSA has led to a steadily growing number of patients in sleep medicine. In many cases treatment of the hypertrophic inferior nasal turbinates is the first step in treating snoring and mild cases of OSA. Today volumetric reduction of the inferior turbinates is also performed as a remedy for inhalation allergies, the stuffy nose syndrome and to enhance continuous airway pressure (CPAP) treatment. The great number of procedures requires a minimally invasive approach: One that is efficient, yet easy to learn and easy to implement. Moreover the procedure should be suitable for both the operating theatre and for the outpatient clinic. Due to its efficacy in combination with its safety as well as its low morbidity the minimally invasive bipolar Radiofrequency Volume Reduction (RaVoR™) (Sutter Medizintechnik, Freiburg/Germany) has become an important treatment option for us.

Introduction: The main goal for the treatment of OSA is decreasing airway resistance. While the focus on soft palate surgery continues, addressing the nasal cavities as an initial step to achieve this goal should not be overlooked. Over time minimally invasive surgery of obstructed airways has improved with state-of-the-art medical technology. My experience with the Sutter BM-780 II generator (Figure 3) stands out. This is how I do it.

Material and Methods: For any treatment of the airways subjective evaluation of the history of nasal obstruction, especially in the supine position, is indicated. The standard diagnostic approach is a sleep study coupled with endoscopy of the upper airways, in this case the nasal cavities, even if endoscopy is not always performed. I do the RaVoR™ either under local anesthesia as a stand-alone treatment or under general anesthesia as the initial procedure for multiple surgeries for the treatment of OSA.

Preparation of the Patient (under local anesthesia): **1.** For ten minutes the turbinates are packed in cottonoids soaked with lidocaine spray to achieve numbing of the nasal cavities. **2.** Under direct visualization, using a nasal speculum and a headlight, injection of 0.5 to 1.0 cc of 2% lidocaine into each inferior nasal turbinate is made using a gauge 29 or 30 spinal needle. **3.** After administration of the anesthetic the patient may leave the treatment room for 30 minutes, but should remain under supervision.



Figure 1: Endoscopic view of the probe fully inserted

Application of Radiofrequency: **4.** Starting on the left side, the Sutter bipolar turbinate electrode is inserted submucosally (Figures 1 and 2) into the lower part of the turbinate. The Sutter BM-780 II generator is activated for 5 seconds at an intensity of '2' (CURIS® 10 watts, RaVoR™ mode). **5.** A cottonoid soaked in lidocaine epinephrine solution 1:10,000 is applied for hemostasis right after RF treatment of the turbinate. **6.** In the same fashion the procedure is performed on the contralateral side. **7.** While alternating between the left and the right side, three lesions are made starting on the lower part and moving up to the highest point in the head of the inferior turbinate. **8.** If needed, for enhanced decongestion, a fourth lesion is created in the middle part of the inferior turbinate (Figure 2).

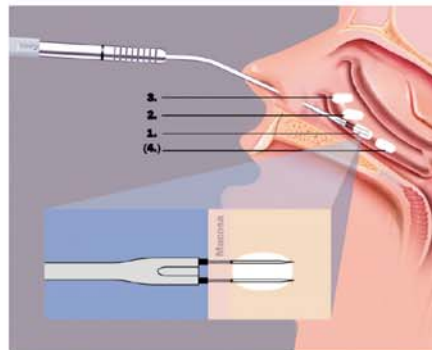


Figure 2: Inferior turbinate puncture sites, enlarged the schematic view of the inserted probe.

Post-Operative Care: **9.** The usual take home instructions are oral antibiotics for one week coupled with a nasal saline douche three times a day. It is advised to abstain from heavy nose blowing and strenuous physical activity for that week. **10.** Nasal packing and pain killers are hardly ever necessary. **11.** The final results are visible after three weeks following the procedure. If necessary, the treatment can be repeated on residual hyperplasia after six weeks.

Under General Anesthesia: The procedure is performed in the same fashion as under local anesthesia, except for the numbing and infiltration of the nasal cavity and the inferior turbinates with lidocaine for obvious reasons.



Figure 3: Sutter BM-780 II radiofrequency unit

Results and Discussion: The minimally invasive radiofrequency volume reduction RaVoR™ of hypertrophic inferior turbinates enhances nasal breathing by expanding the airways and thus reducing airway resistance. The symptoms as well as the patients' quality of life are improved. Patients tolerate the procedure very well. The daily routine can be resumed immediately after treatment as there is virtually no postoperative bleeding. Nasal packing and pain management are hardly ever necessary. The procedure is safe and, for the surgeon, it is fast and easy to perform. Unlike other radiofrequency systems the probes supplied are re-usable and may be autoclaved to keep the cost per procedure reasonable.



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