

# Bipolar Radiofrequency Volume Reduction RaVoR™ with ORL Set for Treatment of Habitual Snoring

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Radiofrequency Volume Reduction (RaVoR™) has been a popular treatment option for habitual snoring and mild obstructive sleep apnea. The most commonly treated areas are the lower turbinates in the nose and the soft palate, the posterior pillars, the tonsils, and the tongue base in the oropharynx. Although not a “cure-all” treatment, numerous authors have shown radiofrequency volume reduction to be a safe and efficient treatment for snoring and mild obstructive sleep apnoea. Our surgical approach makes use of the specially developed ORL set (Sutter Medizintechnik, Freiburg/Germany) (Fig. 1) and takes into account the specific anatomical structures of the soft palate.

**Introduction:** In a retrospective study [1] we assessed the efficacy of the reusable instruments of the ORL set in combination with a modern radiofrequency generator. The application of RF energy creates a defined lesion in the target tissue. It is therefore of utmost importance to observe the anatomy, function, and histomorphology of the palate and the uvula [2]. In particular the peristaphyline muscles must be preserved as much as possible [3].

**Material and Methods:** Between January and March 2003 we treated a total of 36 patients with the RaVoR™ method. Thirty-two patients received treatment of the lower turbinates and for oropharyngeal obstructions. Four patients received only oropharyngeal treatment, namely of the soft palate. All patients suffered from habitual snoring. Five patients suffered from mild to medium obstructive sleep apnea syndrome (AHI > 33, Lugaresi stage 1). Patients were treated under local anaes-

thesia in the outpatient room. The puncture sites of the lower turbinate and the soft palate are shown in Fig. 2 and Fig. 3 respectively. We observed no perioperative complications, and patients tolerated the procedure very well. Postoperatively a moderate oedema at the soft palate persisted for one to three days. The primary criterion for success was the snoring sound assessed by the bed partner preoperatively and postoperatively on a numeric and analogue scale (NAS). The NAS went from 1 “bearable snoring” to 4 „unbearable snoring“. Postoperatively a zero value was added to the NAS meaning “patient does not snore anymore”.

**Results:** Twenty-one patients (58%) reported a reduction in snoring (score postoperatively  $1 \leq \text{NAS} \leq 2$ ) and ten patients (28%) did not snore anymore (score postoperatively  $\text{NAS} = 0$ ) for at least six months. A significant improvement was achieved in a total of 31 patients (86%) (score postoperatively  $\text{NAS} \leq 2$ ). Two of the OSAS patients did not improve with respect to snoring, but had a moderate improvement in AHI from 22 to 17 and from 25 to 21 respectively.

**Discussion:** Combined treatment of the oropharyngeal obstruction site and the lower turbinates seems to be of utmost importance. Good nasal breathing seems to be a prerequisite for successful treatment of oropharyngeal obstruction sites. The delicate muscular structures in the soft palate interact in a complex way during inspiration, expiration, swallowing, speech, etc. Great care must be taken to spare the palatine levator and tensor mus-

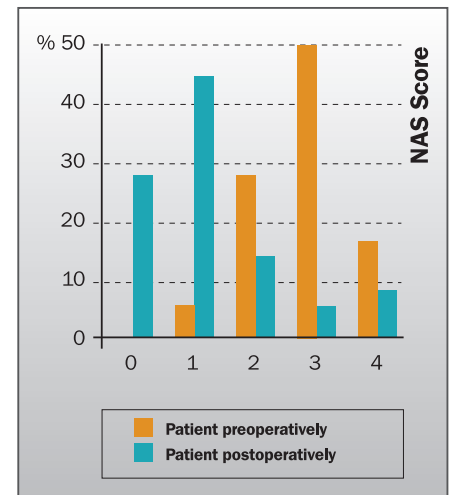


Fig. 4: Diagram snoring intensity preoperatively and postoperatively

cles as much as possible. The bipolar electrodes are designed in such a way that they can be inserted in a controlled way. Only after they are placed correctly is RF energy applied for a short time. Since they are reusable, they are also a very cost-efficient tool for radiofrequency treatment. Our good results show that Radiofrequency Volume Reduction of the lower turbinates and the oropharynx is a safe and effective method for the treatment of socially disruptive snoring and potentially for mild obstructive sleep apnea.



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**References:** 1. Marinescu A (2004) Bipolare Radiofrequenz-Volumenreduktion mit “ORL-Set” bei habituellem Rhonchus. *Laryngo-Rhino-Otol* 83: 610 – 616  
2. Metternich FU, Brusis T, Koebke J, Wenzel S (2000) Untersuchungen zur Histomorphologie und Funktion der Uvula. *Laryngo-Rhino-Otol* 79: 465 – 470  
3. Chevaillier H, Lerault P, Attias E, Jakobowicz M (1993) Anatomie du voile, incidences thérapeutiques dans le traitement du ronflement. Paris: Les monographies du cca Wagram, 1993: 8-32

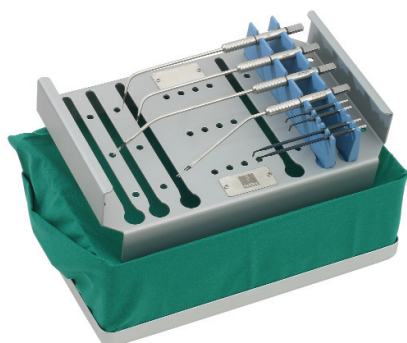


Fig. 1: RaVoR™ ORL electrodes set (REF 87005)

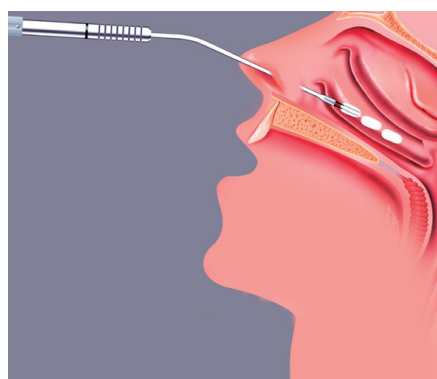


Fig. 2: Lower turbinate puncture sites

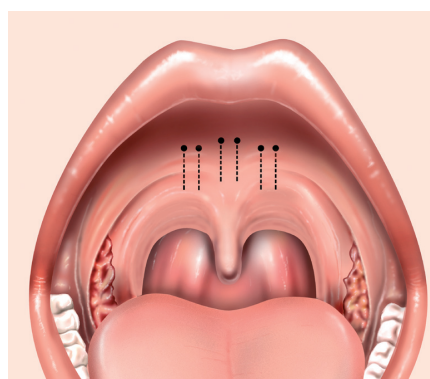


Fig. 3: Soft palate with puncture sites

# Ordering Information

## Featured Product



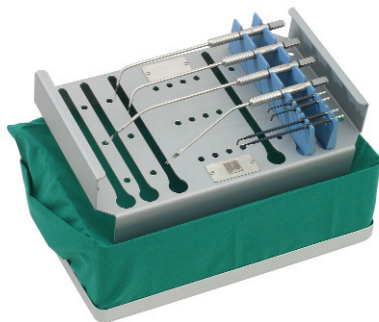
**700462 – Bipolar needle electrode "Binner"**

Qty.	REF	Description
1	700462	Bipolar needle electrode "Binner" with protective insulation, work length 110 mm



**700495 – Bipolar needle electrode "Marinescu" for the soft palate**

Qty.	REF	Description
1	700495	Bipolar needle electrode "Marinescu" for the soft palate with protective insulation



**87005 – RaVoR™ sleep surgery set**

Qty.	REF	Description
1	700462	Bipolar needle electrode "Binner" with protective insulation, work length 110 mm
1	700495	Bipolar needle electrode "Marinescu" for the soft palate
1	700496	Bipolar needle electrode "Marinescu" for the posterior pillars
1	700499	Bipolar needle electrode for the tongue base
1 (x2)	360328	ARROWtip™ electrode, medium angled, work length 30 mm
1 (x2)	360342	ARROWtip™ electrode, medium angled, work length 65 mm
1	701757	Instrument tray for RaVoR™ Set CURIS®
1	800000	Compact container with basic accessories

**870010 – CURIS® basic set with single-use patient plates**

Qty.	REF	Description
1	360100-01	CURIS® radiofrequency generator (incl. mains cord, user manual and test protocol)
1	360110	Footswitch with two pedals for CURIS® (cut & coag), 4 m cable
1	370154 L	Bipolar cable for CURIS®, length 3 m
1	360704	Monopolar handpiece (pencil) cut & coag, shaft 2.4 mm, cable 3 m
1	360236	Cable for single-use patient plates, length 4.5 m
1 (x50)	360222	Safety patient plates, single use, packing 5 x 10 pcs. (not shown)

**Optional**

1*	360226	Patient plate with cable, re-usable, length 4 m
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