

Radiofrequency Surgery of the Soft Palate for the Treatment of Snoring and Selected Cases of Mild Obstructive Sleep Apnea (OSA)

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Since the first description of uvulopalatopharyngoplasty by Ikematsu in 1964 [1] numerous variations of surgical procedures of the soft palate for the treatment of primary snoring and OSA have been published. This paper describes our approach to snoring patients and patients with mild OSA ($10 \leq \text{AHI} \leq 20$) performing the Radiofrequency Assisted Soft Palate Procedure (RAPP) first presented by Tvinnereim using a plasma mediated RF-based device [2].

Introduction: Snoring and OSA are different manifestations of the same pathophysiological disorder. Snoring per se is not dangerous to overall health, but can become a social problem for the snorer as well as for the sleeping partner. It is controversial whether snoring can be considered a cardiovascular risk factor or not [3, 4]. Substantial evidence shows that patients with OSA have an increased risk of cardiovascular disease. Continuous positive airway pressure (CPAP) is the treatment of choice for patients with OSA. However, compliance with CPAP has been less than ideal [5]. After failure of conservative treatment options, more invasive interventions are requested by snoring patients as well as by patients suffering from OSA.

Patients: Preoperative routine includes anamnestic questions, the filling out of a questionnaire by the patient (ESS,VAS) and a patient examination including flexible rhinopharyngoscopy. All patients undergo cardiorespiratory polygraphy with the ApnaeGraph (MRA-Medical Ltd, Gloucestershire,UK). Besides the polygraphic parameters, the ApnaeGraph records respiratory efforts via two pressure sensors on a thin probe (2mm in diameter), which is introduced transnasally.

It also records airflow via two temperature sensors. Thus, an upper obstruction (uvula and above) can be differentiated from a lower obstruction (below the uvula). The exclusion criteria for RAPP are: $\text{AHI} \geq 20$, $\text{BMI} \geq 30$, tonsil size: ≥ 3 (Friedmann table), modified Mallampati classification [6] ≥ 2 . If a patient has more than 40% of the obstructions on the lower level, RAPP should not be performed as there is a high likelihood of failure.



Fig. 2: CURIS® RF unit (Sutter, Germany)

Methods: With cooperative patients, RAPP is performed under local anaesthesia. Anxious patients or patients with a strong gag reflex should be treated under general anaesthesia. The soft palate is disinfected with a mucosal antiseptic spray and treated with xylocaine gel 2%. After 20 minutes the soft palate is injected at five places in a half-moon shape, and at two spots above the base of the uvula, each time with 1-2 ccm xylocaine 1% with adrenaline 1:200000. The patient rests on the OR table in a half-sitting position, with the patient plate attached. The surgeon stands at the patient's right side. The patient himself depresses the tongue with a 90°-angled tongue depressor. Thus being able to regulate pressure on the tongue himself.

For RAPP we use the Sutter Radiofrequency-Unit (Sutter Medizintechnik, Freiburg/Germany) in the "Cut 1" monopolar mode at an intensity of 3.5 (BM-780 II) or 25 watts (CURIS®). The uvula is grasped at its tip with a pair of forceps and pulled to the right, tightening the left side of the soft palate. With a monopolar needle electrode (Sutter ARROWtip™) an incision is made as described by Tvinnereim [2]. The soft palate is cut in an angle of approx. 45° towards the lateral wall through the posterior pillar

and into the anterior pillar (Fig. 1). The opposite side is treated in the same fashion. The result is in a large transversal opening. If less pronounced retraction of the tissue is desired, a more horizontal cut is made, as recommended by Tvinnereim [2]. For thick-walled soft palates, an incision line at an angle of 60° to the lateral wall has proven to be advantageous [2]. The lower third of the uvula is resected by a horizontal cut. The bipolar probe for the soft palate is inserted into the existing incision, as shown in Fig. 3. Each time, after placement of the electrode, RF energy is applied for 5 seconds at an intensity of 2.5 (BM-780 II) or 10 watts (CURIS®) for tissue volume reduction of the soft palate.

Conclusion: The Radiofrequency Assisted Soft Palate Procedure described is a minimally invasive, safe and quick procedure. It is well tolerated by patients. We have not observed any bleeding that needed special attention. Postoperatively only minimal swelling occurs. Analgesics are only required occasionally.



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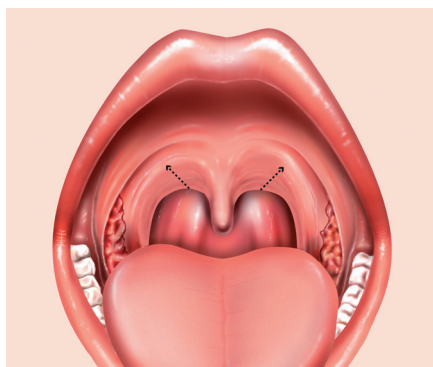


Fig. 1: Incision line through the soft palate as described by Tvinnereim

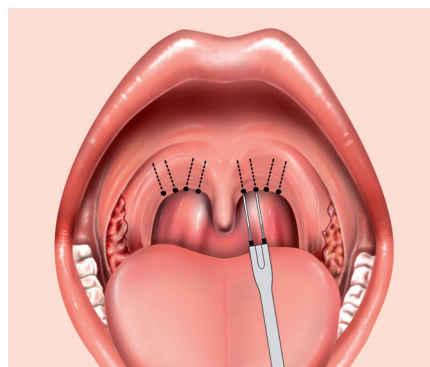


Fig. 3: The probe for the soft palate is inserted from below into the existing incision

Featured Product

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, working length 110 mm



1:1



360342 – ARROWtip™ electrode

Qty.	REF	Description
2	36 03 42	ARROWtip™ electrode, angled, Ø 0,3 mm, working length 65 mm



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

Qty.	REF	Description
1	360100-01	CURIS® radiofrequency generator (incl. main cord, user's manual and test protocol)
1	360110	Footswitch two pedals for CURIS® (cut & coag), 4 m cable
1	370154L	Bipolar cable for CURIS®, length 3 m
1	360704	Monopolar handpiece (pencil) cut & coag, shaft 2.4 mm, cable 3 m
1	360238	Cable for single use patient plates, length 3 m
1 (x50)	360222	Safety patient plates, single use, packing 5 x 10 pcs. (not shown)

Unit settings / Other accessories

CURIS®
 Bipolar electrode: Bipolar RaVoR, AUTO STOP
 Power adjustment: 10 watts
 Arrowtip™ electrode: Monopolar CUT 1
 Power adjustment: 25 watts

BM-780 II
 Bipolar electrode: Bipolar PRECISE
 Power adjustment: 2,5, 5 sec.
 Arrowtip™ electrode: Monopolar CUT 1
 Power adjustment: 3,5



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