A 40 case inferior turbinoplasty study

By Pavel Navrátil, MD, Head of ENT Department Hospital Prostějov, Czech Republic & Martin Navrátil, MD

Introduction: Inferior turbinate hypertrophy is a common cause of nasal airway obstruction. Surgical treatment can be recommended for patients who do not respond to medical therapy. Surgical volume reduction of the inferior turbinates is performed to increase airflow whilst maintaining the nasal functions with minimal discomfort. The use of radiofrequency as a minimally invasive technique for performing volumetric turbinate reduction has increased, and numerous studies have demonstrated the safety and efficacy of radiofrequency turbinate volume reduction (RFTVR). We designed a prospective study to evaluate RFTVR with the CURIS® 4 MHz radiofrequeny generator in comparison with classical technique/shaver. The outcomes were evaluated on both subjective criteria by the patients and objective criteria with measurements of the airflow using the Peak Nasal Inspiratory Flow Meter.

Methods: The CURIS® 4 MHz radiofrequency generator (Sutter Medizintechnik, Freiburg/Germany) was used in RaVoR™ (Radiofrequency Volume Reduction) mode. The CURIS® 4 MHz radiofrequency generator operates at 4 MHz which enables lower power settings and reduced lateral tissue damage. For the indication of inferior turbinate volume reduction, this is the ideal device in our experience as thermal damage should not occur to the underlying tissue or the important overlying mucosa. We use the Sutter RaVoR™ bipolar electrodes for inferior turbinoplasty. These are high quality reusable probes which can be resterilized and thereby save costs versus other techniques with single use products.

Data: We performed the study with 40 patients, split randomly and equally into RaVoR™ group and classical/shaver group. The study was prospective, with patient self-evaluation using a subjective survey as well as objective airflow measurement, both preoperative and postoperative. The survey was based on ten questions with subjective rating from 0-10, thus achieving maximum score of 100 points per patient, in case he would feel 100% well. Postoperative pain was measured on a visual analog scale convertible to a percentage scale. Objective measurement of airflow was measured by Peak Nasal Inspiratory Flow Meter. Both subjective and objective measurement was done at day 0 (preoperatively) and days 7, 28 postoperatively. A standard nasal examination with nasal endoscopy was done, to visually compare local findings.

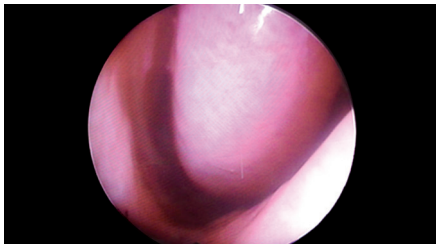

Fig. 1: Lower nasal concha before turbinoplasty

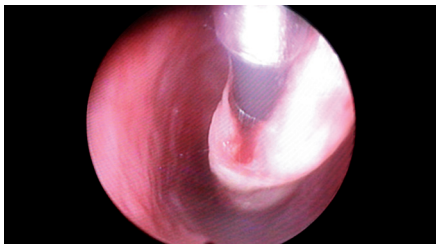

Fig. 2: Shrunked concha after turbinoplasty

Discussion: The CURIS® 4 MHz radiofrequency generator offers clinicians important assistance to enhance the safety and efficacy of the procedure. The AutoStop function measures the impedance of the targeted tissue during the application of radiofrequency energy and automatically stops once the tissue has been optimally coagulated. This function is invaluable since the surgeon cannot see the submucosal application area.

Response chart, 40 subjects, converted to percentage	day 0		Turbinoplasty	day 7		day 28	
	classical	RaVoR		classical	RaVoR	classical	RaVoR
1 - how good is your sense of smell?	78,0%	75,5%		82,0%	88,0%	86,5%	90,0%
2 - how well can you breath through your nose?	26,5%	23,0%		38,0%	41,0%	51,0%	74,5%
3 - how well can you blow your nose?	41,0%	40,0%		47,5%	57,0%	56,0%	78,0%
4 - how often do you have to blow your nose?	17,0%	13,5%		31,0%	15,0%	16,0%	10,0%
5 - how much do you feel your nose is blocked?	78,0%	81,0%		71,0%	60,0%	44,0%	32,5%
6 - how much do you feel discomfort in pharynx?	17,5%	19,0%		17,0%	16,5%	14,5%	15,0%
7 - how tired do you feel doing normal activities?	68,0%	61,0%		70,5%	62,0%	64,0%	56,5%
8 - how well you sleep?	63,5%	56,5%		67,0%	66,5%	75,0%	84,0%
9 - how would you rate your overall health status?	62,0%	60,0%		75,0%	78,0%	82,5%	88,0%
10 - how would you rate your overall happiness?	64,0%	59,5%		74,0%	75,0%	79,5%	85,5%
Peak nasal inspiratory flow (average litres/minute)	77	71		72	78	95	106
Postoperative pain index	n/a	n/a		26,0%	17,5%	0,5%	0,0%

Fig. 3: CURIS® 4 MHz RF unit (Sutter, Germany)

Conclusions: The results presented demonstrate a significant improvement of both nasal airflow and overall quality of life score after volume reduction turbinoplasty performed with RaVoR™ bipolar electrode using CURIS® 4 MHz radiofrequency unit. Compared to other methods of turbinoplasty done with classical cold instruments/shaver this method showed better results with shorter healing time and less postoperative pain. There were no intra-operative or postop complications and patients in the RaVoR™ group did not request analgesics postoperatively. Results were comparable to the literature[1-5] and it is without doubt that volume reduction turbinoplasty performed with RaVoR™ bipolar electrode is highly effective solution for nasal tubinoplasty surgery.

Navrátil P., MD
Head of ENT Department
Hospital Prostějov, Czech Republic

Correspondance: Pavel Navrátil, MD, Head of ENT Department Hospital Prostějov, Mathonova 291/1, 796 04 Prostějov, Czech Republic, E-mail: pavel.navratil.orl@nempv.cz

References: 1. Cavaliere M, Mottola G, Iemma M, Comparison of the effectiveness and safety of radiofrequency turbinoplasty and traditional surgical technique in treatment of inferior turbinate hypertrophy, Otolaryngology--Head And Neck Surgery: Official Journal Of American Academy Of Otolaryngology-Head And Neck Surgery [Otolaryngol Head Neck Surg] 2005 Dec; Vol. 133 (6), pp. 972-8. **2.** Lee DH, In reference to Microdebrider-assisted versus radiofrequency-assisted inferior turbinoplasty, The Laryngoscope [Laryngoscope] 2009 Jul; Vol. 119 (7), pp. 1455 **3.** L. Di Rienzo Businco, A. Di Rienzo Businco, M. Lauriello, Comparative study on the effectiveness of Coblation-assisted turbinoplasty in allergic rhinitis, Rhinology, 48, 174-178, 2010 **4.** Gunhan K, Unlu H, Yuceturk AV, Songu M, Intranasal steroids or radiofrequency turbinoplasty in persistent allergic rhinitis: effects on quality of life and objective parameters, Eur Arch Otorhinolaryngol (2011) 268:845–850, DOI 10.1007/s00405-010-1462-1 **5.** Lin HC, Lin PW, Friedman M, Chang HW, Su YY, Chen YJ, Pulver TM, Long-term results of radiofrequency turbinoplasty for allergic rhinitis refractory to medical therapy, Archives Of Otolaryngology--Head & Neck Surgery [Arch Otolaryngol Head Neck Surg] 2010 Sep; Vol. 136 (9), pp. 892-5.

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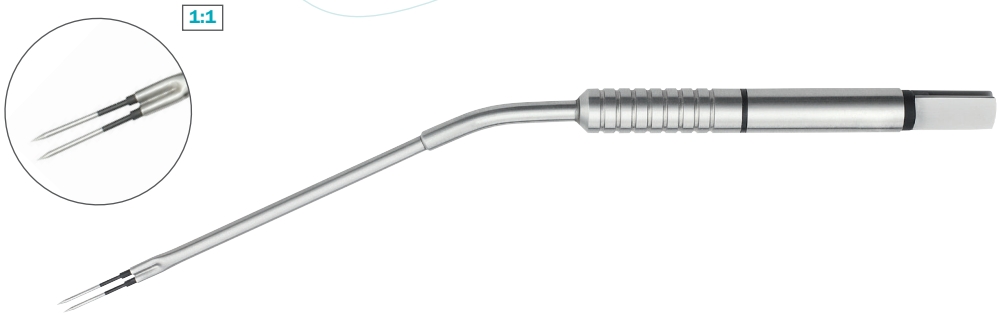

Qty.	REF	Description
1	70 04 62	**RaVoR™** bipolar electrode “Binner” for inferior turbinates with protective insulation, working length 110 mm

87 00 10 – CURIS® basic set with single-use patient plates

Qty.	REF	Description
1	36 01 00-01	**CURIS®** 4 MHz radiofrequency generator (incl. main cord, user manual and test protocol)
1	36 01 10	Footswitch two pedals for CURIS® (cut & coag), 4 m cable
1	37 01 54L	Bipolar cable for CURIS®, length 3 m
1	36 07 04	Monopolar handpiece (pencil) cut & coag, shaft 2.4 mm, cable 3 m
1	36 02 38	Cable for single-use patient plates, length 3 m
1 (x50)	36 02 22	Safety patient plates, single-use, packing 5 x 10 pcs. (not shown)

Unit settings / Other accessories*
CURIS® 4 MHz radiofrequency generator **RaVoR™** bipolar electrode: Bipolar RaVoR™ Power adjustment: 10 watts
CURIS® 4 MHz radiofrequency generator **RaVoR™** bipolar electrode: Bipolar RaVoR™ Power adjustment: 10 watts

Valid for the CURIS® with the orange label.

* Please consider that this information is not meant to serve as a detailed treatment guide. Always adjust according to patient and application.

SUTTER MEDIZINTECHNIK GMBH
TULLASTRASSE 87 · 79108 FREIBURG/GERMANY · TEL. +49(0)761-51551-0 · FAX +49(0)761-51551-30
WWW.SUTTER-MED.COM · INFO@SUTTER-MED.DE