

Micro-Surgery for Benign Laryngeal Tumors Using Radiofrequency (RF) and ARROWtip™ Electrodes

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Over the last 15 years lasers have been widely used in larynx surgery and have achieved a role of utmost importance. At the same time, various and diverse electrosurgical technologies and products have been developed. The laser as well as advanced RF surgery devices were introduced in our ENT clinic during this period of time. The experience we gained from the application of minimally invasive RF surgery, in particular of the soft palate and the turbinates, has encouraged us to expand the use of this method to the larynx as well.



Fig. 1: Micro-dissection ARROWtip™ electrode for Larynx (here: REF 36 03 71)

Introduction: Micro-dissection electrodes for the larynx (ARROWtip™, Sutter Medizintechnik, Freiburg) are delicate instruments, which have the advantage of allowing an accurate, precise cutting of tissue. Larynx surgery with the laser necessitates various precautions and is time-consuming, given the adjustments and heavy equipment needed.

However, it has proven its effectiveness beyond any doubt. In order to compare the two technologies with regard to their use in cutting during laryngeal tumor surgery, we selected 23 patients with benign laryngeal lesions who were operated on between 2009 and 2010. Within the group 11 underwent RF laryngeal surgery with ARROWtip™ electrodes by Sutter, and 12 were operated on with the CO2 laser. The clinical outcome, tissue damage and overall postoperative results of the two groups have been almost identical.

Materials and Methods: All patients selected for the study underwent diagnostic flexible fiber-optic video laryngoscopy. There were 6 female and 17 male patients. The lesions selected for surgery were: 8 vocal polyps, 4 retention cyst of the vocal fold, 3 fibroid nodules, 2 postintubation granuloma, and 6 papillomatosis.

For both procedures we employed the same technique, namely direct laryngoscopy under general anesthesia. Laser surgery was performed with the Sharplan 40C in super-pulse mode at a power setting of 3 to 4 watts. The target spot size was 0.5 to 0.7 mm². For endoscopic RF surgery, specialty ARROWtip™ micro-dissection electrodes (Fig. 1) and a CURIS® RF-generator

(Fig. 4, both Sutter Medizintechnik, Germany) were used. The five different electrodes have a special design and angles for easy access to the different areas of the larynx. The generator is set in monopolar cutting mode with 5 to 20 watts power, depending on the type of tissue on which it is used. Histopathological specimens were taken from all patients treated. A rigorous follow-up at 48 hours/ 7 days/ 3 weeks and 2 month post-op was performed. Video-endoscopic findings were discussed and the quality of the voice was evaluated in both groups.

Results and Discussion: Histopathology showed denaturation of collagen at the stroma level, yet similar in all cases, regardless of the type of surgery used. Post-operatively, epithelial damage was small. Hemostasis was considered sufficient, intraoperatively and after surgery. Other than a few cases of mild edema, we saw no post-operative complications. The group with RF had a faster recovery. These patients could be discharged on the same day or within 2 days after surgery. Six of the patients operated on with the CO2 laser needed 3 days of hospitalization, and other five laser-patients required systemic anti-inflammatory and antibiotics treatment. Their post-operative discomfort remained unchanged. The average post-operative pain levels were different in both groups. Patients recorded their pain two times a day over a 5-day period after surgery on a visual analogue scale (VAS) and through numeric rating (NSR). The results have confirmed that the pain level in the laser group is higher and that the tolerance for RF is better. RF patients experienced less discomfort and re-



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

quired shorter hospital stays. Endoscopic RF surgery for benign laryngeal lesions is an excellent alternative to the use of the CO2 laser. The ARROWtip™ electrodes have a thin shaft; yet they are strong. The tips are very delicate and the instrument is easy to handle. It makes surgery simple without compromising precision. Notwithstanding the team's experience of more than 10 years with the laser, the average duration of laser procedures for microsurgery in the larynx was up to 2 hours, even for simple unilateral polyp resections or papillomatosis. Laser usage requires a specific set-up, additional maneuvers (micromanipulator to be mounted on the microscope) and personnel safety measures (wearing goggles). By comparison, the average operating time of the same type of procedure performed with the CURIS® RF-generator was 30 minutes. The set-up time is short while perfect RF coagulation with the ARROWtip™ electrodes makes the procedure „clean“. No post-op complications were observed. The relatively low cost of Sutter RF surgery when compared to the laser will make this method suitable for many a surgeon and clinic.



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Fig. 2: Excision of benign laryngeal tumor with ARROWtip™ electrode



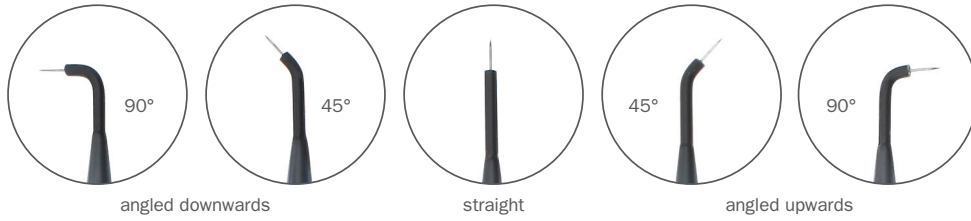
Fig. 3: Surgical site immediately post-operatively

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References: 1. Frias, S. „A new device for for treating laryngeal carcinoma using micro-dissection electrodes“, Laryngoscope, No.9, 2006 2. Basterra, J. „Comparative study of acute damage by CO2 laser versus micro-dissection electrode in chordectomies“, Otolaryngology, 2006 3. Sadri, M., McMahon, J. Parker, A. „Management of laryngeal Dysplasia“, Archives of Otorhino-Laryngology, 2006

Featured Product

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Micro Dissection Electrodes ARROWtip™ for Larynx

Qty.	REF	Description
1 (x2)	360371	ARROWtip™ electrode, Larynx, work length: 210 mm, straight
1 (x2)	360372	ARROWtip™ electrode, Larynx, work length: 210 mm, 45° angled downwards
1 (x2)	360373	ARROWtip™ electrode, Larynx, work length: 210 mm, 90° angled downwards
1 (x2)	360374	ARROWtip™ electrode, Larynx, work length: 210 mm, 90° angled upwards
1 (x2)	360375	ARROWtip™ electrode, Larynx, work length: 210 mm, 45° angled upwards



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

Qty.	REF	Description
1	360100-01	CURIS® radiofrequency generator (incl. mains 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	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 model

CURIS® basic set with re-usable patient plate (REF 870020)



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