

The Resection of Malignant Laryngeal Tumors with Micro-Dissection ARROWtip™ Electrodes

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For endoscopic resection of laryngeal malignancies a CO2 laser is commonly used. Since 2003 micro-dissection electrodes have become our method of choice. Compared to lasers, ARROWtip™ electrodes (Sutter, Germany) enhance the surgical approach by giving tactile feedback while no special safety precautions are necessary. Made of super-hard tungsten and especially designed to reach every part of the laryngeal anatomy, micro-tips in different angles allow good access to the surgical field. We have operated on 92 tumors, mainly T1 glottic tumors, using the ARROWtip™ electrodes.

Introduction: Thanks to the very small area where the energy is focused and the flow of electric current is accurately defined, the ARROWtip™ needles work like a precise electrical scalpel. In order to compare the lateral thermal damage, 40 chordectomy samples with stage T1 glottic carcinomas were studied (AJCC/UICC 1997). According to the European Laryngological Society classification all the chordectomies were transmuscular. Of the 40 chordectomies performed, 20 patients were operated on using the Sharplan 40C CO2 laser at a power rating of 2-3 W in superpulse mode with a target spot size of 0.5-0.8 mm². The other 20 patients were treated with electro-surgery and ARROWtip™ instruments.

Histopathologically, HE-stained specimens operated on with micro electrodes (coagulation and cutting mode) and CO2 laser, all showed collagen denaturation within the vocal cord stroma (1). Collagen band thickening and disorganization were observed with a reduction in elastic fibres affect-

ing between one and two thirds of the thickness of the specimens. Collagen denaturation at the stroma level was similar in all samples.

When comparing the lesion produced by the different dissection techniques, the epithelial damage area was small and comparable in both specimens. In the cutting mode both results were nearly the same whereas the lesion of the micro-electrodes in the coagulation mode was marginally larger than with the CO2 laser (2).

Materials and methods: For both procedures we used the same surgical technique, i.e. direct suspension laryngoscopy and the same hand-held instruments. After two years of using different products, we only use micro-dissection electrodes by Sutter today. These ARROWtip™ needles have a total length of 21 cm, and an ultra-sharp tungsten needle tip angled at 180, 90 or 45 degrees for access to different anatomical areas of the larynx.

The electrodes can be connected to a conventional monopolar pencil and an electro-surgical generator (e.g. CURIS™ radiofrequency unit, Sutter). For tissue resection the generator is adjusted to a monopolar cutting mode with 5 to 20 watts power depending on the type of tissue. Less power is needed for soft tissue; more when cartilage is incised (only in supraglottic resections). A non-metallic anesthetic tube is used during the procedure. As of today 97 tumors have been operated on with micro-dissection needles.

Functional results have been studied. In chordectomies, the voice quality was evaluated by a single speech therapist using the GRBAS method, domain G (Grade of dysphonia: R=Roughness, B=Breathiness, A=Asthenia and S=Strain). Severity of dysphonia was scored as 1=slight, 2=moderate or 3=severe. The quality of voice was similar in a group of people where the GRBAS results were compared with results obtained from patients who had a similar operation with the CO2 laser. No post-operative complications were observed with either method. In case of extensive chordectomies, patients developed glottic incompetence in both groups. With micro-dissection electrodes none of the patients developed a granuloma. Oncological results with ARROWtip™ instruments on T1 glottic tumors were excellent and similar to those of



Fig. 3: CURIS® radiofrequency unit (Sutter/Germany)

the CO2 laser. Results and other considerations about supraglottic tumors have been submitted for publication in peer-reviewed journals and will be available soon.

Conclusions: The ARROWtip™ electrodes for endoscopic resection of laryngeal malignancies are an excellent alternative to the CO2 laser. The learning curve is short. Haemostasis with these instruments is excellent. The overall surgical time is considerably shorter than with a laser. Due to the simplicity of the equipment, easy maintenance and the low cost of the micro-dissection electrodes, in my opinion the Sutter ARROWtip™ instruments are most efficient.



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References: 1. Basterra, J. et al. (2006) Comparative study of acute tissue damage induced by the CO2 laser versus micro-dissection electrodes in chordectomies. *Otolaryngology*. 2. Zapater, E. et al (2006) Electrosurgical endoscopic chordectomies with micro-dissection electrodes: a comparative study with CO2 laser. *J. of Laryngology*. 3. Frias, S. et al. (2006) A new device for treating laryngeal carcinoma using micro-dissection electrodes. *The Laryngoscope*.



Fig. 1: ARROWtip™ electrode (Ref. 36 03 73), 210 mm long, metal tip, 3 mm x 0.3 mm Ø

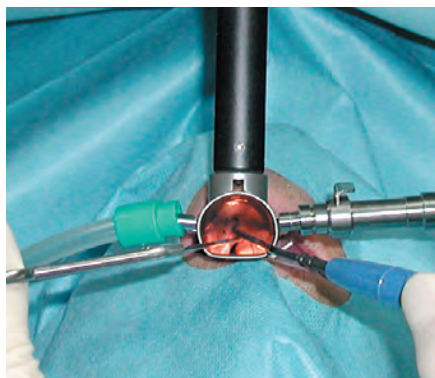


Fig. 2: Endoscopic view of the operating field using the ARROWtip™ electrode

Ordering Information

Featured Product



1:1

360373 – ARROWtip™ electrode

Qty.	REF	Description
1 (x2)	360373	ARROWtip™ electrode, work length 210 mm 90° angled downwards
1 (x2)	360371	ARROWtip™ electrode, work length 210 mm, straight
1 (x2)	360372	ARROWtip™ electrode, work length 210 mm, 45° angled downwards
1 (x2)	360374	ARROWtip™ electrode, work length 210 mm, 90° angled upwards
1 (x2)	360375	ARROWtip™ electrode, 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 manual and test protocol)
1	360110	Footswitch 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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