Endoscopic Posterior Cordotomy with ARROWtip™ Microdissection Radiofrequency Electrodes for Bilateral Vocal Cord Paralysis

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Endoscopic posterior cordotomy was performed using ARROWtip™ microdissection electrodes in 14 patients with bilateral vocal cord paralysis. All patients had an adequately functional airway and good exercise tolerance compared to poor preoperative exercise tolerance. No complications were encountered. The data show the safety, ease of use, and efficiency of the microdissection radiofrequency electrodes in patients with bilateral vocal fold paralysis. The technique provides a reliable alternative to laser procedures.

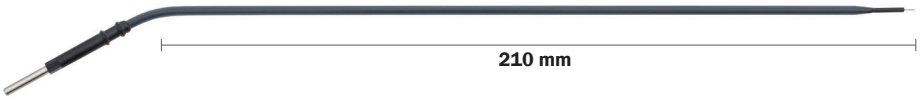

Fig. 1: Microdissection ARROWtip™ electrode for Larynx (here: REF 36 03 71)

Introduction: Bilateral vocal cord paralysis is a potentially life-threatening condition, occurring most commonly due to iatrogenic causes. Among various laser treatment techniques for bilateral vocal cord paralysis, microdissection electrodes appear to be a good alternative for the endoscopic management of vocal cord pathologies. This study covers the results of endoscopic posterior cordotomy using microdissection electrodes on 14 patients with bilateral vocal cord paralysis.

Technique: Procedures were performed under general anesthesia with the patient in conventional laryngeal suspension position and a Kleinsasser medium-size operating laryngoscope. A CURIS® radiofrequency generator (Fig. 2) was employed. The generator was set in CUT 1 monopolar cutting mode at 15 to 25 watts power, depending on the tissue response to the electrode. The procedure was performed with 21 cm long radiofrequency ARROWtip™ tungsten monopolar microdissection needles (Fig. 1). The steps of the surgery are explained in detail in figure 3.

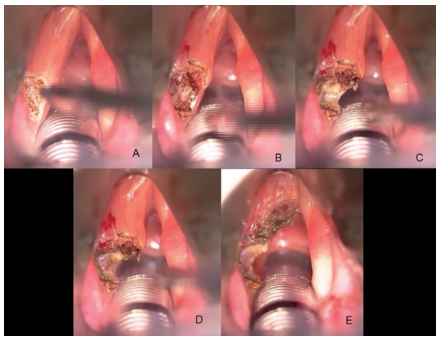

Fig. 3: After identifying the vocal process using a suction tip, a simple transverse section from the free border of the membranous cord, anterior to the vocal process, is made using a radiofrequency ARROWtip™ monopolar needle. Care is taken to avoid injury and expose the vocal process (A-C). A transverse section is extended to the lateral thyroid cartilage to create a wedge opening of the glottis (D). Redundant mucosa is minimally resected, and a ~6 mm transverse opening is obtained at the posterior larynx (E).

Results: Twelve patients were operated on without the need for tracheotomy. Two tracheotomized patients were decannulated on the third postoperative day. Hospital stays after the operation ranged from 2 to 3 days. All patients had an adequately functional airway and good exercise tolerance postoperatively. Three patients had very good exercise tolerance, and 9 patients had good exercise tolerance test postoperatively. Three patients required a secondary debridement surgery due to granulation and crust formation and respiratory problems.

Discussion: Many external and endoscopic surgical procedures have been proposed for the treatment of bilateral vocal cord paralysis. Endoscopic laser transverse cordotomy or posterior cordectomy achieves sufficient air passage providing a relatively good voice quality. [Lit.] Nevertheless, laser interventions require special instruments and an experienced surgical team. Radiofrequency ARROWtip™ electrodes have the advantage of tactile feedback and do not require safety precautions like the laser. Cordotomy using microelectrodes is a safe and simple procedure, offering shorter overall surgical time, improved hemostasis, and easier handling than the laser. Besides, the risk of airway fire is a life-threatening issue in laser surgery. However, airway fire has not been reported regarding procedures performed with

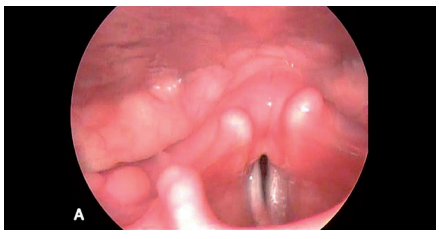

Fig. 4: Preoperative endoscopic view.

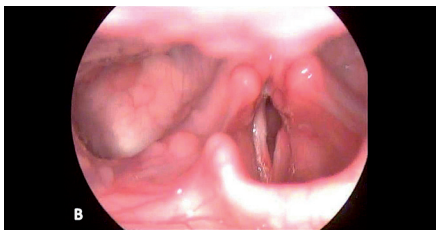

Fig. 5: Postoperative laryngoscopic view 4 weeks after surgery.

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

microdissection electrodes. We performed more than 50 airway procedures in the past years and have not encountered such complications. One reason is probably that the needle used is ultrafine and the energy used during the procedure is not high enough to cause a spark in the lower airways. The cost-effectiveness of this instrument gains importance in developing countries: The tips are reusable, and the radiofrequency generator can be used as a bipolar or a monopolar cautery device.

We performed unilateral posterior cordotomy using the ARROWtip™ monopolar needle. The anterior two thirds of the vocal cord were left intact for voice production. We have achieved similar results as with laser-assisted endoscopic interventions. All patients had improved airway function and exercise tolerance. Three patients required secondary surgery due to granulation and crust formation. Two patients with tracheotomy cannulas were decannulated postoperatively.

All our patients confirmed better exercise tolerance and acceptable voice after the surgery. None of our patients required prolonged tracheostomy. An ideal treatment of bilateral vocal cord paralysis is still under debate despite the new techniques. Microdissection with radiofrequency appears to be a promising alternative to the laser with similar outcomes.

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References: 1. Landa M, Luqui I, Gómez J, Martínez Z. Posterior cordectomy: our experience. Acta Otorrinolaringol Esp. 2012;63:26-30.**2.** Basterra J, Zapater E, Moreno R, Hernández R. Electrosurgical endoscopic cordectomy with microdissection electrodes: a comparative study with CO2 laser. J Laryngol Otol. 2006;120:661-664.

Featured Product

Micro Dissection Electrodes ARROWtip™ for Larynx

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

angled downwards straight angled upwards

1:1

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®
ARROW*tip*™ electrode: Monopolar CUT 1
Power adjustment: 15-25 watts

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