Transoral resection of supraglottic tumours using an ARROW*tip*™ monopolar microdissection electrode (54 cases) [1]

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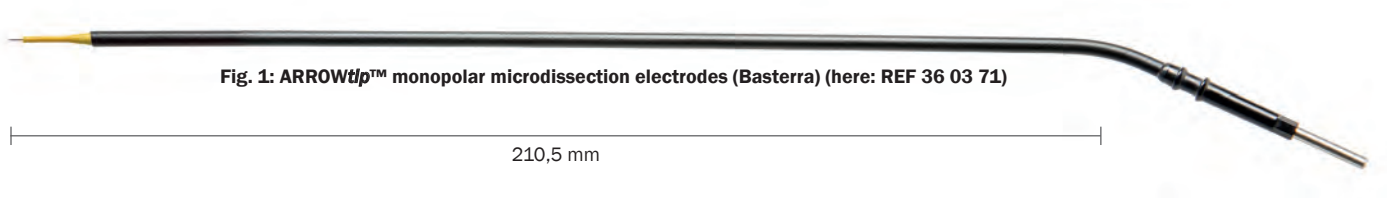

Fig. 1: ARROW*tip*™ monopolar microdissection electrodes (Basterra) (here: REF 36 03 71)

Introduction: Between 1989 and 2004 the senior author used the CO_2 laser for resection of laryngeal tumors and switched in 2004 to the use of ARROWtip™ monopolar microdissection electrodes for tumor resection.
In 2006 on the basis of our good early clinical results, see published comparative evaluation [2] we designed a prospective multicenter study of patients with supra-glottic carcinoma reported in two ENT clinics with the goal to establish the long term clinical results over a minimum follow-up of two years [1].

Methods: In our departments, since 2005 (during 2004 only glottic tumours were operated on using ARROWtip™ monopolar microdissection electrodes technique), transoral resection with microdissection electrodes has been considered the surgical standard treatment for patients with T1, T2, and selected cases of T3 supraglottic carcinomas, with preservation of vocal cord motility, good visual control of the tumor, and extension within the pre-epiglottic space.

The sample comprised 54 patients (17 T3, 14 T2 and 23 T1), 48 males (88.8 %) and 6 females (11.2 %). The mean age of the patients at the time of diagnosis was 66.3 years (range 49–85 years).

Ultrafine tungsten ARROWtip™ monopolar microdissection electrodes (Sutter/Germany) were used for the resections (Fig. 1). Tissue resection was performed in the cutting or coagulation mode of the handpiece scalpel depending on the amount of bleeding. From 2005 to 2009 an electrogenerator (Valleylab Force 2) was used [2]; since 2009 a CURIS® 4 MHz radiofrequency generator (Sutter/Germany) has been used. The highest power intensity level, 25 to 46 watts, was used to resect cartilage, while the lowest (25 to 36 watts) was used to section soft tissues.
In all procedures, depending on the amount of bleeding, direct electrocoagulation with ARROWtip™ monopolar microdissection electrodes or clamping of the vessels with microforceps and coagulation at 35 watts was applied.
The numbers of patients with clinical nodes (c-N) were: 8 N2, 3 N1; 43 N0. Bilateral functional neck dissections were performed in the T2–T3 cases; prior to the trans-oral approach to the laryngeal tumor the superior laryngeal vascular pedicle was ligated during the neck dissection to achieve better hemostasis of the laryngeal field. Tracheostomy was always performed in cases requiring bilateral neck dissections. In wide supraglottic resections, a nasogastric feeding tube was inserted to prevent aspiration.

Results: Transoral surgeons generally agree that transoral surgery is indicated in supraglottic tumours staging T1 and T2. Most experienced surgeons using this approach also agree that T3 supraglottic tumours are resectable if the surgeon has a good visual control of the tumor on microlaryngoscopy, the larynx mobility is preserved, and the tumor is within the pre-epiglottic space limits.
Our oncological and functional results using ARROWtip™ monopolar microdissection electrodes are similar to those reported by other authors using CO_2 lasers and specifically regarding the recurrence rates and survival times, requirement for permanent tracheostomy, time of decannulation, necessity of nasogastric feeding, and neck dissection.

Discussion: To summarize, regarding functional and oncological evaluation, the clinical results when using the ARROWtip™ monopolar microdissection electrodes resection technique are similar to those achieved using a CO_2 laser.
In the author's experience, use of ARROWtip™ monopolar microdissection electrodes has significant advantages over the CO_2 laser in the clinical setting.
Firstly the ARROWtip™ monopolar microdissection electrodes offer improved hemostasis compared with CO_2 laser, which allows better vision. The angled tip of the microdissection electrodes allows cutting at a direct angle which is an important advantage.
With the ARROWtip™ monopolar microdissection electrodes there is improved tactility for differentiating between tumor and healthy tissue.
Furthermore the ARROWtip™ monopolar microdissection electrodes offer excellent visualization with the high-intensity operating light of the microscope, simplicity of handling, and a significantly lower cost of the equipment.
Also, the operating time is shorter (mean operating time: cordectomy 22 min, epi-glottectomy 17 min and supraglottic resection 85 min) due to the excellent cutting capacity of the ARROWtip™ monopolar microdissection electrode's tungsten sharp tip (3 × 0.3 mm) [3].
ARROWtip™ monopolar microdissection electrodes are also more effective than a CO_2 laser when sectioning cartilage and debulking a tumour [2].

Fig. 2: CURIS® 4 MHz RF unit (Sutter, Germany)

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References: 1. Basterra J, Esteban F, Reboll R, Menoyo A, Zapater E (2014) Transoral resection of supraglottic tumours using microelectrodes (54 cases). Eur Arch Otorhinolaryngol 2014 Sept; 271(9):2497-502 **2.** Basterra J, Reboll R, Zapater E (2011) 83 cases of glottic and supraglottic carcinomas (stage T1-T2-T3) treated with transoral microelectrode surgery. Clin Otolaryngol 36:500–504 **3.** Basterra J, Alba JR, Bonet M, Zapater E (2010) Endoscopic resection of supraglottic (T1-T2-T3) and glottic (T2-T3) carci- nomas using microdiseccionts electrodes. Otolaryngol Head Neck Surg 142:449–451

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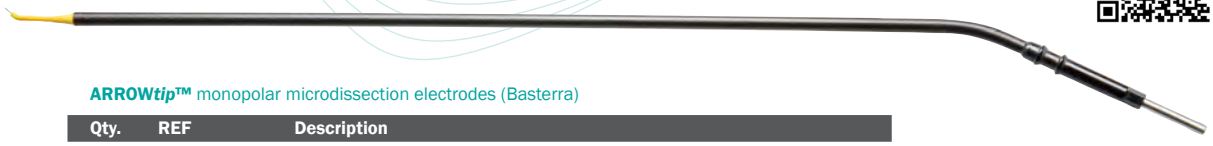

ARROW*tip*™ monopolar microdissection electrodes (Basterra)

Qty.	REF	Description
1 (x2)	36 03 71	**ARROW***tip*™ monopolar microdissection electrode (Basterra), Larynx, working length: 210,5 mm, straight, Ø 2,4 mm
1 (x2)	36 03 72	**ARROW***tip*™ monopolar microdissection electrode (Basterra), Larynx, working length: 209 mm, 45° angled downwards, Ø 2,4 mm
1 (x2)	36 03 73	**ARROW***tip*™ monopolar microdissection electrode (Basterra), Larynx, working length: 205,5 mm, 90° angled downwards, Ø 2,4 mm
1 (x2)	36 03 74	**ARROW***tip*™ monopolar microdissection electrode (Basterra), Larynx, working length: 205,5 mm, 90° angled upwards, Ø 2,4 mm
1 (x2)	36 03 75	**ARROW***tip*™ monopolar microdissection electrode (Basterra), Larynx, working length: 209 mm, 45° angled upwards, Ø 2,4 mm

angled downwards straight angled upwards

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's 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
To resect cartilage
ARROW*tip*™ (Basterra): Monopolar CUT 1
Power adjustment: 20 watts

To section soft tissues
ARROW*tip*™ (Basterra): Monopolar CUT 1
Power adjustment: 5-10 watts

CURIS® 4 MHz radiofrequency generator
To resect cartilage
ARROW*tip*™ (Basterra): Monopolar CUT 1
Power adjustment: 25-46 watts

To section soft tissues
ARROW*tip*™ (Basterra): Monopolar CUT 1
Power adjustment: 25-36 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.

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