

Improved control of bleeding in endoscopic ear surgery with a newly developed ARROWtip™ monopolar microdissection electrode

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Introduction: Endoscopic ear surgery (EES) has rapidly gained interest in the field of minimally invasive surgery. The technique makes it possible to preserve functional tissue at significantly less operative trauma during an intervention. Management of bleeding is of utmost importance in creating a tympanomeatal flap when the surgeon needs one of his hands to perform the operation and the other to hold a camera. Sutter Medizintechnik GmbH (Germany) has now developed a monopolar electrode for endoscopic ear surgery to control bleeding by radiofrequency ablation of the skin of the outer ear canal before incision.



Fig. 1: ARROWtip™ monopolar microdissection electrode (REF 36 03 43)

Opportunities and challenges in endoscopic ear surgery:

For the last few years the oto-endoscopic approach to middle ear surgery has increasingly gained attention⁽¹⁾. Thanks to the pioneers who started employing this innovative technique about ten years ago with instruments and endoscopes that were initially designed for sinus surgery, endoscopic ear surgery (EES) has finally come into its own. While an endoscope can be used to “look” around the corner, newly designed instruments make it possible not just to “look” but also “work” around the corner. High-definition cameras together with an LED light source produce detailed, high-quality images. By a slight twist of the hand, the angle of inspection of the middle-ear cavity can be altered to evaluate different ventilation routes, the possible presence of folds and the extent of epithelium retracting into spaces that were hard to detect and treat before (lateral attic folds, tensor fold, cog, supratubal recess, patency of the anterior and posterior isthmus). With a light source emitting a specific spectrum, epithelial tissue can be highlighted and distinguished from other tissue.

New diseases like the selective dysventilation syndrome can be recognized and be treated by EES⁽²⁾.

As the surgeon holds the camera with one hand when using the EES technique, he will ensure that all possible measures are taken to limit perioperative blood loss. Pre-operative

local infiltration of the outer ear canal with epinephrine and the placement of cottonoid soaked in epinephrine is routinely administered.

If blood enters in the operation field, the endoscope and operative field will have to be cleaned. Therefore, the elevation of the tympanomeatal flap is rather time-consuming and can become quite challenging when the field of vision is already blurred by blood at the start of an intervention. Special dissection knives with a built-in suction canal have been developed for the purpose although these tend to be slightly thicker in diameter than standard instruments.

In order to achieve maximum visibility at minimal blood loss, Sutter Medizintechnik in Germany has designed a probe for performing radiofrequency ablation of the skin of the outer ear canal before the tympanomeatal flap is incised and mobilized.

With an ergonomic design, a working length of 10.2 cm, and the smallest possible tip angled at 55 degrees, the probe can easily be inserted and maneuvered in the outer ear canal.

Method: After local infiltration with epinephrine and pre-operative placement of cottonoid soaked in epinephrine⁽³⁾, the Sutter CURIS® 4 MHz radiofrequency generator (Sutter Medizintechnik, Freiburg/Germany) is employed at an intensity of 5 to 6 watts in coagulation mode. A tip angled at 55 degrees (Fig. 1) provides natural working access to the



Fig. 4: CURIS® 4 MHz radiofrequency generator.

outer ear canal and requires only minimal manipulation when inserted into the skin. At carefully selected points radiofrequency ablation is applied. Care must be taken to place the incision of the tympanomeatal flap at least 2.5 mm above the tympanic annulus in order to prevent retraction of the tympanomeatal flap. Before the tympanomeatal flap is raised, 5 to 6 different coagulation points need to be placed and connected. Anatomical landmarks like the chorda tympani must be respected.

Conclusion: Endoscopic ear surgery is rapidly gaining interest. With one hand holding a camera, bleeding control and hemostasis can be a challenge. With the use of the Sutter ARROWtip™ monopolar microdissection electrodes bleeding can be significantly reduced from the outset, optimizing visibility and reducing operation time.



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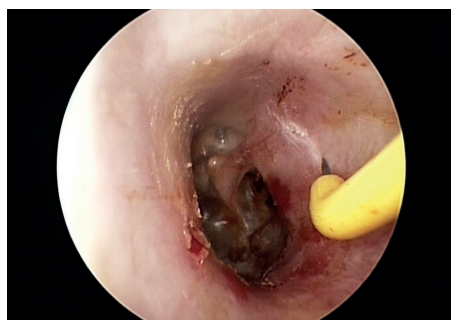


Fig. 2: Intraoperative picture showing outer ear canal with an ARROWtip™ monopolar microdissection electrode.

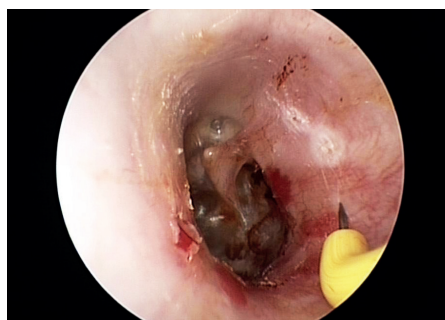


Fig. 3: Application of radiofrequency ablation at carefully selected points.

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References: 1. Anzola JF, Nogueira JF. Endoscopic techniques in Tympanoplasty. *Otolaryngol Clin North Am.* 2016 OCT;49(5):1253-64. 2. Tarabichi M, Marchioni D, Kapadia M. The Epitympanum Revisited: Endoscopic Anatomy. *Indian J Otolaryngol Head Neck Surg.* 2016 Dec;68(4):490-495. 3. L. Presutti, D. Marchioni. *Endoscopic Ear Surgery: Principles, Indications and Techniques.* Controlling Hemorrhage, p. 3

Featured Products



Qty.	REF	Description
2	36 03 43	ARROWtip™ monopolar microdissection electrode, Ø 0,3 mm, 55° angled, total length 105 mm



[REF 87 00 10] CURIS® 4 MHz radiofrequency generator
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®, 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

ARROWtip™ microdissection electrode: Monopolar CUT 2
Power adjustment: 5 to 6 watts

Valid for the **CURIS®**
with the orange label.



CURIS®
4 MHz radiofrequency generator

ARROWtip™ microdissection electrode: Monopolar CUT 2
Power adjustment: 23 to 36 watts

* 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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