

# Experience with the Radiofrequency Generator CURIS® in External Laryngotracheal Surgery for the Treatment of Circular Stenosis of the Larynx and Trachea

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**Introduction:** Patients with stenosis of hollow organs of the neck make up three percent of all patients in ENT. This disease attracts special attention as it often impairs vital functions. Among the principal causes of stenosis of the larynx and trachea are tracheostomy, prolonged intubation, and artificial ventilation. The basic methods of treatment of chronic circular stenosis of the larynx and trachea are:

- Endosurgical intervention
- Multilevel plastic-reconstructive operation (MPRO)
- Circular resection of the trachea and anastomosis.

The basic stages of MPRO are:

- 1) Laryngotracheoplasty.
- 2) Formation of a lumen in the respiratory tract with the help of a t-shaped stent-tube (for at least 4 months).
- 3) «Control period» without the t-shaped tube (for at least 3 weeks).
- 4) Plastic-reconstructive closing of the laryngotracheostoma.

Surgical treatment of chronic circular stenosis of the larynx and trachea and the use of the appropriate dissection instruments make it possible to rehabilitate 92.5 % of the patients treated.

Patients who had been subjected to first-stage MPRO were carefully selected.

Patients were diagnosed with «circular stenosis of the larynx and trachea» if they had difficulty in breathing, dyspnea at the slightest exertion, a hoarse voice. Specific anamneses (prolonged pulmonary ventilation, tracheostomy, previous thyroid-gland surgeries) and physical examinations of patients, including CT scan of the neck and video-laryngotracheoscopy, were employed. The last two methods permit to determine the stenosis level of the larynx and trachea, its extent, the diameter of the narrowed airway, and potential paralysis of the larynx.

**Technique:** We have performed more than 20 MPRO surgeries so far.

Laryngotracheoplasty was performed on patients under general anaesthesia with the intubation tube being inserted through tracheostomy. For laryngotracheostomy a vertical midline incision is made along the anterior wall of the narrowed trachea exposing the inner lumen of the cicatricial tissue. The framework is reconstructed by median and lateral cartilage stabilization around the stenosis site. Then a mucosal flap is grafted on the laryngotracheostoma with loop sutures to cover the incisions. Finally the lumen of

the respiratory tract is maintained with the help of various stents protectors. For this purpose, a silicon t-shaped tube is a common kind of stent. Tissue damage (oozing) and hemorrhaging have been insignificant.



**Fig. 1: RF incision for laryngotracheoplasty (REF 36 03 25)**



**Fig. 2: Bipolar precision coagulation in the subcutaneous fat tissue (REF 78 01 79 SG)**

For the intervention we have used the CURIS® radiofrequency generator and the Super-Gliss® nonstick bipolar forceps (length 20 cm, straight, micro-tip 0.4 mm), and also an Arrowtip™ micro-dissection needle (working length 30 mm) (all by Sutter Medizintechnik, Germany). We have found the CUT 2 mode to work best for our purposes as it offers the possibility to coagulate tissue during dissection. We recommend the PRECISE mode at a power adjustment of 10 to 30 watts for coagulation. The CURIS® radiofrequency generator offers a number of advantages such as precision coagulation, a convenient cutting mode that can also be used for coagulation, along with the simplicity and universality of the instruments employed (forceps and electrode). The resection of cartilages of the larynx and trachea by means of a micro needle requires minimum effort. The cut comes out clean with maximum precision, no fragmentation of cartilage and very little bleeding.

The surgery was well tolerated by patients. The postoperative period proceeded without complications. The healing process was expedited by the absence of excessive necroses – thanks to the PRECISE coagulation mode of the CURIS® radiofrequency generator. Wound healing was without complications and delays. Sutures were removed 10 to 12 days post-operatively; migration of the latter was not observed.

**Conclusion:** Advantages of the Curis® radiofrequency generator:

- 1) Less lateral tissue damage – non-invasive cuts.
- 2) Precise delivery of energy – effortless cutting.
- 3) Minimally invasive – no tissue carbonization.
- 4) Minor edema and wound oozing – no drainage required.
- 5) Very little pain.
- 6) Excellent cosmetic outcome.



**Fig. 3: CURIS® RF unit (Sutter, Germany)**

All the above benefits are important factors in surgery of the hollow organs of the neck. The use of the CURIS® radiofrequency generator has helped to cut OR time considerably and the special electrosurgical accessories have positively influenced the speed in carrying out these interventions as well.

The CURIS® radiofrequency generator is the ideal unit to access the internal structures of the larynx and trachea in surgery, for excising cicatric tissue in the respiratory tract and for the formation of dermal flaps to close the laryngotracheal defect during the final treatment stage of the intervention. Based on our experience we recommend the CURIS® radiofrequency generator for MPRO procedures.



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## Featured Product



### 360325 – ARROWtip™ electrode

Qty.	REF	Description
2	360325	ARROWtip™ electrode, straight, Ø 0,3 mm, working length 30 mm



### 780179SG – SuperGliss® non-stick

Qty.	REF	Description
1	780179SG	SuperGliss® non-stick bipolar forceps, 0,4 mm tip, straight, working length 60 mm, total length 200 mm



### 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)

#### \*Optional model

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

#### Unit settings / Other accessories

CURIS®  
ARROWtip™ electrode: Monopolar CUT 2  
Power adjustment: 10 to 35 watts  
Forceps: Bipolar PRECISE  
Power adjustment: 10 to 30 watts

#### Other accessories:

Optional: Rubber patient plate (REF: 360226)



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