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Combined Radiofrequency Coagulation and Suction in Endonasal Sinus Cavity Surgery

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Bleedings of the mucosa and arterial vessel supply during surgery of the endonasal sinus cavities are usually managed with the help of vasoconstringent substances or bipolar coagulation [3]. With the introduction of an electrically insulated suction tube with a suction interruptor and non-stick instrument tips, it has now become possible to combine suction and coagulation. Radiofrequency technology permits sufficient coagulation and causes only minimal damage to the surrounding tissue.

Introduction: Pronounced inflammations and some tumor entities, which are regularly treated by endonasal surgery, tend to lead to erratic and irritating bleedings. In two-handed sinus surgery, even minor bleedings force the surgeon to interrupt the intervention, change the instrument and use suction to clear the OR field.

Fig. 1: Suction tube (Sutter) REF 71 50 10

Such interruptions of the workflow, depending on the intensity of the bleeding, may be very time-consuming. They make it difficult to work with bipolar coagulation forceps in a confined surgical field. Especially the anterior cranial ethmoid bone area will defy this type of coagulation. Coagulation near the skull base with an active electrode and patient-plate (monopolar coagulation) carries the danger of unpredictable stray currents leaking via the brain tissue.

Case study: The preoperative coronary CT of a patient with a feeling of pressure in the right side of his midface and constant rhinorrhoea shows convex-shaped, limited clouding of the soft tissue in the left maxillary sinus (Fig. 2). Despite of superficially administered suprarenin 1:1000 for decongestation, the central nasal passage was not wide enough to insert the endoscope and another instrument. The head of the turbinate, which was curved laterally, was dissected with a punch to avoid fracturing the vertical lamella of the middle turbinate. In order to avoid packing the nose, it was of paramount importance to ensure that even a minor bleeding was stopped when it occurred. With the help of the suction tube (Fig. 1) and 4 MHz alternate current (CURIS® radiofrequency generator, Sutter/Germany, "Cut 1",15 watts) it was possible to localize the source of the bleeding at the edge of the mucosa precisely and coagulate it directly (Fig. 3). Post-operatively, the process was characterized by minimal crust formation and a continually wide ethmoidal infundibulum (Fig. 4).

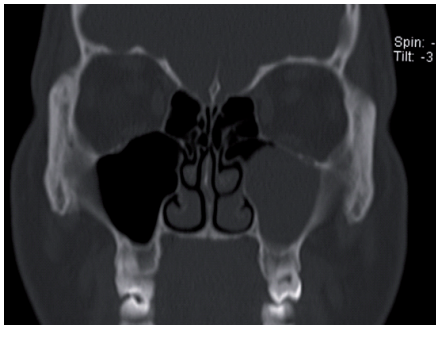

Fig. 2: Lateral curve of inferior middle turbinate

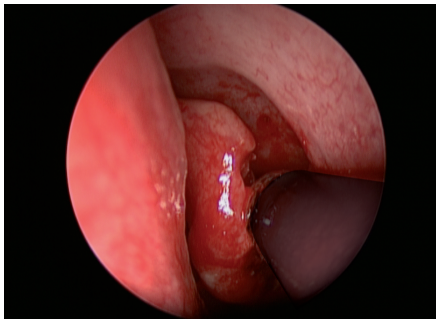

Fig. 3: Good hemostasis after suction and coag.

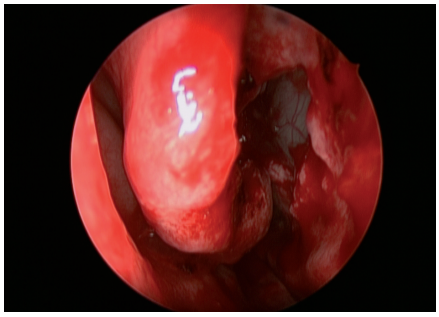

Fig. 4: Successful antrostomy exposes part of cyst

Material and Methods: We typically perform large interventions of the sinus cavity under general anesthesia. Cotton pledges moistened with epinephrine are applied for maximum decongestion of the mucosa and pathologies. The extent of the ensuing functional sinus surgery is adjusted to the pathology. Starting with the resection of the uncinate process, Incisions of the mucosa are inspected with an endoscope while the source of bleeding is meticulously exposed with the suction tube. Random bleedings are stopped at a low power-setting. In our experience the application of monopolar radiofrequency coagulation is most successful when the suction function of the tube is opened just prior to coagulation.

Fig. 5: CURIS® RF unit (Sutter, Germany)

This ensures that no undesired coagulated tissue enters and might block the tube. The process is repeated until the surgical site is free of blood. Only on rare occasions nasal packing will be required. Using a higher power setting (25 watts), safe and targeted hemostasis is possible to stop heavy arterial bleeding, such as bleedings of the sphenoid artery or posterior lateral nasal artery. For the surgery of neoplasms [2], in particular for juvenile angiofibroma, suction combined with coagulation is a significantly faster method with improved visualization of the surgical field.

Conclusion: Subtle hemostasis is mandatory in functional endoscopic surgery of the nasal cavities. In order to identify the source of bleeding and to simultaneously coagulate it, a suction-coagulation device is essential. The combination of monopolar radiofrequency coagulation and adjustable suction performance in one unit enhances the efficacy of the process and guarantees gentle hemostasis in sinus surgery. The special-material design of the tips virtually eliminates the sticking of coagulum to the electrode tips.

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Ordering Information

Featured Product

Monopolar (malleable) suction tube

Qty.	REF	Description
1	715010	Suction tube non-stick, work length 130 mm, Ø 4.0 mm, Lumen 2.8, insulated
1	715015	Suction tube non-stick, work length 130 mm, Ø 3.3 mm, Lumen 2.0, insulated
1	715017	Suction tube non-stick, work length 255 mm, Ø 3.3 mm, Lumen 2.0, insulated
1	715019	Malleable suction tube non-stick, work length 130 mm, Ø 4.3 mm, Lumen 3.0, insulated

870010 – CURIS® basic set with single-use patient plates

Qty.	REF	Description
1	360100-01	CURIS® radiofrequency generator (incl. mains 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	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 model**

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

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