

Safe Hemostasis in FESS Without Nasal Packing Using a Monopolar Suction-Coagulation Device

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Introduction: Endonasal endoscopic sinus surgery (ESS) in chronic rhinosinusitis aims at restoring nasal and paranasal physiology, mucociliary drainage and ventilation, and at removing gross pathology such as polyps, hyperplastic mucosal growths and other tissues which seem to be irreversibly and pathologically altered, as well as phlegm, and secretions.¹ Every effort should be made to preserve both normal mucosa that shows only slight signs of alterations as well as anatomical landmarks.¹ The advantages of minimally invasive interventions are lower morbidity, faster wound healing and a lower risk of bleeding as well as the possibility of doing without nasal tamponades, which tend to bother patients postoperatively to a great extent.²⁻⁴

National and international tendencies to avoid nasal packing after FESS are closely related to surgical techniques (atraumatic endoscopic surgery, avoidance of resection of turbinates, meticulous coagulation).²

In case of extensive polypoid sinusitis or recurring polyposis comprehensive surgery of all sinuses may often be indicated while consistent removal of all polyps and affected mucus accumulations is recommended additionally. This will lead to a larger postoperative wound surface requiring careful and efficient hemostasis to avoid postoperative bleeding. Critical areas in bleeding and its management are the anterior ethmoid artery along the anterior ethmoid roof and the sphenopalatine artery, the branches of which are at risk during the different steps of surgery:

- branch towards inferior turbinate in expanded fenestration of the maxillary sinus
- branch towards the middle turbinate in complete ethmoidectomy
- branch at the anterior wall (posterior nasal artery) of the sphenoid sinus during enlargement at the opening of the sphenoid sinus.

Case report: Images 1a-e show a patient who underwent endonasal endoscopic surgery of all sinuses for the treatment of the typical symptoms of chronic polypoid rhinosinusitis on both sides (classification: Malm 2, Kennedy IV, Lund 20). Despite comprehensive surgery and severe inflammation of the mucosa a dry surgical field was achieved through systematic hemostasis while nasal tamponades were not required.



Fig. 1a: Branch of sphenopalatine artery towards inferior nasal turbinate

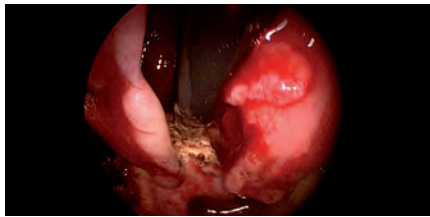


Fig. 1b: Branch of sphenopalatine artery towards middle nasal turbinate

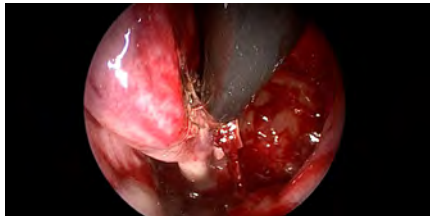


Fig. 1c: Along the middle turbinate (after lateral partial resection)



Fig. 1d: Branch of sphenopalatine artery on anterior wall of ethmoid sinus

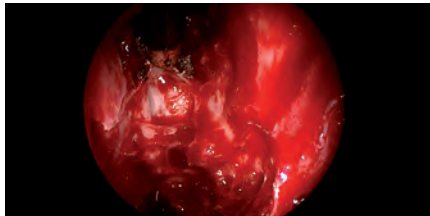


Fig. 1e: Anterior ethmoid artery on ethmoid bone

Images 1a-e: Systematic coagulation of relevant arterial vessels at the end of endonasal endoscopic pansinus surgery (left surgery side, with 45° Hopkins endoscope, Karl Storz, Tuttlingen/Germany).



Fig. 2: View of nasopharynx after hemostasis

Discussion: The classical method for hemostasis using bipolar bayonet-shaped forceps is often, for a number of reasons, difficult and sometimes downright impossible to carry out:

- Secure localization of the source of heavy, diffuse bleedings is difficult as a third hand would be needed. With the common two-hand method broad, imprecise tissue coagulation will only increase unintended damage to the mucosa.

- With rigid, bayonet-shaped forceps with the tips pointing straight forward it is almost impossible to reach bleeding vessels “around the corner” in an anatomically angled site, such as the *foramen sphenopalatinum* or anterior ethmoid roof. It is then necessary to resect further tissue parts – although the disease symptoms would not require this – to achieve a straight passage and make coagulation with rigid bipolar forceps possible. Therefore, an accessory that has an integrated suction function and is individually malleable is extremely useful in gaining precise access to the site of bleeding while providing excellent vision. The monopolar non-stick suction tube (Sutter Medizintechnik, Freiburg/Germany) has proven to be our instrument of choice for such interventions.



Fig. 3: Suction tube (Sutter) REF 71 50 19

At the end of sinus surgery all critical vessels that might cause postoperative bleeding should always be examined and, if required, sealed, in particular the anterior ethmoid artery at the anterior ethmoid roof and the different branches of the sphenopalatine artery. This precaution ensures that intraoperative bleeding can be stopped and that the risk of postoperative bleeding is minimized. Also, the patient is spared the inconvenience of nasal tamponades.

Conclusion: Endonasal endoscopic sinus surgery calls for subtle hemostasis. The flexible monopolar non-stick suction tube by Sutter allows a high degree of precision and can be individually adapted to the surgeon's needs. Complications can be reduced and, as no nasal tamponades are required patient comfort is enhanced.

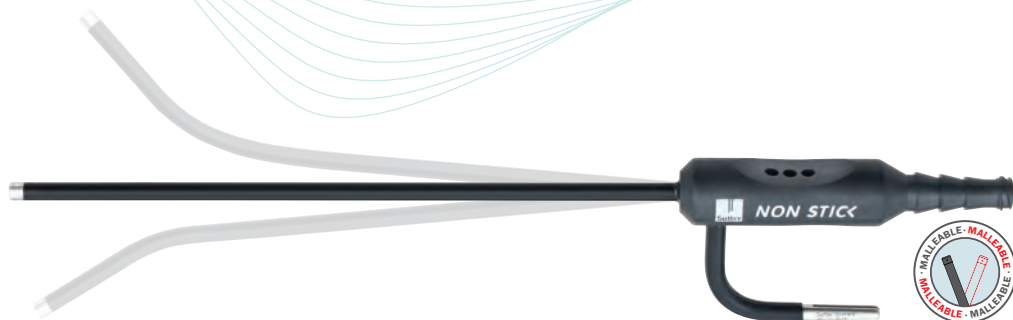


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References: 1. German guidelines on Rhinosinusitis. http://www.awmf.org/uploads/tx_szleitlinien/017-049l_S2k_Rhinosinusitis_2011-07.pdf. 2. Weber RK. Nasal packing after FESS – time is over?. *Laryngorhinootologie*. 2009 Jun;88(6):379-84. 3. Weber RK. Nasal packing and stenting. *GMS Curr Top Otorhinolaryngol Head Neck Surg*. 2009;8:Doc02. 4. Orlandi RR, Lanza DC. Is nasal packing necessary following endoscopic sinus surgery? *Laryngoscope*. 2004 Sep;114(9):1541-4.

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