

Hybrid-technique electrosurgery in endoscopy

Polyps can be resected using an electrosurgical snare, bleeding can be staunched using argon plasma coagulation, and tumors can be devitalized. Electrosurgery has become an integral part of interventional endoscopy. That's because it supports a wide variety of applications and is compatible with new techniques. A case in point:

Hybrid technique with waterjet surgery.

Interventional procedures can be optimized by combining electrosurgical resection techniques with a waterjet. In endoscopy, the waterjet is primarily used to separate layers of tissue and isolate them from one another. That's because the resection depth is limited when performing endoscopic resection of exophytic tumors in the gastrointestinal tract. From an oncological perspective, tumors that are limited to the mucosa should be resected both laterally and basally in healthy tissue and en-bloc without injuring the muscularis.

During endoscopic submucosal dissection (ESD), the waterjet supports the electrosurgical procedure. Needleless waterjet elevation using the combined instrument HybridKnife (Fig.) raises the mucosa selectively and generates a cushion of fluid in the submucosal layer with a mechanical and thermal protective function. The formation of a submucosal cushion is beneficial throughout electrosurgical dissection given the risk of perforation and injury to blood vessels.

Prior to elevation, the margin of the tumor is marked using a coagulation mode (FORCED COAG or SOFT COAG). The tumor is then resected along these marking points using the cutting mode ENDO CUT Q or

DRY CUT of the VIO 3 electro-surgical unit (Fig.). As both functions are available in the HybridKnife, the cushion of fluid can be refilled at any time and the protective function also maintained at all times during cutting. Any bleeding during dissection or in the resection bed can be coagulated electro-surgically.



APC electro-surgery in combination with waterjet

Plasma surgery (APC, argon plasma coagulation) is a special, non-contact form of electro-surgery in which the thermal power is applied to the target tissue via ionized argon plasma. APC can be upgraded to the hybrid technique using the waterjet function. In the case of Barrett's esophagus, the raised Barrett layer can be ablated using HybridAPC at a higher energy input than when using conventional APC without a water protection layer. The plasma jet is guided in a line over the raised tissue, thus creating an ablation zone. The Barrett epithelium is devitalized; the underlying layers are preserved.* The APC is suitable both for residual, flat Barrett's tissue (dynamic) as well as for small isolated areas of Barrett's tissue.

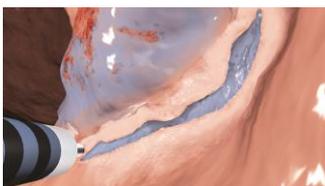
In addition to the primary therapy of low-grade dysplasia (LGD), HybridAPC can also be used to supplement ESD and EMR for complete ablation of abnormal residual epithelium with high-grade dysplasia (HGD).



*Manner H, et al., Efficacy and safety of Hybrid-APC for the ablation of Barrett's esophagus, Surg Endosc 2016; 30: 1364-70.



Workstation for gastroenterology with the master module, the VIO 3 electro surgery unit



Electrosurgical resection following elevation with HybridKnife