

erbe  
power your performance.



## Waterjet elevation prior to EMR or ESD

Gentle and selective with  
Flexible Probe or HybridKnife®

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GASTROENTEROLOGY

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# Elevation with waterjet protects and optimizes



ERBEJET 2 waterjet surgery unit

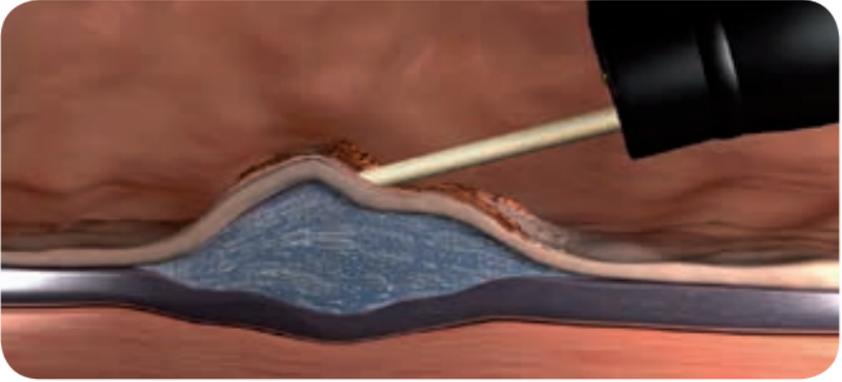
The resection depth for endoscopic resection of exophytic tumors in the gastrointestinal tract is limited. This is because the wall of the esophagus, stomach and intestine is only a few millimeters thick. Tumors that are limited to the mucosa should be resected both laterally and basally in healthy tissue and en-bloc without injuring or perforating the muscular layer.

*Selective elevation of the mucosa using a submucosal fluid cushion raises the resection level and thus represents a mechanical and, at the same time, a thermal protective function.*

The needleless waterjet elevation of the mucosa provided by the ERBEJET® 2 raises the mucosa quickly and selectively and generates a larger fluid cushion than with needle injection. The fluid cushion forms a safe margin to the muscular layer. This minimizes the risk of perforation in the subsequent resection. The VIO® electro-surgical unit offers optimal cutting modes for both resection techniques – **Endoscopic Mucosal Resection (EMR)** or **Endoscopic Submucosal Dissection (ESD)**.



# Advantages of elevation prior to EMR and ESD

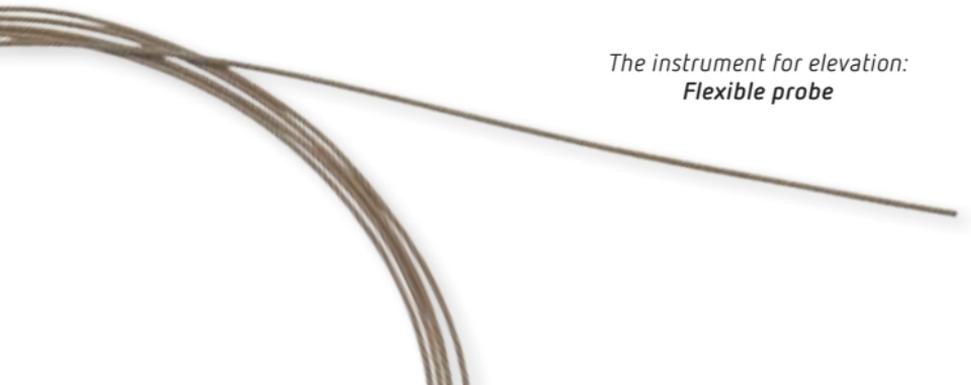


*Elevation protects against perforation.*

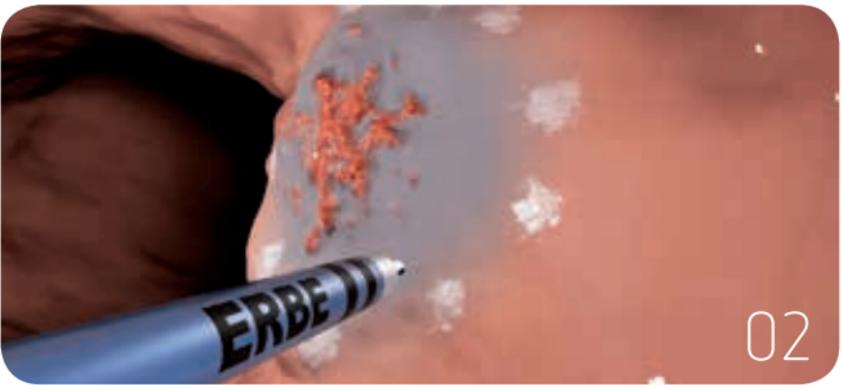
Elevation with the ERBEJET® 2 and the flexible probe has many advantages over needle injection – irrespective of the choice of resection technique, EMR with resection snare or ESD with a resection electrode.

- ✔ Selective and layer-specific elevation without the use of needles
- ✔ Fast elevation using a high pressure waterjet
- ✔ Flat angle of application, reliable elevation
- ✔ Minimal risk of injury to the muscular layer or to blood vessels
- ✔ Large fluid cushion which can be replenished as required
- ✔ Clear view of the target operating area with irrigation

*The instrument for elevation:  
Flexible probe*



# Advantages of the HybridKnife® for ESD



## 01 Marking

Prior to elevation, the lateral safety margin of the tumor in the gastrointestinal tract is marked with coagulation points.

## 02 Elevation

The waterjet penetrates the mucosa and accumulates as a protective cushion in the submucosa. The tissue elevation is layer-selective and can be repeated during dissection and resection, as required.



## 03 Incision/dissection

VIO® offers optimal cutting features with the ENDO CUT® Q or DRY CUT® modes for the incision and cutting around the tumor, as well as for resection of the tumor.

## 04 Post-coagulation

Vessels and capillary bleeding are coagulated during and after resection with FORCED COAG®. Hemostasis is supported by the compressed fluid cushion.

# The equipment for elevation and resection

## **Gastroenterology Workstation**

VIO® 200 D (electrosurgery)  
APC® 2 (argon plasma coagulation)  
ERBEJET® 2 (waterjet surgery)  
EIP 2 (endoscopic irrigation pump)



## **Flexible Probe**

Ø 1.3 mm; length 2.2 m  
No. 20150-020



## **HybridKnife, Type T**

Ø 2.3 mm; length 1.9 m  
No. 20150-060



## **HybridKnife, Type I**

Ø 2.3 mm; length 1.9 m  
No. 20150-061



## **HybridKnife, Type O**

Ø 2.3 mm; length 1.9 m  
No. 20150-062



# Settings

## Mucosa elevation (Flexible Probe + HybridKnife):

Esophagus/stomach	ERBEJET 2, effect 30–50
Right colon	ERBEJET 2, effect 10–15
Rectum / left colon	ERBEJET 2, effect 20–30

## EMR with electro-surgical snare

Markierung	VIO system, FORCED COAG, effect 2, 60 watts
Resection electro-surgical snare	ENDO CUT Q, effect 1–4 Cutting duration 1, cutting interval 6

Effect 1: Coecum, right colon  
Effect 2: Duodenum, polyps > 5 mm  
Effect 3: Esophagus, stomach, polyps 5–15 mm  
Effect 4: Rectum, stalked polyps, polyps > 15 mm, large tumors

## ESD with HybridKnife

Marking	VIO system, FORCED COAG, effect 1, 20 watts
Incision/dissection	ENDO CUT Q, effect 2–3 Cutting duration 3, cutting interval 3 DRY CUT, effect 2, 60 watts
Coagulation	FORCED COAG, effect 2, 60 watts

## References

*Repici, A et al.: A prospective, single center study of endoscopic submucosal dissection of rectal LST lesions larger than 3 cm by using an innovative concept of injecting and Cutting: The water-Jet Hybrid-Knife (ESD-H). Gastrointest Endosc Vol 73, Issue 4, Supplement, Page AB156, April 2011*

*Fernandez-Esparrach, G. et al.: A novel device for endoscopic submucosal dissection that combines water-jet submucosal hydrodissection and elevation with electrocautery: initial experience in a porcine model. Gastrointest Endosc Vol 71, No. 3: 2010*

*Hochberger, J. et al.: Neue Instrumente für die endoskopische Submukosadisektion Gastroenterologie 2011 · 6:418–426*

*Neuhaus, H.: Endoscopic submucosal dissection in the upper gastrointestinal tract: Present and Future View of Europe. Digestive Endoscopy (2009) 21 (Suppl. 1), S4–S6*

*Neuhaus, H.: Endoscopic mucosal resection and endoscopic submucosal dissection in the West – too many concerns and caveats? Endoscopy 2010; 42: 859–861*

*Schumacher, B. et al.: Endoscopic submucosal dissection of early gastric neoplasia with a water jet–assisted knife: a Western, single-center experience. Gastrointest Endosc, 2012.*



*The direct link to EMR*  
[www.medical-video.com](http://www.medical-video.com)



*The direct link to ESD*  
[www.medical-video.com](http://www.medical-video.com)

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