



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*

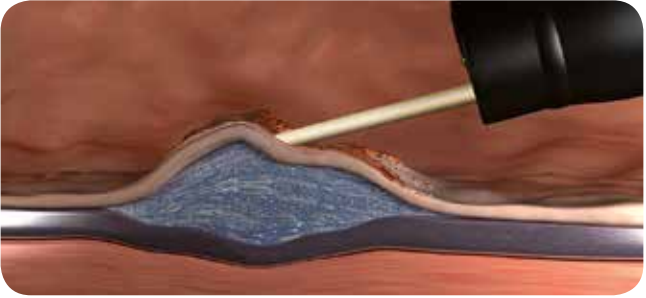
The resection depth for endoscopic resection of exophytic tumors in the gastrointestinal tract is limited. This is because the wall of the esophagus, stomach and intestine is only a few millimeters thick. Tumors that are limited to the mucosa should be resected both laterally and basally in healthy tissue 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.*

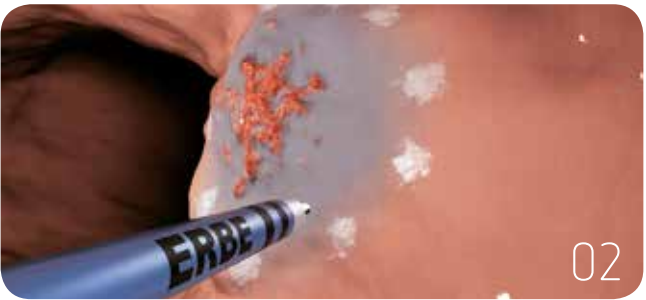
Elevation with the ERBEJET® 2 and the flexible probe has many advantages over needle injection – irrespective of the choice of resection technique, EMR with resection snare or ESD with a resection electrode.

- ✔ 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

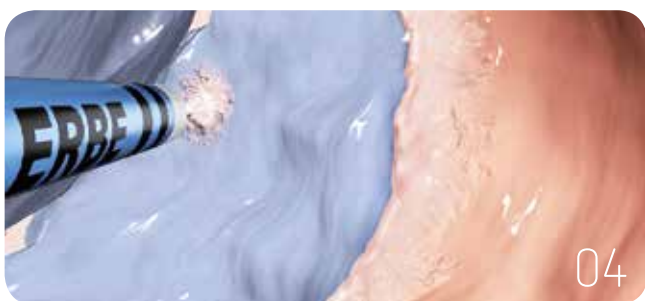


## 01 Marking

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.

# 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

# 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*



## References

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

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*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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