

For medical professionals

ESD Clinical Guidebook

Capability of FlushKnife BT

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ESD Clinical Guidebook – FlushKnife BT

Stomach



- ESD knife / FlushKnife BT **knife length 2.5mm**
- Endoscopic findings / A whitish flat protrusion found in the antral lesser curvature.
- Endoscopic diagnosis / The lesser curvature of the gastric antrum is suspected to be an adenoma.

1 Indigo carmine dye spraying

A whitish flat protrusion lesion, suspected to be an adenoma, is found in the antral lesser curvature. The planned resection line is a horizontal semicircle shape of the lesser curvature.



2 Marking

Sharper marking can be achieved when the sheath tip is put lightly against the mucosa.



[Settings]
Knife length:2.5mm
Soft coagulation (Effect 5-6, 100W)

3 Maintenance

It is important to maintain a uniform marking performance by washing off tissues attached to the knife tip by supplying water each time it is used.



4 Incision

The knife is inserted in the mucosa by applying the flash current. Lightly put the tip of the sheath against the mucosa in order to keep it in contact with the mucosa and operate the knife slowly while making sure of the direction so that the incision can be made smoothly. Even in situations where the conventional type of knife may have slipped, the tip ball part lifts up the mucosa, allowing the incision to be made in a stable manner.



[Settings]
Knife length:2.5mm
Endo cut I (Effect 2, Duration 3, Interval 3)

5 After completion of full-circle incision

A uniform incision depth can be achieved with the mucosa held between the sheath tip and ball tip.



6 Trimming

Operate the same knife toward the lumen, and perform Forced coagulation (Effect 3, 45 W) with intermittent energization. Operability is remarkably improved by the operation of lifting-up of the submucosa which was not previously possible.



7 Trimming (blood vessel part)

In order to prevent bleeding in a thin blood vessel, perform pre-coagulation Soft coagulation (Effect 7 or 8, 100 W) on both sides of the vessel with the knife until the color turns white. The ball shape improves coagulation performance, making blood coagulation easy in cases of small amounts of bleeding.



8 Submucosal dissection

With the ball-tip type knife, the tip may be pulled in as deep as it can be visualized, which makes the operation safer. Dissection can be effectively performed if the sheath is controlled into the dissected space with the margin sliding on the muscle layer.



9 Condition after resection

A uniform dissection depth can be achieved with a lifting dissection action which was not previously possible.



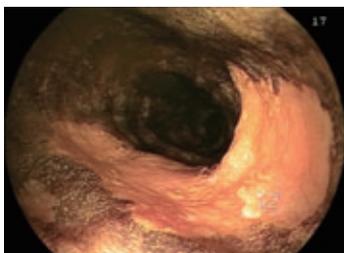
Esophagus



- ESD knife / FlushKnife BT knife length 2mm
- Endoscopic findings / An iodine achromatic band found in the one-third of the esophagus.
- Endoscopic diagnosis / Esophagus: early stage cancer (IIc)

1 Thoracic esophagus posterior wall

An iodine achromatic band with an approximately two-thirds circular lesion is found.



2 Marking

A small and sharp marking can be achieved by lightly putting the knife tip on the mucosa.



[Setting]
Knife length:2.0 or 1.5mm
Soft coagulation (Effect 5, 100 W)

3 Before Incision

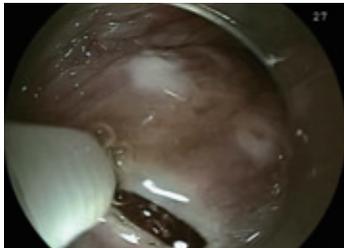
Start incision of the adoral side, and continue through the lateral and anal horizontal incision as it makes a C-shape.

In principle, incision should be initiated from the side that tends to be submerged.



4 Incision

Taking into account, safety sodium hyaluronate is locally injected. A uniform incision depth can be achieved even in the esophagus where pulsation and respiratory fluctuations frequently occur since the mucosa is held between the sheath tip and ball tip.



[Settings]
Knife length:2.0 or 1.5mm
Endo Cut 1 (Effect 4, Duration 3, Interval 3)

5 After semicircular incision of the left wall side

Judging the direction and timing of incision with the knife inserted in the mucosa, start moving the entire endoscope so that incision can be completed without interruption of the operation.

Once the trimming of the site is completed, the lesion will be transferred to the right side and is separated from the submerged region by tension of the mucosa of the opposite side.



6 Trimming

Dissect the submucosa under the incision margin by lifting up with the ball-tip. Bleeding occurs rarely in thin blood vessels even if dissection is performed immediately after coagulation.



Perform forced coagulation (Effect 2, 40 W)

7 Treatment of thick blood vessels

For thick blood vessels, perform pre-coagulation and soft coagulation (Effect 6, 100 W) with the knife in order to change the color of the vessel to white, followed by dissection by Forced coagulation.



Pre Coag: Soft Effect 6, 100 W
Dissection: Forced Effect 2, 40W

8

After full-circle incision and trimming are completed, perform dissection of the one-third of the esophagus. The same knife length of resection is used for submucosal dissection. A uniform dissection depth can be achieved by aligning the edge of the sheath tip on the muscle layer. In principle, energizing should be carried out after lifting up the object, which makes the operation safer.



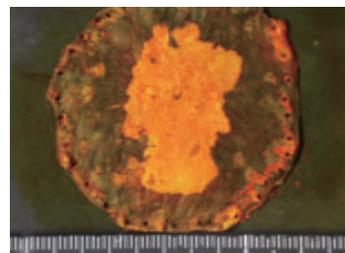
9 Condition after resection

A uniform dissection surface has been achieved. Resection time was 50 minutes.



10 Resected sample

PType 0-IIc, squamous cell carcinoma T1a, 30 × 20 / 46 × 46 mm, ly0, v0, LM(-), VM(-)



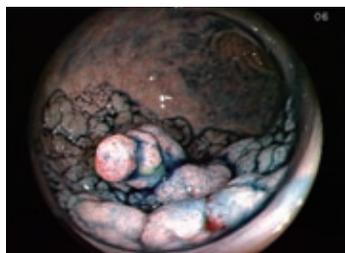
Large intestine (rectum)



- ESD knife / FlushKnife BT knife length 1.5mm
- Endoscopic finding / LST-G is found in the Rb.
- Endoscopic diagnosis / Rectum: early cancer (IIa) suspected.

1 Indigo carmine dye spraying

Semicircular lateral spreading tumor granular type (LST-G) with coarse nodes is found in the rectum below the peritoneal reflection (Rb).



2 Incision

The incision is performed after injecting a sufficient amount of local injection solution into the submucosa and holding the mucosa between the sheath tip and ball tip.

In the colon, a knife length of 2 mm is recommended as there are many bending portions.



[Settings for the incision of the rectum]
Knife length: 1.5mm
Endo Cut I (Effect 2, Duration 3, Interval 3)

3 Trimming

In the large intestine, instead of a full-circle incision, perform an approximately one quarter-circle incision and dissection (trimming) on the anal side, and extend the dissection large enough to allow the knife to slip into the submucosa with attachment. Subsequently, extend the incision and dissection (trimming) sequentially toward the adoral side.



4 Submucosal dissection

Control the knife in the parallel to or toward the direction far from the muscle layer. The twisting function of a forced coagulation (Effect 2, 40 W) endoscope can be used to turn the object to a better operating direction.

The targeted depth is below the submucosa vascular network and just above the muscle layer.

It should be remembered that an exposure necessary for dissection operation may not be achieved if dissection depth is too shallow.

Use a knife length of 1.5 mm for the rectum. In the colon, use a knife length of 2 mm, which is effective for the lifting-up motion as there are many bending portions.



5 Submucosal dissection

If the gap between the vascular network and the muscle layer is narrow, use the sheath tip to dissect in order to dividing the vascular network and muscle layer aside. Using the ball-tip may also be effective by hooking up the submucosa.



6 Pre-coagulation

Expose a thick blood vessel, use hemostatic forceps to clamp and tract the vessel, and perform pre-coagulation by soft coagulation (Effect 5, 100 W).

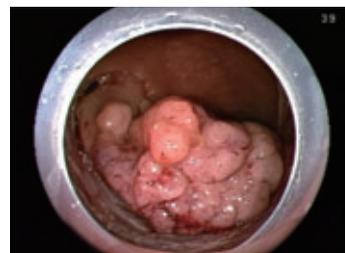
The knife itself can be used for the pre-coagulation of a thin blood vessel, in which soft coagulation is performed (Effect 7, 100 W).



7 Full-circle incision

The lesion may completely invert as dissection progresses. Ensure that a complete full-circle incision is done before this inversion occurs.

If the incision was not performed before the inversion, either the outside should be additionally cut or the remaining mucosa should be cut from the behind.



8 Condition after resection

The deep layer of the submucosa is to be left. The shiny ulcer floor after incision and thick vessel stump are observed.

It is important to maintain an appropriate dissection depth under the vascular network, as is the case for the gastric corpus, since the vessels of the rectum are the thickest among those of the large intestine.



9 Resected sample

LST-G, carcinoma (tub1) in adenoma pM, 55 × 42 / 67 × 50 mm, ly0, v0, LM(-), VM(-).



Presenting the diathermic slitter FlushKnife BT

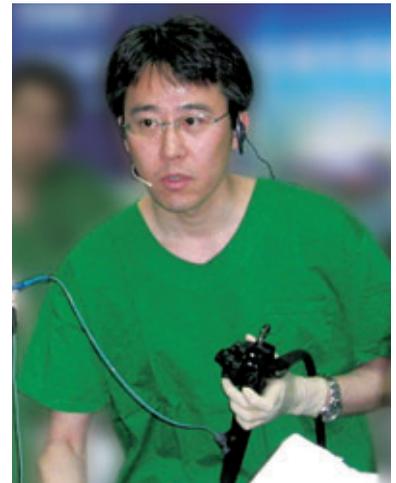
Bringing to as many physicians as possible, the great capability of ESD with FlushKnife BT

The diathermic slitter “FlushKnife BT” is developed for use by all physicians from ESD trainees to skilled practitioners.

The ball tip and stopper ensure great safety, and the unique water jet system keeps the knife sharp.

One knife covers from marking to the arrest of bleeding, reducing time and cost of operations.

FlushKnife BT is best suited for ESD operations of stomach, esophagus and large intestine.



Co-inventor of FlushKnife BT
Kobe University Hospital
Takashi Toyonaga

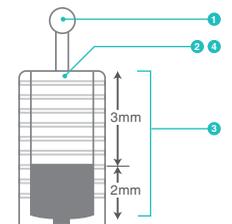
Main Features of FlushKnife BT

POINT 1 Maintaining the sharpness of the knife

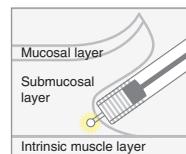
The water jet system keeps the tip of the knife clean by washing off debris and lesion tissue adhering to the tip, thereby maintaining the sharpness of the knife throughout the operation. The water jet system washes off lesions without withdrawing the knife from the scope, maintaining the operation efficiency during the operation.



POINT 3 The tip is designed to enhance safety and operation capability



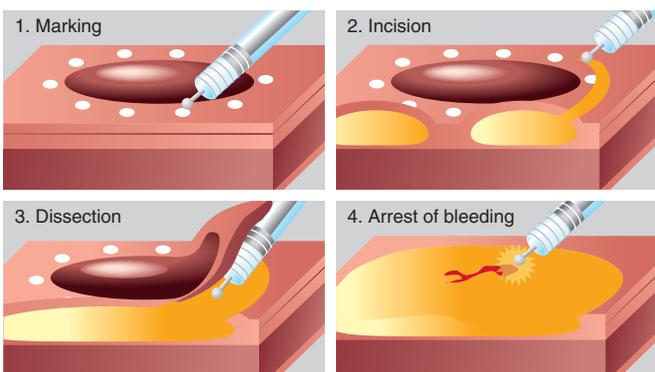
- 1 The ball tip prevents mucosa from being damaged when touched inattentively, ensuring greater safety during the operation.
- 2 A ceramic tip is used for the sheath to prevent the center of the tip from moving during operation.
- 3 Gradation indication serves as a guide for the protruding length. (White 3mm/Black 2mm)
- 4 The distal end of the sheath functions as a stopper to prevent damage to the deep tissue during dissection.



FlushKnife BT has a ball tip, which produces good traction, enabling the target tissue to be dissected more smoothly.

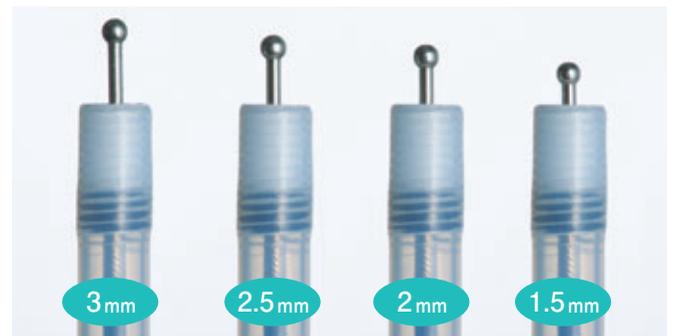
POINT 2 Covering from marking to arrest of bleeding, achieving high versatility

One knife carries out procedures including marking to arrest of bleeding, and no replacement is necessary. The high versatility improves operation and cost efficiencies.



POINT 4 Rich lineup of protruding knife lengths

Rich lineup of protruding knife lengths



FlushKnife DK2618J -B30-, -B25-, -B20-, -B15-
DK2623J -B20-, -B15-

Generic Name: Active instrument, endoscopic, high-frequency current procedure, single-use

