A new device for endoscopic submucosal dissection of a submucosal gastrointestinal stromal tumor

Surgical resection is the treatment of the choice for gastrointestinal stromal tumors (GIST). These neoplasms usually arise from the muscularis propria. Endoscopic submucosal dissection (ESD) is a novel technique to resect epithelial as well as submucosal gastrointestinal neoplasia and represents a less invasive alternative to surgery [1–3]. Recently, many technical developments and accessories have been presented to facilitate the ESD procedure [3–5]. The following case report presents the successful ESD of a submucosal gastric GIST using a new combined instrument, the Endo-FS/FK dissection device (KACHU Technology, Seoul, Korea), which integrates an injection needle and a flex knife into a single device.

A submucosal tumor, 15–20 mm in size, was incidentally found in the stomach of a 72-year-old man. The lesion was located at the posterior wall in the proximal part of the gastric antrum (Fig. 1). Endoscopic ultrasound revealed a 15 mm homogeneous tumor, presumably of a benign or premalignant nature (lipoma, leiomyoma, or GIST) (Fig. 2). As the patient refused surgery, ESD was carried out using the new combination dissection device, the Endo-FS/FK (Fig. 3; Video 1). The whole procedure (marking, injection, dissection) was carried out using only this instrument. After marking with the flexible snare tip, a high-volume submucosal injection was given, using the integrated injection needle of the Endo-FS/FK device.

Fig. 1 Endoscopic appearance of the submucosal gastrointestinal stromal tumor at the posterior wall of the proximal part of the gastric antrum.

Fig. 2 Endoscopic ultrasound showing that the lesion was restricted to the submucosal layer.

Fig. 3 a The Endo-FS/FK device. b Handle of the device with different sliders to control both parts (FK tip and FS tip) of the device. c Slider of the handle in the position in which the forklike needle (FK tip) is moved out. d The syringe for injecting and rinsing connected to the handle. e The forklike injection needle (FK tip). f The braided snare tip (FS tip) of the dissection device.
A dilute epinephrine solution with indigo carmine dye (1 mg epinephrine and 1 mL 0.8% indigo carmine in 250 mL 0.9% saline solution) was used to broaden the submucosal layer. A circumferential incision was made with the flexible snare tip of the Endo-FS/FK device. Subsequently, the dissection with the flexible snare tip was interrupted by injections of the dilute epinephrine and indigo carmine solution, again using the integrated injection needle. Thus, time-consuming changing of accessories was avoided and the whole tumor was dissected with the flexible snare tip of the Endo-FS/FK device. Finally, hemostasis of oozing bleeding was achieved with a Coagrasper device (Olympus Endotherapy, Hamburg, Germany). Histological examination of the resection specimens revealed a 15 mm GIST with a proliferation rate of 2–3% (MIB1). In addition, the tumor expressed CD117 and CD34 markers, and so the patient’s situation was determined to be low risk. A control gastroscopy 1 day later revealed an arterial stump in the center of the resection ulcer. Three endoclips (HX-610-090, Olympus Endotherapy, Hamburg, Germany) were applied for hemostasis (Fig. 4).

Follow-up 1 and 3 months after resection showed regular healing without any signs of recurrence.

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References


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Video 1

Demonstration of the endoscopic submucosal dissection procedure using the Endo-FS/FK device. In conclusion, ESD should be considered as a therapeutic alternative not only in early gastric cancer but also in selected cases with submucosal tumors. The new combined instruments, such as the Endo-FS/FK device, are facilitating the resection procedure.

Fig. 4 a The resection margin was marked by creating small coagulation dots with the snare tip. b Lesion after complete incision with the snare tip. c Resection area after complete removal of the tumor. d The GIST specimen pinned on a cork plate for pathological workup. e One day after the resection: an ulcer is seen with a clip applied on a central vessel.

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