Release and re-hook: a novel method with combined use of clips and nylon snare to close a colonic defect after endoscopic mucosal resection

A 67-year-old man presented to our department for a screening colonoscopy, during which a 2-cm type IIa nonpolypoid lesion was found in the ascending colon (Fig. 1 a). After submucosal injection (saline with methylene blue) and adequate lifting of the lesion, a single-piece endoscopic mucosal resection (EMR) was performed. The post-EMR defect consisted only of serosal lining (Fig. 1 b). Because of its large size, attempts to close the defect with clips failed. A decision was made to close the defect with the combined use of clips and a nylon snare (HX-400U; Olympus, Tokyo, Japan). The traditional method of snaring and clipping could not be performed. Therefore, we developed a new technique.

At the patient’s bedside, the nylon snare was opened and released from its original sheath (Fig. 2 a). The distal loop of the snare was enlarged to facilitate re-hooking (Fig. 2 b). The snare was grasped with a clip (QuickClip2; Olympus) and introduced into the working channel of the endoscope (Fig. 2 c, Fig. 2 d). The snare was delivered to the ascending colon (Fig. 2 e, Fig. 3 a), where it was anchored with multiple clips along the edges of the defect (Fig. 3 b). The distal end of the snare was then re-hooked and pulled back into the original sheath (Fig. 2 f), enabling the closure to be completed in a “purse-string” fashion (Fig. 3 c). Follow-up colonoscopy at 8 weeks demonstrated a healed defect, with both the snare and clip in situ (Fig. 3 d).

The application of two accessories with a single-channel endoscope is either challenging or impossible. Perforations and large mucosal defects can be closed with the combined use of clips and a nylon snare using two methods. In the “tulip-bundle” technique the snare is lassoed and tightened over a bundle of clips attached at the edges of the tear [1]. In the “purse-string” technique, the snare forms a nylon loop that is clipped around the edges of the lesion. Closure is accomplished by closing the snare [2,3]. However, with the tulip-bundle technique, there is a risk of the snare slipping over the clips, whereas the purse-string approach requires the use of a double-channel endoscope, or the snare must be fixed externally to the scope. In addition, it can be difficult to operate a double-channel endoscope or to maintain the position of an externally fixed snare in a redundant or tortuous colon.

Fig. 1  a Sessile polyp and positive lifting sign in the ascending colon of a 67-year-old man undergoing screening colonoscopy. b Colonic wall defect after resection; only the serosal lining is left in situ. Attempts to close the defect with clips failed.

Fig. 2  Release and re-hook method (bedside demonstration). a The snare is released in the open position from the original sheath. b The distal loop is enlarged to facilitate re-hooking of the snare. c The snare is grasped with a clip. d The snare is introduced through the working channel of the colonoscope. e Delivery of the snare. f Re-hooking of the snare.
In sum, we believe that our release and re-hook method is a useful modification of the snare-and-clip technique and might be useful in a clinical scenario such as the one presented here.

**Fig. 3** Combined use of a nylon snare and clips for closure of the colonic wall defect. 

- **a** Delivery of the snare into the colonic lumen. 
- **b** Anchoring the snare with clips along the edges of the defect. 
- **c** The closure is done in a "purse-string" fashion. 
- **d** Follow-up colonoscopy at 8 weeks shows complete healing of the defect, with both snare and clips in situ.

**Competing interests:** None