Minimal incision-assisted full-thickness sampling with over-the-scope clip targeting intestinal neuronal malformation

Intestinal neuronal malformation (INM) is a rare and refractory pediatric disease [1]. Its definitive diagnosis is generally confirmed by an invasive full-thickness biopsy [2]. This biopsy is required because the nerve plexus is located in the deep submucosal and muscle layers, resulting in poor diagnostic ability with endoscopic suction biopsies [3]. In our experience, even specimens obtained by endoscopic submucosal dissection fail to provide an accurate histological evaluation owing to the burn effects. As a result, full-thickness specimens must be obtained to make a diagnosis of INM. A new type of over-the-scope clip (OTSC), called a full-thickness resection device (FTRD; Ovesco Endoscopy, Tübingen, Germany), provides a moderate rate (75%) of histologically complete resection, so indicating a need to modify procedures [4, 5]. In this animal study, we introduced a productive endoscopic full-thickness sampling method with the original OTSC system targeting INM. A flexible gastrointestinal endoscope was used. First, a 10-mm mucosal pocket was created in the lower rectum using a needle knife (KD-650Q; Olympus, Tokyo, Japan) until the muscle layer was visible (▶Fig. 1a). Next, after the artificial pocket had been anchored into the application cap with a retraction device (Anchor; Ovesco Endoscopy) that captured the exposed muscle layer, the OTSC was successfully deployed (▶Fig. 1b). A 10-mm incision was then made with the needle knife in the muscle layer immediately above the clip to prevent slippage of the snaring device. Finally, a full-thickness resection was completed with the snare, without complications, using the Endo Cut Q mode on an electric generator (VIO300D; ERBE, Tübingen, Germany) (▶Fig. 1c, d; ▶Video 1). A 10-mm specimen with a sufficient muscle layer was acquired (▶Fig. 2). Histological examination revealed an adequate full-thickness layer including the myenteric plexus and ganglia cells (▶Fig. 3). This study emphasizes that a minimal incision-assisted OTSC procedure can facilitate full-thickness sampling and minimally invasive diagnosis of INM.

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Competing interests
None

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E-Videos

▶ VIDEO 1

▶ Video 1: A full-thickness specimen is needed for the definitive diagnosis of intestinal neuronal malformation (INM). This video shows that the minimal incision-assisted over-the-scope clip (OTSC) procedure is simple, and is suitable for sampling a sufficient full-thickness specimen to allow a minimally invasive diagnosis of INM.
References


Bibliography

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