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. 1 a). 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. 1 b). 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. 1 c, 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.

Endoscopy_UCTN_Code_TTT_1AO_2AC

Competing interests

None

The Authors

Noriko Nishiyama¹, Hirohito Mori¹, Hideki Kobara¹, Shintaro Fujihara¹, Maki Ayaki¹, Yumi Miyai², Tsutomu Masaki¹

- 1 Department of Gastroenterology and Neurology, Faculty of Medicine, Kagawa University, Kagawa, Japan
- 2 Department of Diagnostic Pathology, Faculty of Medicine, Kagawa University, Kagawa, Japan

Corresponding author

Noriko Nishiyama, MD, PhD

Department of Gastroenterology and Neurology, Faculty of Medicine, Kagawa University, 1750-1 Ikenobe, Miki, Kita, Kagawa 761-0793, Japan
Fax: +81-87-8912158
n.nori.ocean@gmail.com

► 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.

► **Fig. 1** Endoscopic images showing: **a** a 10-mm pocket with the muscle layer exposed that was created with a needle knife; **b** successful over-the-scope clip (OTSC) deployment with an anchor assist that captured the exposed muscle layer of the pocket; **c** complete full-thickness resection using a snare after a 10-mm incision had been made in the muscle layer immediately above the clip to prevent slippage of the snare; **d** a full-thickness defect that was closed by deployment of the OTSC.

► **Fig. 2** Macroscopic view showing the full-thickness resected specimen with a sufficient amount of muscle layer.

References

- [1] Qadir I, Salick MM, Barakzai A et al. Isolated adult hypoganglionosis presenting as sigmoid volvulus: a case report. *J Med Case Rep* 2011; 5: 1
- [2] Kobayashi H, Yamataka A, Lane GJ et al. Pathophysiology of hypoganglionosis. *J Pediatr Gastroenterol Nutr* 2002; 34: 231–232
- [3] Yunis EJ, Dibbins AW, Sherman FE. Rectal suction biopsy in the diagnosis of Hirschsprung disease in infants. *Arch Pathol Lab Med* 1976; 100: 329–333
- [4] Snauwaert C, Jouret-Mourin A, Piessevaux H. Endoscopic full-thickness resection of a nonlifting adenoma in an ileal pouch using an over-the-scope full-thickness resection device. *Endoscopy* 2015; 47: E344–E345
- [5] Schmidt A, Bauerfeind P, Gubler C et al. Endoscopic full-thickness resection in the colorectum with a novel over-the-scope device: first experience. *Endoscopy* 2015; 47: 719–725

Bibliography

DOI <http://dx.doi.org/10.1055/s-0043-100626>
 Endoscopy 2017; 49: E103–E104
 © Georg Thieme Verlag KG
 Stuttgart · New York
 ISSN 0013-726X

► **Fig. 3** Histology of the specimen stained with hematoxylin and eosin (H&E) showing the full-thickness layers with the presence of the internal circular and external longitudinal muscle layers, and the neurogenic plexus containing ganglia cells (yellow arrows).