Endoscopic submucosal dissection of a large squamous cell cancer using the proximal mucosal bridge technique

During endoscopic submucosal dissection (ESD) of large esophageal lesions, adjunct strategies are needed to generate adequate tissue tension besides the traditional distal attachment cap [1, 2]. These tension-generating maneuvers are moderately effective, require additional devices [3], and can be time consuming. In this video, we demonstrate the successful use of a proximal "mucosal bridge technique" to efficiently and quickly complete ESD of a large squamous cell carcinoma (SCC) in the esophagus, obviating the need for supplementary traction devices (Video 1).

A 74-year-old man underwent esophagogastroduodenoscopy and was found to have a large nodular and granular lesion in the middle of the esophagus (Fig. 1). Biopsies revealed SCC in situ and endoscopic ultrasound examination demonstrated that the lesion was limited to the mucosa. The decision was made to pursue en bloc resection via ESD.

Chromoendoscopy with Lugol’s solution demonstrated an unstained area measuring 50 mm in length and involving 90% of the esophageal circumference. Thermocautery marks were placed circumferentially using the retracted tip of a Dual-Knife (Olympus, Center Valley, Pennsylvania, USA) (Fig. 2). Initial mucosal incision was performed using the Dual-Knife at the distal aspect of the lesion after a submucosal lift was achieved by injecting methylene blue mixed with normal saline (Needle Master; Olympus). A nearly complete marginal mucosal incision was then made around the lesion using the IT nano knife (Olympus) while intentionally preserving an intact mucosal margin, 4 mm wide, at the most proximal aspect of the lesion (Fig. 3). This “mucosal bridge” was left intact to provide traction during the submucosal dissection portion of the ESD.

With the mucosal bridge acting as an anchor, entry into the dissection plane was readily accomplished and submucosal dissection was then easily carried out using the IT nano knife in the cephalo-caudal direction. Upon completion of the submucosal dissection, resection of the specimen was achieved, resulting in an en bloc resection (Fig. 4). Final histological examination confirmed the successful en bloc resection of the SCC in situ, consistent with the proximal mucosal bridge technique demonstrated.

Video 1 Endoscopic submucosal dissection of a large esophageal squamous cell carcinoma using the “proximal bridge technique”. The proximal mucosal bridge serves as an anchor and facilitates efficient dissection without the need for additional devices.
the submucosal dissection, the mucosal bridge was finally cut and the lesion detached for complete en bloc resection (Fig. 4, Fig. 5).

By acting as a proximal tissue anchor, the "proximal mucosal bridge" provides an alternative method for efficient dissection of lesions in the esophagus given the tubular lumen and limited maneuverability.

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Competing interests

Dr. Draganov is a consultant for Boston Scientific and Olympus Corp. Dr. Yang is a consultant for Boston Scientific.

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