



Cap-EMR II

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BACKGROUND

EMR using a cap-EMR (EMRC) is an endoscopic treatment technique initially introduced by Inoue et al.¹ EMRC is a very simple EMR technique that makes it easy to collect specimens. EMRC provides a straightforward method for mucosal resection. In comparison to endoscopic submucosal dissection, EMRC is a technically simpler and more accessible procedure, with a considerably shorter average procedure time.² Recently, EMRC has gained widespread recognition as a safe and effective treatment for the esophagus, stomach, duodenum, and colon.³⁻⁶ EMRC can be used throughout the entire digestive tract. Additionally, it is used in anti-reflux mucosectomy^{7,8} and anti-reflux mucoplasty (ARM-P),^{9,10} both of which serve as endoscopic treatments for patients with proton pump inhibitor refractory-dependent GERD.

Indeed, it is crucial to acknowledge specific limitations. For instance, the prelooping process into the groove may not always be straightforward and may necessitate additional time for preparation. Consequently, there is a risk of the injected saline bleb becoming flattened or leaking during prelooping. In response to these challenges, we have developed a refined technique called EMRC-II, which we introduce in this report.

This study was approved by the institutional review board of Showa University (approval number: 2023-209-B).

PROCEDURE

EMRC-II was conducted using a therapeutic endoscope (H290T; Olympus, Tokyo, Japan) equipped with a straight distal attachment (MH-463; Olympus). A specially designed gutter was made by a dentist on the outer surface of the cap, approximately 1 to 2 mm from the tip, to accommodate

a disposable electrosurgical snare (SD-210L-25; Olympus) (Fig. 1). The snare was positioned around the exterior of the gutter before inserting the endoscope (Fig. 2). The procedure involved inserting the endoscope with the snare positioned around the gutter, applying an injection to the targeted mucosal area, and then proceeding with the resection by gently releasing the snare from the attachment and grasping the targeted area.

The advantages of EMRC-II are as follows. First, the prelooping procedure can be conveniently executed at the outer circumferential gutter before inserting the scope. Second, targeted mucosa can be promptly resected right after saline injection. Furthermore, it is possible to inject while confirming the relationship between the target for resection and the position of the snare and resection with a visible field of view (Fig. 3). Additionally, it enables the removal of larger specimens compared with EMRC (Fig. 4).

Torii et al¹¹ previously outlined a similar method; however, their approach deviated in that it did not include a gutter on the outer surface of the cap. They used a Teflon tube as the snare introducer, fastening it to the endoscope using tape. In contrast, EMRC-II improved snare flexibility by integrating a gutter on the cap's exterior. Remarkably, the snare is not attached to the scope, leading to a simpler overall structure.¹¹

CASE

A female patient, 64 years of age with a history of proton pump inhibitor-refractory GERD spanning over 20 years, was referred to our hospital. She underwent a series of diagnostic tests, including upper endoscopy, high-resolution esophageal manometry to assess for esophageal motility disorders, and 24-hour impedance pH monitoring test. The upper endoscopy revealed the absence of erosive esophagitis but identified the presence of a hiatal hernia. Additionally, the 24-hour impedance pH monitoring demonstrated pathological acid reflux, with an acid exposure time of 15.6% and a DeMeester composite score of 38.2. All were confirmed to be ARM-P inclusion criteria.

OUTCOME

Prelooping can be readily achieved outside the cap, resulting in a reduction of the time required for resection after injection. EMRC-II represents a refined technique that has

Abbreviations: ARM-P, anti-reflux mucoplasty; EMRC, cap-EMR.

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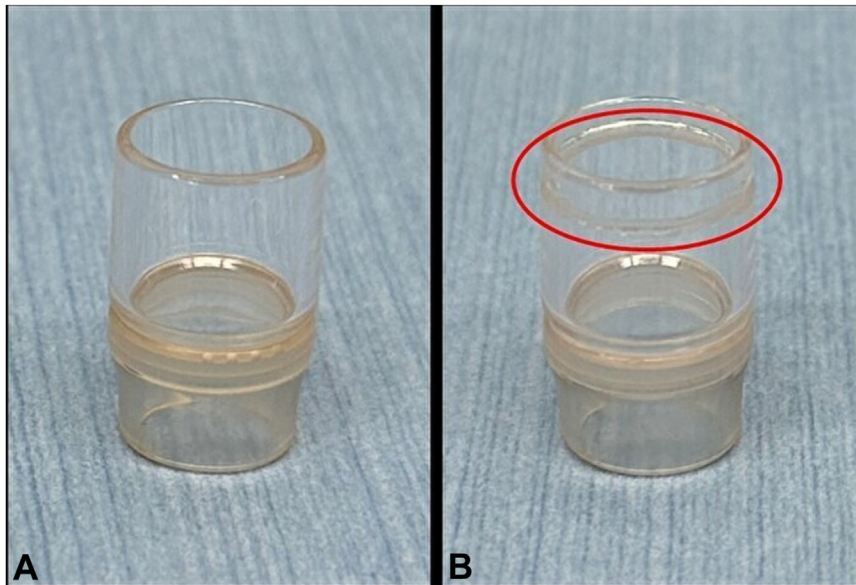


Figure 1. **A**, Straight distal attachment (MH-463; Olympus, Tokyo, Japan) before fabrication of gutter by dentist. **B**, After fabrication of gutter by dentist.

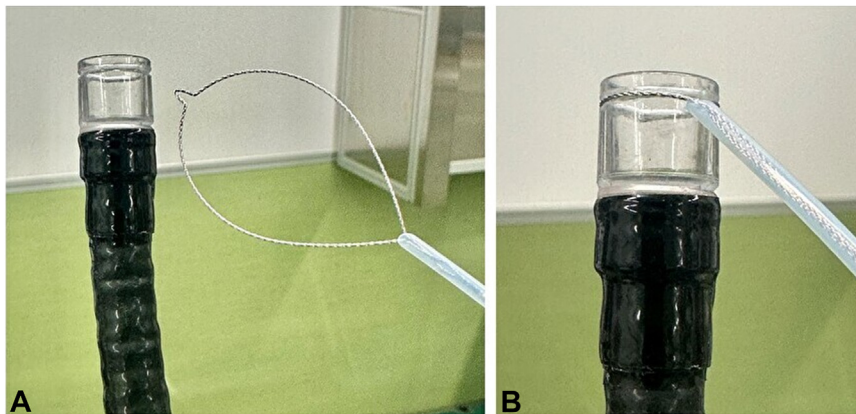


Figure 2. The snare was positioned around the exterior of the gutter.

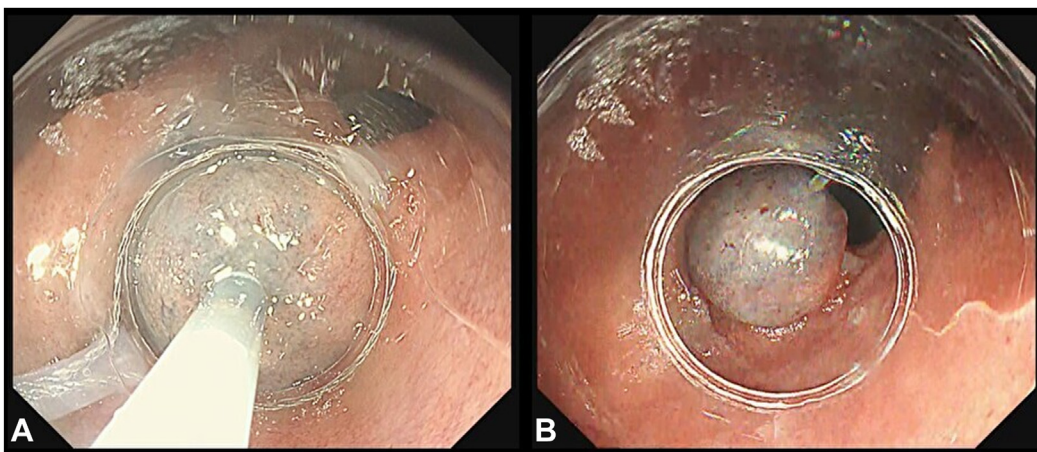


Figure 3. EMRC-II. **A**, Injection. **B**, Snaring. EMRC, Cap-EMR.

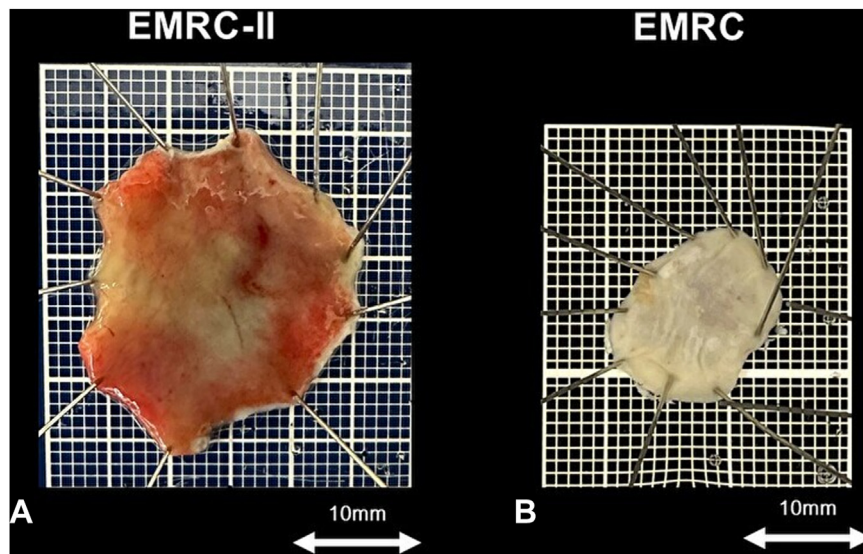


Figure 4. **A**, Specimen resected by EMRC-II. **B**, Specimen resected by EMRC. EMRC, Cap-EMR.

effectively addressed the challenges encountered in EMRC and may potentially supplant the conventional approach.

CONCLUSION

EMRC-II demonstrates effectiveness throughout the entire digestive tract, encompassing anti-reflux mucosectomy and ARM-P (Video 1, available online at www.videogie.org).

DISCLOSURE

Dr Inoue is an advisor for Olympus Corporation and TOP Corporation. He has also received education grants from Olympus Corporation. All other authors disclosed no financial relationships relevant to this publication.

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