Closure of mucosal defect with a micro-ring technique: simple, cheap, and effective

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Effective closure methods of mucosal leakage are a paramount tool for every endoscopist. They are crucial in reducing the need for surgery and allowing us to stretch the limits of interventional endoscopy. The aim of these videos is to share a simple and cheap solution to close large mucosal defects (Videos 1, available online at www.VideoGIE.org).

Many endoscopists observe adverse events like mucosal leakage. It can occur after EMR, endoscopic submucosal dissection, peroral endoscopic myotomy, or other interventional endoscopic procedures. For this reason, multiple advanced closure techniques have been developed in the past few years. Some involve the use of devices in addition to through-the-scope clips; some use other over-the-scope devices such as over-the-scope clips or over-the-scope suturing devices. In previous published reports, all of these methods proved their effectiveness.1-5 Despite that, some of them are challenging, expensive, or time consuming.

The technique we present was developed to easily manage large mucosal defects with simple tools and without any time consumption or relevant additional cost.

With a 4-0 suture strand, we created a micro-ring around one arm of a repositionable clip in 3 simple steps (Fig. 1). First, we tied a surgical knot on one arm of the clip (Fig. 2); then, we used the edge of the strand to create a loop around a support (outer sheath of a repositionable clip); finally, we removed the support. The clip and the attached micro-ring were placed in the working channel so that one side of the mucosal defect could be grasped (Fig. 3). The naked arm of the clip was placed on the ulcer side of the mucosal edge. At this point, a second clip was inserted (Fig. 4). Therefore, it was possible to engage the micro-ring and catch the opposite free edge of the defect, thereby drawing the 2 mucosal edges together; in this way they could be grasped by regular through-the-scope clips (Figs. 5 and 6). Every type of 4-0 surgical strand, and every brand of repositionable clip, can be used for this purpose.

Many advanced closure methods need a dual-channel endoscope for the insertion of 2 devices at the same time (for example, foreign body forceps or endoloop plus one clip). Unfortunately, dual-channel endoscopes are not available everywhere. To avoid this problem, in many centers a modified endoloop-assisted clip closure (so-called king closure) is performed. In fact, in practice, the endoscopist withdraws the endoscope, then inserts a repositionable clip through the scope; once the clip is placed, the endoscopist grasps the endoloop and finally reinserts the scope. This way, the endoloop can be brought in place outside the endoscope. Obviously, this approach can be time consuming in colonic defects, where the reinsertion of the colonoscope can be challenging.

In conclusion, the micro-ring is a feasible, cheap, and easy tool to achieve complete closure of large mucosal

![Figure 1. Tools needed to make a micro-ring: single-use repositionable clip + 4-0 strand.](image1)

![Figure 2. Endoscopic view of micro-ring tied on the first clip.](image2)
leakage in every tract of the GI lumen with every type of endoscope.

DISCLOSURE

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