



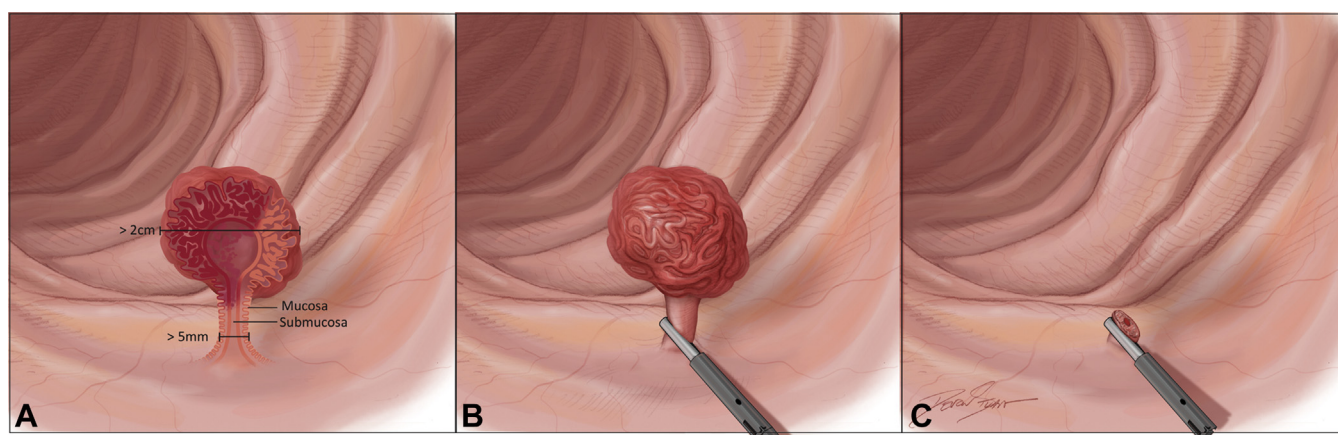
# Endoscopic resection of large Paris 0-Ip pedunculated polyps: video demonstration of recent U.S. Multi-Society Task Force recommendations on resection and removal for general endoscopists

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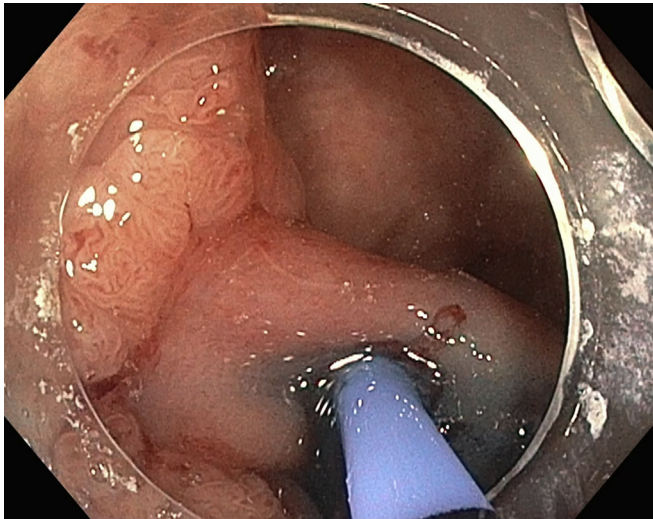
Large pedunculated polyps have several unique features that contribute to the complexity of their removal. Pedunculated polyps typically have larger feeding blood vessels in their stalk, which increases the risk of immediate and delayed postpolypectomy bleeding. In addition, maneuvering instruments around the head of very large polyps can be difficult within the confined space of the colon lumen. The 2020 U.S. Multi-Society Task Force Recommendations on the Endoscopic Removal of Colorectal Lesions have offered best practice recommendations on the resection and removal of pedunculated lesions.<sup>1</sup> Among these is the strong recommendation for prophylactic mechanical ligation of the stalk with a detachable loop or clips for pedunculated lesions with a head size  $\geq 20$  mm or stalk thickness  $\geq 5$  mm. There is also the strong recommendation for hot snare polypectomy to remove pedunculated lesions  $\geq 10$  mm. Herein, we provide examples that illustrate different techniques that can be used for the ligation and resection of pedunculated polyps as a means of video-based instruction for general endoscopists.

## GENERAL TECHNIQUE

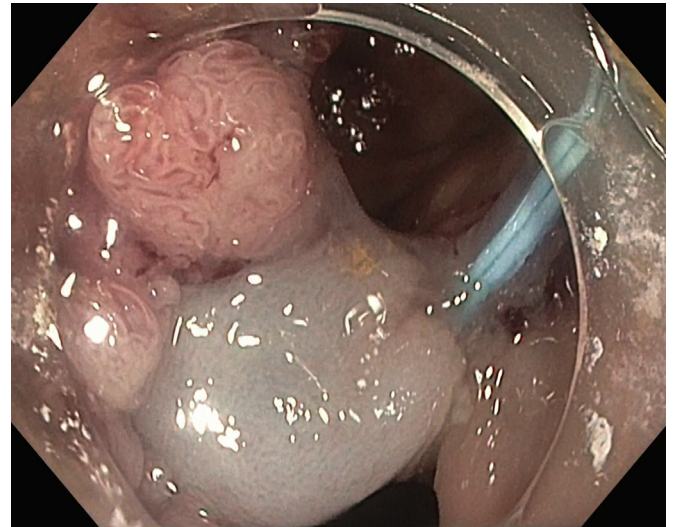
In accordance with the 2020 U.S. Multi-Society Task Force recommendations for the resection and removal of pedunculated polyps, mechanical ligation is recommended for polyps that have a head size  $\geq 20$  mm or stalk thickness  $\geq 5$  mm, as illustrated in Figure 1A. In most cases, preresection ligation is typically performed using endoscopic clips, as illustrated in Figure 1B. The effect of ligation is multifold: it reduces blood flow to the head of the polyp and causes it to shrink, aiding visualization and making it easier to maneuver devices around the head of the polyp. It also helps to decrease the risk of postpolypectomy bleeding. Resection of the polyp is then performed, as shown in Figure 1C. Care must be taken to transect the stalk at a point that allows a maximal length of stalk to remain attached to the polyp head, to ensure a clear margin from the adenomatous polyp head. This is especially important in the event that unexpected malignancy is found in the head of the polyp. Additional techniques that can be used in the resection of very large or complex pedunculated polyps are demonstrated in the following examples.



**Figure 1.** **A**, Mechanical ligation is recommended for pedunculated polyps that have a head size  $\geq 20$  mm or stalk thickness  $\geq 5$  mm. **B**, Pre-resection ligation is typically performed using endoscopic clips, which should be placed as far down the stalk and close to the colon wall as allowable. This is to ensure maximum distance from the adenomatous polyp head. **C**, Transection of the stalk is performed a few centimeters above the endoscopic clips.



**Figure 2.** Injection of epinephrine into the stalk of a pedunculated polyp to induce vasoconstriction of the feeding blood vessels.



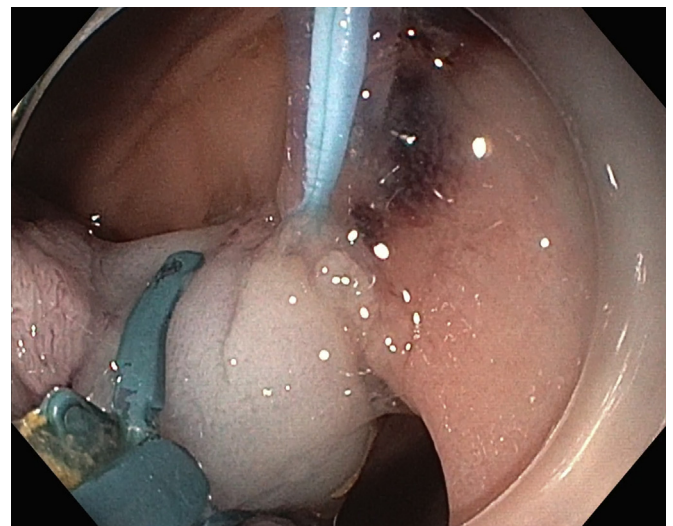
**Figure 3.** A detachable loop is secured at the base of the stalk, close to the colon wall.

### EXAMPLE 1

A large pedunculated polyp is seen in the rectosigmoid colon. The stalk is identified and injected (Fig. 2) with an EMR cocktail with epinephrine (1:1 solution of hetastarch and normal saline solution mixture with either methylene blue or indigo carmine, in addition to 0.5 mL of 1:10,000 epinephrine to 30 mL of EMR cocktail). The epinephrine in the injectate induces vasoconstriction of the feeding blood vessels, which helps to decrease blood flow to the head of the polyp and may also decrease the risk of immediate postpolypectomy bleeding.<sup>2,3</sup> After this, a loop ligating device (PolyLoop, Olympus Medical Inc, Center Valley, Pa, USA) is brought around the polyp and tightened at the base of the stalk (Fig. 3). Attention is turned toward transection of the stalk, which must be done at least a few millimeters above the loop to avoid cutting it, but at a point that allows the maximal length of stalk to remain attached to the head of the polyp to ensure clear margins from the adenomatous polyp head. Resection is performed (Fig. 4) with an articulated electrocautery knife (SB knife, Olympus Medical Inc), using EndoCut Q mode (parameters: effect 1, cut duration 1, cut interval 1). This technique is particularly helpful in situations in which the polyp head is too large for effective use of a snare.

### EXAMPLE 2

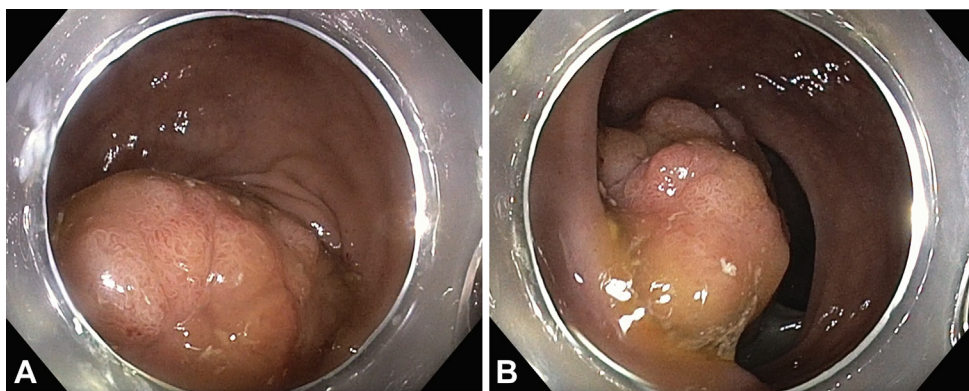
A large pedunculated polyp is encountered in the rectosigmoid colon, occupying nearly the entire lumen



**Figure 4.** Transection of the stalk with an articulated electrocautery knife. The site of transection must be at least a few millimeters above the loop to avoid cutting it, but at a point that allows the maximal length of stalk to remain attached to the head of the polyp to ensure clear margins from the adenomatous polyp head.

(Fig. 5A). The stalk of the polyp is injected with an EMR cocktail with epinephrine. The remainder of the colonoscopy is completed, and when the polyp is visualized again, it has reduced partially in size (Fig. 5B), although more significant reductions in mass size are often seen. Submucosal injection of EMR cocktail is made to lift the lesion, which is then resected en bloc using a large electrocautery snare. On evaluation of the resection site, a bleeding vessel is seen. Delayed bleeding is prevented by closing the resection area with endoscopic clips.





**Figure 5.** **A**, A large pedunculated polyp in the rectosigmoid colon, before injection of epinephrine, occupying nearly the entire lumen of the colon. **B**, The pedunculated lesion has partially decreased in size after injection of epinephrine into the stalk.

### EXAMPLE 3

A pedunculated lesion is seen in the sigmoid colon. The stalk of the polyp is inadvertently injected with too much EMR cocktail and epinephrine. As seen in this example, the initial injection can obscure subsequent visualization. A detachable loop is maneuvered around the polyp and tightened around the base. An electrocautery snare is then negotiated around the polyp. Because of poor visualization, the stalk is transected too close to the loop, causing the loop to become detached. Clipping is then applied to correct the situation ([Video 1](#), available online at [www.giejournal.org](http://www.giejournal.org)).

### DISCLOSURE

*Dr Moyer is a consultant for Boston Scientific Corp. All other authors disclosed no financial relationships.*

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<https://doi.org/10.1016/j.vgie.2021.04.012>

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