Cool it now: a new addition for resecting 10- to 14-mm polyps

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In this month’s Gastrointestinal Endoscopy, Yabuuchi et al1 present their prospective data on the safety and efficacy of cold snare EMR of polyps measuring 10 to 14 mm. The authors use a rigorous standard of “histologic complete resection,” defined by visual en bloc resection, a pathologically negative vertical margin, and no neoplastic tissue in 4-quadrant biopsy specimens taken around the resection margin. This leads to some illuminating data, and there are lessons to learn from the results. But let’s first ask an important question.

DOES EN BLOC RESECTION MATTER?

Obtaining an R0 resection has significant clinical implications in suspected or known T1 cancer but is less important in noncancerous polyps where there is no concern about being unable to determine risk of nodal spread and/or need for surgery. No invasive cancers were found in this study. Furthermore, the previously reported rate of invasive cancer in polyps this size in large studies is low (0.9%),2 so a strategy of attempting R0 en bloc resection in all polyps this size may be overkill, particularly when no surface features suggest invasion.

WHY ATTEMPT EN BLOC RESECTION IF WE DON’T SUSPECT CANCER?

The other rationale for en bloc resection is to be able to lengthen the surveillance interval. Recently published U.S. Multi-Society Task Force (USMSTF) guidelines recommend 3 years of follow-up for polyps ≥10 mm that are completely resected and 6 months for polyps ≥20 mm removed piecemeal.3 There is no specific recommendation for piecemeal resection of polyps 10 to 19 mm. The rate of recurrent neoplasia in 1 study was 18% for piecemeal hot EMR of 10- to 20-mm polyps.4 But incomplete resection occurs even when en bloc hot polypectomy is attempted, as reported in the complete adenoma resection (CARE) study, where resected polyps 10 to 14 mm had a 13.4% rate of incomplete resection, as defined by positive marginal tissue biopsy specimens.5 In that study, the rate of positive marginal tissue was lower with en bloc cold EMR in only 3 of 69 (4.3%) polyps. With either hot or cold EMR, the snare can slip along or into the polyp margin and fail to transect through normal lateral marginal tissue. Margins therefore need to be carefully inspected to ensure there is no remaining polyp, even with en bloc resection hot or cold. Any center using this strategy to guide surveillance intervals would also rely heavily on the quality of the submitted tissue and of the pathologists in reporting margin status.

HOW DID EN BLOC COLD EMR PERFORM IN THIS STUDY?

The study was powered to show noninferiority by 10% of cold snare EMR to hot snare polypectomy, which has a reported complete resection rate of 86.6%. The histologic complete resection rate was 63.8%, as defined by ability to resect en bloc cold, a pathologically negative vertical margin, and no neoplastic tissue in 4-quadrant biopsy specimens around the margin. The authors acknowledge that this may not necessarily reflect whether all neoplastic tissue was ultimately removed, inasmuch as they did not include a follow-up colonoscopy to assess for residual polyp. The exclusion of sessile serrated polyps from the study may underestimate effectiveness, given that serrated polyps are typically easier to resect cold. It was harder to cut tissue with the larger (15-mm vs 10-mm) snare, and although this could reflect snare design, I suspect it is more indicative of the difficulty in mechanically transecting a larger area of tissue, presumably because of the gathering and bunching up of muscularis mucosa and/or submucosa layers. This likely had an effect on the ability to complete
en bloc resection and may have limited the amount of captured radial margin.

**SHOULD WE WORRY ABOUT VERTICAL MARGINS?**

All cold EMR specimens contained the muscularis mucosa layer, potentially aided by submucosal lifting. Cold EMR with a lift solution containing dye will show a stained blue layer of submucosa, confirming removal of the muscularis mucosa layer, as demonstrated in this study. I routinely also add dilute epinephrine (1:500,000) to reduce background venous oozing to further improve visualization of the base to confirm complete resection. There is no concern for perforation with cold EMR, and therefore there is no clear added benefit with a colloidal solution. Although the authors could not universally confirm a negative vertical margin, this does not appear necessary for noncancerous lesions, inasmuch as removal of the muscularis mucosa is adequate for superficial mucosal lesions such as adenomas or sessile serrated polyps. For suspected superficial cancers, the difficulty in confirming negative vertical margins supports the use of cautery because it routinely cuts more deeply through the submucosal layer. Ultimately, it appears excessive to require demonstrating negative vertical margins in cold EMR of a noncancerous lesion.

**WHAT ABOUT LATERAL MARGINS?**

The authors acknowledge that biopsy of 4 margins may overestimate effectiveness resulting from sampling error. It may also underestimate effectiveness if positive margins are removed with forceps. Using this as a strategy in practice to confirm completeness of lateral margin resection is therefore simultaneously excessive and inadequate. Confirmation of a low rate of residual polyp at follow-up would add confidence in en bloc cold EMR but would not necessarily determine a priori which patients could have a longer surveillance interval. A 63.8% complete resection rate sounds low, but this appears more likely owing to difficulty in resecting some polyps en bloc cold and histologically confirming negative margins, inasmuch as marginal biopsy positivity was only 4.3%—lower than in the CARE study of hot polypectomy. Nevertheless, with the vertical margin secure, certainty in obtaining a negative lateral margin is critical. This ideally means resecting enough of a lateral margin en bloc to allow a pathologist to confirm an R0 resection. At this polyp size, it becomes more challenging, given the increasing difficulty in completely transecting larger surface areas cold. Complete cold excision may therefore be more effective by cutting a lesion in 2 or 3 smaller overlapping pieces with wide lateral margins rather than by trying to get it in one.

**COLD SNARE RESECTION IS SAFER; SHOULD THAT AFFECT STRATEGY?**

This study reaffirms that delayed bleeding is a cautery-related phenomenon. Conversion of cold EMR to hot could increase the rates of delayed bleeding. It may therefore be safer to persist in resecting a polyp cold even when it is stuck on a cord. Some strategies include partial snare release with deflection away from the colon wall and then reclosure or even releasing the snare and taking the polyp in 2 pieces. But with polyps >1 cm, it may be quicker and more effective to intentionally take it in ≥2 smaller overlapping pieces. This would avoid the snare getting stuck, reducing the temptation to convert to hot resection, and it would create a cleaner base, increasing confidence that a resection is complete.

**DO WE NEED A SHORT INTERVAL FOR SURVEILLANCE OF A 10- TO 14-MM POLYP RESECTED PIECemeAL?**

Recent USMSTF guidelines don’t specify surveillance intervals for piecemeal resection of polyps <20 mm, and the authors infer a 6-month follow-up for anything removed piecemeal. But this makes more sense when considering a 3-cm TVA than when considering an 11-mm tubular adenoma, given that the rate of cancer progression over 3 years will surely be lower for the smaller polyp, and the likelihood of complete removal piecemeal should be higher with the smaller polyp. In a study of 1031 patients, the incomplete resection rate of 10 to 20 mm nonpedunculated polyps was estimated to be 18.3%; yet, there were no interval cancers during follow-up between 6 months and 5 years. We have de facto accepted a failure rate in the teens in determining a 3-year interval. Furthermore, intentional piecemeal resection with attention to wide margins may be more likely to eliminate all polyp tissue for smaller polyps. In our study of cold EMR of polyps >10 mm, none of the 35 resected polyps <20 mm had residual polyp at follow-up. We were careful, however, to ensure that a wide lateral margin was removed at the time of cold EMR, and results from a single site should always be interpreted with caution. Guidelines are important, but so is good judgement. Deviation from a guideline for piecemeal resection in polyps in this range is predicated on good technique and the ability to assess the resection site for completeness, leaving no bridges of tissue at the base and aggressively extending lateral margins while also considering histologic aspects of the polyp. If the resection base is clean and wide margins have been resected from a 12-mm polyp, it is still likely “complete,” whether an R0 resection is histologically confirmed, and therefore surveillance beyond 6 months should be of limited concern.
STRATEGY SUGGESTIONS FOR RESECTING 10- TO 14-MM POLyps

Consider polyp characteristics and decide which strategy is most likely to yield the outcome of elimination of all neoplastic tissue.

1. If superficial cancer is suspected, then the lesion ideally should be removed en bloc with lift and hot snare resection or endoscopic submucosal dissection, ensuring negative lateral and deep margins. Cautery allows deeper resection into submucosa and gives the pathologist a clearer view of the margins. Capture a circumferential lateral margin beyond the polyp itself when using hot EMR, even at this polyp size range. If unsure, then lateral margins should be resected further.

2. Assuming there is no suspicion of cancer, consider abandoning en bloc resection in favor of piecemeal resection but with wide lateral margins. Instead of getting a questionable lateral margin with an en bloc attempt, take it in 2 or 3 overlapping pieces, each with a wide lateral margin. Given the association of cautery with adverse events, it appears more rational to do piecemeal resection with cold EMR unless new data show significantly higher efficacy with heat. Resection of lateral margins also obviates the need to take biopsy specimens from the margins to confirm complete resection. The resection will also more likely be quicker, cleaner, and with a neater base, easier to visually assess its completeness. Further resect lateral margins when in doubt.

3. Alternatively, attempt en bloc resection with cold EMR and also resect the lateral margins to ensure that no microscopic polyp tissue is left behind and potentially provide more comfort in extending the surveillance interval. As noted, although the authors report a low histologic complete resection rate, this is very likely an underestimation because of the strict criteria for complete resection, inasmuch as the rate of positive marginal tissue was only 4.3%. Removing lateral margins after en bloc cold EMR should make that rate negligible. For either piecemeal strategy to work, however, it is critical that no intervening bridges of polyp are left unresected and that lateral margins are extended liberally.

CONCLUSION

This study supports the fact that cold snare EMR is feasible for polyps 10 to 14 mm and reaffirms the safety of cold EMR, but confirmation of complete resection is a limitation. Vertical margins reliably include the muscularis mucosa, possibly aided by submucosal lifting. For noncancerous lesions, therefore, deep margins should not be a concern. However, lateral margins may still be an issue—a fact that is true for both hot and cold EMR of polyps this size. Therefore, if a strategy of attempted en bloc cold EMR of a polyp 10 to 14 mm is used, consider extending the margins laterally with a cold snare. Alternatively, consider intentionally taking the polyp out in piecemeal with wide lateral margins. The design of this study focuses on confirmation of complete resection at the time of EMR as a marker for success, but the more important marker is confirmation of complete resection by showing no neoplastic tissue at follow-up. I suspect this is more easily attainable with piecemeal cold EMR but with wide lateral margins. More prospective data would be helpful to alter the guidelines for surveillance intervals, including assessment of residual polyp after piecemeal cold EMR of polyps <2 cm.

DISCLOSURE

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Abbreviations: CARE, complete adenoma resection; USMSTF, U.S. Multi-Society Task Force.

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