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Resection depth: a very important advantage for underwater EMR

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Bibliography
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This paper compared the histopathological results of consecutive cases of 6- to 9-mm definite benign tumors resected by cold snare polypectomy (CSP), hot snare polypectomy (HSP), or underwater endoscopic mucosal resection (UEMR) by two endoscopists at one institution. The authors assessed whether the specimens contained muscularis mucosa (MM) and submucosal (SM) tissues and measured the thickness from the MM to the vertical resection margin of SM tissue at the center of the resected specimens.

Although this was a retrospective study with limitations, such as the lack of tissue stretching, the results are significant in that they show the superiority of UEMR [1, 2] in that the MM to SM layer can be sufficiently resected compared to CSP and HSP.

The results of this study suggest that UEMR should be the treatment of choice for patients with suspected cancer (high-grade dysplasia in Western Europe), i. e., JNET [3–5] type 2B or Pit pattern type V lesions [6], rather than CSP or HSP.

The question that arises is whether UEMR can provide the same SM layer as conventional EMR with saline injection into the SM layer. Although the authors excluded EMR from their study because EMR, unlike other resection methods, requires local injection, what is of real interest is the comparison between UEMR and EMR when treating early cancers.

Recent meta-analyses [7, 8] and one randomized controlled trial (RCT) [9] have demonstrated both the superior efficacy of UEMR over CEMR regarding R0 resection rate for colorectal polyps and shorter resection time. However, few published RCTs have evaluated whether there is an advantage to using UEMR over CEMR for colorectal polyps ≥ 20 mm in diameter, when *en bloc* CEMR would be difficult. The result from the RCT by Nagl et al [1], comparing UEMR with CEMR for colorectal polyps larger than 20 mm in diameter, is highly significant. The secondary outcomes of *en bloc* and R0 resection rates were both higher in UEMR compared with CEMR, which demonstrated the technical superiority of UEMR compared with CEMR. One of the limitations observed was that the higher *en bloc* and R0 resection rates for UEMR compared with CEMR were driven mainly by the subgroup of polyps with diameters of ≥ 20 to ≤ 30 mm in size, and such results were limited to this size range.

Recently, Takeuchi et al. published a review on UEMR [10]. According to their review, UEMR is recommended for lesions < 2 cm in size due to its *en bloc* resection rate and lower complication, however, further study will be needed for lesions > 2 cm because of the limited data from only one single-center RCT.

Early-stage cancers > 20 mm in diameter, which are usually difficult to resect *en bloc* by conventional EMR, must be resected *en bloc* by endoscopic submucosal dissection (ESD) [11, 12].

There is concern that ESD may result in a thinner SM layer compared to EMR. Unfortunately, many of the lesions amenable to ESD are difficult to resect *en bloc* with EMR, making comparative studies between the two difficult to perform [13].

However, the advantage of ESD is that the depth of dissection can be adjusted.

Therefore, when ESD is performed by an expert, the submucosal layer can be opened firmly with a short type ST hood [14], and cutting line can be targeted above the muscular layer to ensure diagnostic treatment of lesions that are clinically suspected to be T1.

We currently choose an additional SM injection even with underwater conditions when we suspect cancer, including in-

tramucosal disease. This is because we want to ensure a sufficiently deep margin for cancer treatment.

One of the reasons for recommending UEMR over CEMR is that it is difficult to achieve proper SM injection with CEMR. In this regard, the SM layer is expanded with underwater conditions, which may facilitate proper SM injection.

In fact, when a lesion is injected underwater, the SM layer is further raised sufficiently, and snaring underneath the SM provides a sufficient margin. Despite the labor and cost of SM injection, it may be a good technique for lesions that are suspicious for cancer.

Although the evidence is not high in these expert limited cases compared to RCTs, we would like to have more data on the depth of resection between UEMR and underwater and inject EMR in the future. Also, it may be necessary to collect data about UEMR on the depth of resection according to the tumor gross type, as non-polypoid-type lesions often has poor SM lifting.

Conclusions

In summary, the authors found that UEMR is superior to CSP and HSP in terms of depth of resection. However, whether UEMR is sufficient for lesions suspected of being cancer will require comparative data with underwater and inject EMR.

Competing interests

The authors declare that they have no conflict of interest.

References

[1] Nagl S, Ebigbo A, Goelder SK et al. Underwater vs conventional endoscopic mucosal resection of large sessile or flat colorectal polyps: a prospective randomized controlled trial. Gastroenterology 2021; 161: 1460–1474.e1

[2] Saito Y, Ono A. underwater endoscopic mucosal resection for colorectal lesions: a bridge between conventional endoscopic mucosal resection and endoscopic submucosal dissection. Gastroenterology 2021; 161: 1369–1371

[3] Kobayashi S, Yamada M, Takamaru H et al. Diagnostic yield of the Japan NBI Expert Team (JNET) classification for endoscopic diagnosis of superficial colorectal neoplasms in a large-scale clinical practice database. United European Gastroenterol J 2019; 7: 914–923

[4] Sakamoto T, Takamaru H, Sekiguchi M et al. Reliability of Japan Narrow-Band Imaging Expert Team Classification for the diagnosis of colorectal neoplasms: a pilot study. Digestion 2020; 101: 638–643

[5] Iwatate M, Sano Y, Tanaka S et al. Validation study for development of the Japan NBI Expert Team classification of colorectal lesions. Dig Endosc 2018; 30: 642–651

[6] Matsuda T, Fujii T, Saito Y et al. Efficacy of the invasive/non-invasive pattern by magnifying chromoendoscopy to estimate the depth of invasion of early colorectal neoplasms. Am J Gastroenterol 2008; 103: 2700–2706

[7] Choi AY, Moosvi Z, Shah S et al. Underwater versus conventional EMR for colorectal polyps: systematic review and meta-analysis. Gastrointest Endosc 2021; 93: 378–389

[8] Garg R, Singh A, Mohan BP et al. Underwater versus conventional endoscopic mucosal resection for colorectal lesions: a systematic review and meta-analysis. Endosc Int Open 2020; 8: E1884–E1894

[9] Yamashina T, Uedo N, Akasaka T et al. Comparison of underwater vs conventional endoscopic mucosal resection of intermediate-size colorectal polyps. Gastroenterology 2019; 157: 451–461.e2

[10] Takeuchi Y, Shichijo S, Uedo N et al. Underwater endoscopic mucosal resection for colorectal lesions: Can it be an “underwater” revolution? Endosc Int Open 2022; 2: E84

[11] Saito Y, Abe S, Inoue H et al. How to perform a high-quality endoscopic submucosal dissection. gastroenterology 2021; 161: 405–410

[12] Saito Y, Uraoka T, Yamaguchi Y et al. A prospective, multicenter study of 1111 colorectal endoscopic submucosal dissections (with video). Gastrointest Endosc 2010; 72: 1217–1225

[13] Tanaka S, Kashida H, Saito Y et al. Japan Gastroenterological Endoscopy Society guidelines for colorectal endoscopic submucosal dissection/endoscopic mucosal resection. Dig Endosc 2020; 32: 219–239

[14] Saito Y, Sylvia Wu SY, Ego M et al. Colorectal endoscopic submucosal dissection with use of a bipolar and insulated tip knife. VideoGIE 2019; 4: 314–318