EDITORIAL

Clin Endosc 2022;55:753-754
https://doi.org/10.5946/ce.2022.266
pISSN: 2234-2400 • eISSN: 2234-2443

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Need for careful endoscopic evaluation of large gastric neoplasms before endoscopic submucosal dissection

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See "Underestimation of endoscopic size in large gastric epithelial neoplasms" by Jae Sun Song, Byung Sun Kim, Min A Yang, et al., on page 760–766.

Accurate size measurement is essential for selecting patients suitable for undergoing endoscopic resection for early gastric cancer, as the treatment guidelines include size criteria.[1,2] In addition, to reduce postprocedural adverse events, the extent of resection in endoscopic submucosal dissection should be as small as curatively possible.[3] Therefore, it is important to accurately measure the size by identifying the exact margins of a lesion. Lesion size may be underestimated or overestimated during endoscopy. Lesion underestimation can lead to incomplete resection due to horizontal resection margin involvement, on the other hand, lesion overestimation can lead to unnecessary surgery despite the possibility of curative endoscopic resection.[4]

To date, there is no reliable method for accurately measuring the size of gastric neoplasms. Endoscopic vision and the use of biopsy forceps, rulers, or discs of known size remain the most commonly used methods for size measurement; however, the accuracy of these methods is not high.[5] The size of the object on the monitor changes with the distance between the endoscope tip and the object. Thus, it is difficult to determine the exact size using only the two-dimensional endoscopic image, because of the lack of distance information. In addition, because the objective lens of the endoscopic image sensor has a fisheye-like structure allowing observation of the gastrointestinal tract with a wide field of view, the image is distorted; thus, the actual size and image size differ between the central and peripheral parts.[6] Recently, new methods including novel endoscopic systems and artificial intelligence have been reported to be helpful in measuring lesion size and delineating their margins.[7,8]

In the current issue of *Clinical Endoscopy*, Song et al.[9] prospectively evaluated the size discrepancy between pre- and post-formalin fixation and the risk factors for underestimation of lesion size. They included 69 lesions from 64 patients diagnosed with gastric adenoma or adenocarcinoma, and analyzed the factors influencing size discrepancy. Unlike previous studies, the sizes of the pre-fixation lesions were measured with the tissue specimens pinned on the plate after endoscopic resection. The accuracy of the size measurement using this method might be improved compared with the size measurement during endoscopy. They found that lesions larger than 20 mm could be underestimated, similar to the results of previous retrospective studies.[3,10] Lesions measuring >20 mm were 8.65 times more likely to have increased size after fixation than lesions <20 mm. Considering that the size decreased after formalin fixation, the difference between pre- and post-fixation was small in lesions >20 mm in size. Thus, these results supported that underesti-

Received: September 26, 2022 **Revised:** November 5, 2022
Accepted: November 12, 2022

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mation occurred predominantly in large lesions. Shim et al.[10] reported that flat/depressed type lesions, larger lesion size, and undifferentiated-type histology were risk factors for endoscopic size underestimation; cases with these factors had significantly lower complete resection and curative resection rates compared with the well-estimated group. Asada-Hirayama et al.[3] reported that the presence of flat component, large size, and predominant histologic findings of moderately differentiated adenocarcinoma were associated with inaccurate endoscopic evaluation. In cases of larger size, tumor margins may not be accurately determined because the entire lesion cannot be included in one field of view.[3] In addition, large lesions may be accompanied by large areas of intestinal metaplasia, making it difficult to determine their boundaries. Therefore, it is necessary to observe lesions very carefully when performing endoscopic submucosal dissection for large lesions because of the risk of size underestimation. As Song et al.[9] mentioned, the small sample size, analysis of the long axis alone, and subjectivity due to measurement of the lesion size by a single endoscopist were the limitations of this study. The lack of analysis of undifferentiated-type cancers is another limitation. Despite these limitations, this study is meaningful because no prospective study has investigated differences in lesion size before and after formalin fixation. In the future, further large-scale prospective studies including undifferentiated-type cancers and research to minimize size discrepancy or improve the method of size measurement will be needed.

Conflicts of Interest

The author has no potential conflicts of interest.

Funding

None.

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