independently associated with risk of recurrence, the patient cohort was small, and studies have shown substantial interobserver variability in assessing pathologic risk factors. These findings need validation within larger-scale studies.

Future work should focus on innovative methods to identify patients with residual disease and risk of recurrence after endoscopic therapy. A promising approach might be to use liquid biomarkers, such as circulating tumor DNA, which has shown encouraging results for the detection of residual disease in advanced esophageal cancer after treatment.⁵ It is clear that defining the best therapy for patients with early-stage disease remains challenging and that we urgently need new navigation tools to prevent us from hitting the iceberg.

See Article page 1951.

Commentary: Endoscopic treatment is the key for superficial esophageal squamous cell neoplasia

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Wang and colleagues¹ retrospectively reviewed 210 patients with superficial esophageal squamous cell neoplasia (SESCN) who were treated by endoscopic submucosal dissection (ESD) between 2009 and 2017. There were 185 patients who received curative ESD, namely, R0 resection, no deep submucosal invasion, and no lymphovascular invasion. The investigators found that ductal involvement was a

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CENTRAL MESSAGE

Traditional esophagectomy should be selected carefully for superficial esophageal cancer. Thorough examinations and full multidisciplinary discussion should be performed to select appropriate patients.

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poor prognostic factor for patients with SESCEN treated by ESD. I strongly support ESD treatment for SESCEN.

A BRIEF HISTORY OF TREATMENT FOR EARLY ESOPHAGEAL CANCER

Traditional esophagectomy has a 100-year history, and it has been the principal treatment for superficial esophageal

cancer before the advent of endoscopic treatment. Esophagectomy is major surgery. Even with the help of minimally invasive techniques such as thoracoscopy and laparoscopy, esophagectomy is still associated with considerable trauma. The development of esophageal cancer surgery has high requirements for the hospital platform, namely, multidisciplinary comprehensive strengths in oncology and life support to ensure intraoperative and perioperative safety. In addition, esophageal cancer surgery places high demands on the surgical department (well-trained surgeon team) and the surgeons (the technique of esophagectomy is difficult to master, and substantial knowledge of anatomy/physiology and rigorous training experience are needed to surmount the learning curve). Esophagectomy also demands much from patients; only patients with enough anatomic and functional reserve of important organs can tolerate the surgery. After surgery, patients must live through different degrees of life-quality problems and long-term recovery. Therefore, it is not difficult to see that esophagectomy is a high-risk operation with large trauma, high mortality, and high rates of complications. Unfortunately, in the recent past, even the treatment of early esophageal cancer described in this article performed by traditional esophagectomy has brought sizable unnecessary physiological and psychological burden to patients. Therefore, doctors and patients should be cautious about the implementation of traditional esophagectomy for early esophageal cancer. All medical workers and disciplines related to esophageal cancer should ensure careful preoperative evaluation for early esophageal cancer and strive for any opportunity to use endoscopic treatment.

MODERN ENDOSCOPIC TREATMENT FOR EARLY ESOPHAGEAL SQUAMOUS CELL CARCINOMA

It had been more than 30 years since Inoue performed the first endoscopic resection (ER) for early cancer in the esophagus.² Endoscopic resection is curative for superficial esophageal squamous cell cancer when there is minimal risk of lymph node metastasis. Cancer invasion depth correlates well with the risk of metastasis and curability by resection; the rate of lymph node metastasis for M1 (disease confined to the epithelium) and M2 (disease confined to lamina propria) was 0% and 3.3%, respectively. With M3 (tumor involving the muscularis mucosae), the risk of lymph node metastasis increased significantly to 10.2%, and with SM1 (superficial third of submucosa) the risk increased to 26.5%.³ ER techniques consist of 2 main types, endoscopic mucosal resection and ESD. Endoscopic mucosal resection can be performed with a transparent cap that has a rim in which a snare can be placed. With the ER cap, the mucosa is lifted with a submucosal injection and sucked into the cap and snared. More recently, a multi-band mucosectomy technique was performed with the help

of caps with preloaded rubber bands. With multiband mucosectomy, the lesion is sucked into the cap and a rubber band is fired; then, the created pseudo-polyp can be snared. When the lesion is larger than 2 cm, only piecemeal resection can be performed, and the lateral margins of the removed lesion cannot be accessed.

The ESD is a technique to remove lesions by dissecting the submucosal plane. With the ESD technique, larger lesions can be resected en bloc, and this technique offers more information about complete oncologic resection. Because of the relatively high rate of lymph node metastasis for SESCC, en bloc resection is mandatory to ensure accurate histopathologic analysis; therefore, according to multiple guidelines, ESD is the preferred resection method for SESCC.^{4,5} In sum, at the technical level, endoscopy has been used to treat superficial esophageal cancer, and endoscopy has achieved good results. However, efficacy depends on the biological characteristics of the tumor. Therefore, it is important to fully understand the characteristics of patient's disease to make correct treatment decisions.

Careful Preoperative Evaluation

The definition of superficial esophageal cancer lies in "superficial." The decisive factor for treating superficial esophageal cancer also lies in "superficial." All possible examinations should be used as the basis of whether ESD treatment is appropriate for "superficial esophageal cancer." First, an examination should be performed by magnifying endoscopy, which is generally referred to as image enhanced endoscopy and includes narrow-band light by Olympus or BLI and LCI by Fuji. Second, computed tomography, endoscopic ultrasonography, and positron emission tomography should also be performed, so that undertreatment caused by "underdiagnosis" (persons who should undergo surgery mistakenly had ESD) or overtreatment (persons who should be treated by ESD) attributed to insufficient examination.

Emphasis on Complete Resection Including Submucosa

In ESD treatment for superficial esophageal cancer, the resection range in the vertical direction is close to the surface of muscle layer and includes all submucosa to the extent possible, so that possible ductal involvement is removed completely. With a goal of curative treatment, it is imperative for clinicians to perform a comprehensive pathologic examination to avoid undertreatment.

Careful Examination of the Resected Tissues

Many factors affect the prognosis of superficial esophageal cancer after ESD, but, after ESD, a key step is detailed examination of specimens for the marginal status, depth of invasion, tumor length, circumferential invasion, lymphovascular invasion, and ductal involvement. Even if the

mechanism of ductal involvement is unclear, according to the authors' research, the incorporation of ductal involvement in multivariate analysis of early esophageal cancer after ESD has added a certain clinical reference value.

THE SIGNIFICANCE OF DUCTAL INVOLVEMENT IN SUPERFICIAL ESOPHAGEAL CANCER

The concept of ductal involvement first appeared in the study of cervical cancer when it was observed in conization specimens of cervical intraepithelial neoplasia (CIN) lesions to distinguish CIN from invasive cancer. However, the presence of ductal involvement in CIN is not a proven prognostic factor. Even for T1a cervical cancer that is beyond the scope of the basal membrane, ductal involvement is not a risk factor for patients after conization, and its clinical value in the prognosis of cervical cancer cannot be compared with the commonly used indicators such as marginal status, invasion depth, and vascular cancer emboli. Therefore, the contribution of ductal involvement is not clear in the prognostic evaluation and treatment guidance of early cervical cancer. Evaluation of patient survival is also needed to finally determine the clinical significance of ductal involvement in esophageal cancer.

In summary, traditional esophagectomy should be selected carefully for superficial esophageal cancer. Before

treatment, examination and evaluation should be performed by as many methods and means as possible, and full multidisciplinary discussion should be conducted to select appropriate patients and strive for maximum treatment benefit. The surgery should be performed carefully and skillfully to avoid major complications. In case of potentially fatal complications, the surgical team needs to intervene in time to ensure the safety of patients during treatment. After the surgery, the resected specimens should be carefully evaluated to determine the probability of postoperative recurrence and metastasis, and the patients should have regular follow-up for life in the event that traditional surgical treatment is necessary later.

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