An effective technique for delivery of polyglycolic acid sheet after endoscopic submucosal dissection of the esophagus: the clip and pull method

Endoscopic submucosal dissection (ESD) is currently accepted as an established method of treatment for esophageal superficial neoplasms, although it is associated with some complications [1]. Polyglycolic acid (PGA) sheet (Neoveil; Gunze Co., Kyoto, Japan) is an absorbable reinforcement material that has been used for reinforcing the surgical suture to prevent leakage [2]. It has also been reported to be effective in shielding the artificial ulcer after ESD thus preventing perforation or bleeding [3, 4]. However, shielding artificial ulcers is technically difficult especially in the esophagus due to its narrowness. This report describes a novel technique that enables rapid and easy shielding of the esophageal artificial ulcer. A 69-year-old man underwent ESD for two large neighboring lesions in the middle part of the esophagus. Because the post-ESD artificial ulcer extended to over three-quarters of the circumference and was over 8 cm in longitudinal length (Fig. 1), we decided to shield it with a large PGA sheet using a novel delivery and deployment technique – the “clip and pull method” (Fig. 2 and Fig. 3). After successful deployment of the PGA sheet over the artificial ulcer, the procedure was completed by spraying the area with fibrin glue (Beriplast P combi-set; CSL Behring Pharma, Tokyo, Japan), resulting in an artificial ulcer that was totally shielded in PGA sheet (Fig. 4).

The patient recovered well after curative ESD without any complications, including bleeding or perforation, and was discharged on the 7th day. Although he underwent balloon dilation at follow-up endoscopy on the 22nd day after ESD because an endoscope did not pass through a mild stricture, he had not complained of any symptoms of dysphagia until the follow-up endoscopy. The artificial ulcer had...
been re-epithelialized with little reduction in the size of the ulcer bed (\textcircled{F}ig. 5). This simple and effective method can be useful in shielding esophageal artificial ulcers in order to prevent complications including bleeding, perforation, and, potentially, postoperative stricture.

\textbf{Fig. 3} Clipping the anal side mucosa of the artificial ulcer and the anal edge of the polyglycolic acid (PGA) sheet together to anchor the PGA sheet.

\textbf{Fig. 4} After using the “clip and pull method,” the polyglycolic acid sheet shielded the whole artificial ulcer, which was more than three-quarters of the circumferential extension.

\textbf{Fig. 5} The follow-up endoscopy revealed re-epithelialized artificial ulcer with little reduction in size of the ulcer bed.

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\textbf{Satoshi Ono\textsuperscript{1,2}, Yosuke Tsuji\textsuperscript{2}, Mitsuhiro Fujishiro\textsuperscript{2,3}, Shinya Kodashima\textsuperscript{2}, Nobutake Yamamichi\textsuperscript{2}, Kazuhiko Koike\textsuperscript{2}}

\textsuperscript{1} Center for Epidemiology and Preventive Medicine, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan
\textsuperscript{2} Department of Gastroenterology, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan
\textsuperscript{3} Department of Endoscopy and Endoscopic Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

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\textbf{Corresponding author}

\textbf{Satoshi Ono, MD, PhD}
Center for Epidemiology and Preventive Medicine
Graduate School of Medicine
The University of Tokyo
7-3-1 Hongo, Bunkyo-ku
Tokyo
Japan
Fax: +81-3-58008806
satoshi-dky@umin.ac.jp