Innovative delivery method using a detachable device to deliver a large polyglycolic acid sheet to a gastric ulcer perforation

Many reports have indicated the efficacy of polyglycolic acid (PGA) sheets with fibrin glue for the treatment of perforations or preventing stricture following endoscopic submucosal dissection (ESD) [1, 2]. However, the delivery method of such a thin membrane such as the PGA sheet (especially large sheets) into the stomach without getting wet has not been reported.

An 89-year-old woman was diagnosed with early gastric cancer. Following endoscopic submucosal dissection, a perforation was induced by cytomegalovirus infection (Fig. 1a), and accompanied by severe immune suppression due to oral administration of methotrexate for rheumatoid arthritis. A drip infusion of ganciclovir was administered for the infection.

For treatment of the perforation, we developed a novel detachable device to deliver a large, 16 cm² PGA sheet to completely cover the perforation (Video 1).

Two balloons (endoscopic injection sclerotherapy balloons, 11 mm in diameter, 50 mm in length; TOP Co., Tokyo, Japan) were connected by sewing together. Drip infusion of ganciclovir was administered for the infection. The post-ESD ulcer floor perforation was induced by cytomegalovirus infection. Two balloons (endoscopic injection sclerotherapy balloons) were sewn together to connect them and to create a sealed space. A nasolaryngeal endoscope (5 mm) was inserted through the balloons (11 mm), leaving a 3 mm concentric circular gap, into which the PGA sheet was placed. Insufflation of air into the balloons resulted in the PGA sheet being completely sealed at the junction of the two balloons. In the stomach, the balloons were deflated and the endoscope was retracted, leaving the balloons with the PGA sheet at the perforation site. The PGA sheet was then placed over the perforation site. This novel delivery system allowed the large PGA sheet to be delivered to the perforation site without getting wet.
A nasal endoscope (5 mm in diameter) was inserted through the balloons, leaving a 3 mm diameter concentric circular gap, into which the PGA sheet was placed. Insufflation of air into the balloons (red arrows) resulted in the PGA sheet being completely sealed at the junction of the two balloons (yellow circle).
References


Bibliography

DOI https://doi.org/10.1055/s-0043-105573
Endoscopy 2017; 49: E165–E167
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

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