

A basic study of the effect of the shielding method with polyglycolic acid fabric and fibrin glue after endoscopic submucosal dissection.

Authors: Hiroyuki T., Kohki Y., Hiroe M., Tsunehito H., Rie A., Shota T., Hiroko T., Yuki O., Takagi T., Kengo T., Takashi T., Hideyuki K., Hideki T., Akeo H.

Publication Date: 2016

Abstract:

Background and study aims: Recently, the shielding method with polyglycolic acid (PGA) fabric and fibrin glue (P-F method) has been reported to prevent serious complications after endoscopic submucosal dissection (ESD). However, the effectiveness and mechanism to prevent complications by this method remain unclear and the corresponding basic research has not been fully conducted.

Methods and results: We examined the effectiveness and mechanism of the P-F method, using a surgical ESD model of canine stomach and in vitro experiments. In the model experiment treated by P-F method or no treatment (control), ulcer perforation or penetration occurred only in the control group, but not in the P-F group. Microscopically, the P-F group showed less damages of the ulcer lesion than that of the control group, showing thicker granulation tissues including PGA fibers on the third day and excellent mucosal regeneration on the fourteenth day. In vitro culture experiments showed that fibroblasts proliferated at a significantly higher rate on PGA than on fibrin or a complex thereof. However, under hydrochloric acid treatment, fibroblasts were protected by fibrin, followed by the complex of both, and PGA. Conclusion: The P-F method exhibited a protective effect against gastric juice by fibrin glue to reduce tissue damages and a scaffold function of PGA fabric to induce better granulation formation at the earlier phase, resulting in excellent long-term tissue repair, on ulcer lesion following ESD, although the results were based on basic experiments.

Copyright © Georg Thieme Verlag KG Stuttgart New York.