Tissue shielding with polyglycolic acid sheets and fibrin glue on ulcers induced by endoscopic submucosal dissection in a porcine model.

Authors: Takao T., Takegawa Y., Shinya N., Tsudomi K., Oka S., Ono H.

Publication Date: 2015

Abstract:

Background and study aims: The safety and efficacy of the application of polyglycolic acid (PGA) sheets with fibrin glue to ulcers induced by endoscopic submucosal dissection (ESD) have not been established in the treatment of lesions of the gastrointestinal tract, in which the influence of digestive fluid and peristalsis may affect treatment, and there may also be a risk of infection. The aims of this study were to evaluate the healing process of ESD-induced ulcers in animals treated with the application of a PGA sheet with fibrin glue and to verify experimentally the safety of this treatment procedure. Materials and methods: Gastric ESD was performed in nine pigs under general anesthesia. Two ulcer sites were prepared in each pig; one ulcer was treated by applying a PGA sheet with fibrin glue (treated ulcer site), while the other ulcer was left untreated (control ulcer site). Three pigs were euthanized at week 1, three at week 4, and three at week 8 after ESD, and the ulcer sites were macroscopically and histopathologically evaluated. Results: Of the nine treated ulcer sites, seven ulcer sites, to which a PGA sheet had been applied without exposure to the mucosal fluid, showed no peeling of the sheet despite the influence of peristalsis and gastric acid. Histopathologic examination revealed abundant, newly formed blood vessels in the treated ulcers and good granulation. In the treated ulcers, no excessive inflammation, necrosis, or infection was observed. Conclusions: Our animal study experimentally demonstrated that this treatment technique can be safely applied to ESD-induced ulcers.