Use of a self-assembling peptide to control complications associated with endoscopic balloon dilation of refractory anastomotic stricture

PuraStat (3-D Matrix, Tokyo, Japan) is a novel self-assembling peptide hydrogel developed as a hemostatic agent that is believed to be effective in reducing the risk of delayed perforation due to excessive cautery burns [1–3]. Additionally, studies in animal models have suggested the potential of PuraStat for preventing esophageal strictures after endoscopic submucosal dissection for esophageal cancer [4, 5]. In this report, we present a case in which the self-assembling peptide gel effectively managed esophageal stricture and safely addressed complications related to endoscopic balloon dilation (EBD) (▶Video 1).

The patient was a 71-year-old man who developed a severe anastomotic stricture after esophagogastrostomy for esophageal cancer. EBD for the stenosis was performed repeatedly every 2 months after surgery, but no improvement was observed (▶Fig. 1a).

The 23rd EBD was performed to 12 mm (8 atm) using multistage dilation balloons (Micro-Tech, Nanjing, China) as usual (▶Fig. 1b). Immediately after deflation, active bleeding was observed.

The bleeding source was on the posterior wall and submerged due to gravity which made it difficult to identify; the wound appeared to be deep (▶Fig. 1c). Given the complexity and risk of alternative hemostasis methods, we applied PuraStat achieving hemostasis in approximately 1 minute (▶Fig. 2).

▶Fig. 1 a Anastomotic stricture following esophagogastrostomy. b The stricture was dilated to 12 mm (8 atm) using EBD. c Identification of the bleeding source was challenging.

▶Fig. 2 a Application of PuraStat self-assembling peptide hydrogel allows simultaneous visualization and hemostasis (arrows). b Application of pressure at the bleeding site to create a bulge. c Complete cessation of bleeding within approximately 1 minute.

▶Fig. 3 Gradual improvement of the stricture following the use of the self-assembling peptide hydrogel. a Before application. b After introduction of PuraStat.
Despite the persistent and challenging nature of the stricture, it gradually improved, and the frequency of EBD procedures decreased significantly after the introduction of PuraStat. The use of PuraStat as a wound dressing during EBD procedures appeared to enhance esophageal wound healing, delaying the stricture formation process (▶ Fig. 3).

In conclusion, our experience indicates that PuraStat may contribute to the prevention of re-stenosis after EBD for refractory postoperative stricture. PuraStat is suggested to be a valuable and safe option for managing not only bleeding prevention but also postoperative stricture.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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