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

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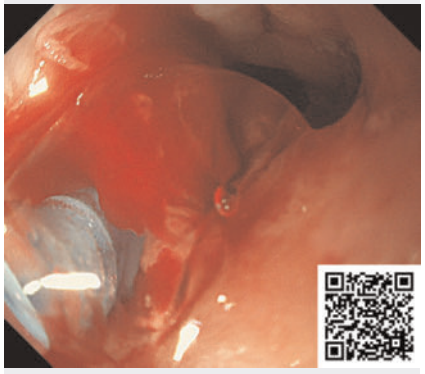
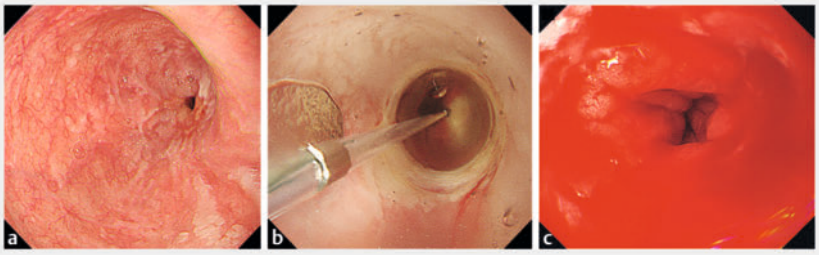


Video 1 A self-assembling peptide hydrogel is used to control complications associated with endoscopic balloon dilation of refractory anastomotic stricture.

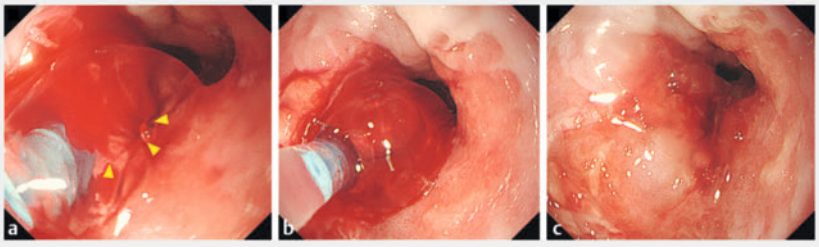
PuraStat (3-D Matrix, Tokyo, Japan) is a novel self-assembling peptide hydrogel developed as a hemostatic agent that is believed to be effective in reducing the risk of delayed perforation due to excessive cautery burns [1–3]. Additionally, studies in animal models have suggested the potential of PuraStat 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. 1 a**).

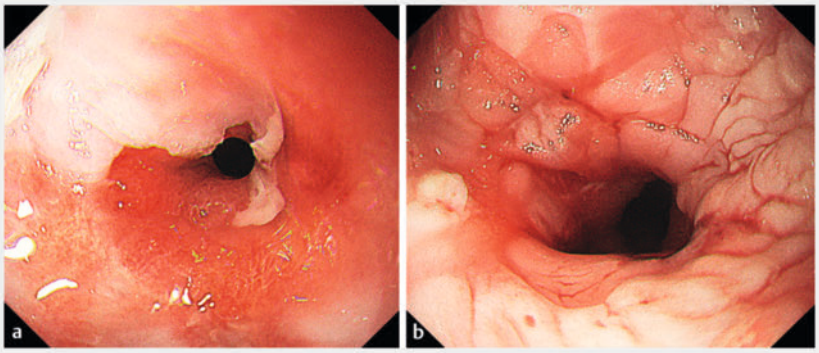
The 23rd EBD was performed to 12 mm (8 atm) using multistage dilation balloons (Micro-Tech, Nanjing, China) as usual (▶ **Fig. 1 b**). Immediately after deflation, active bleeding was observed.



▶ **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.

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. 1 c**). Given the complexity and risk of alternative hemostasis methods, we applied PuraStat achieving hemostasis in approximately 1 minute (▶ **Fig. 2**).

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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