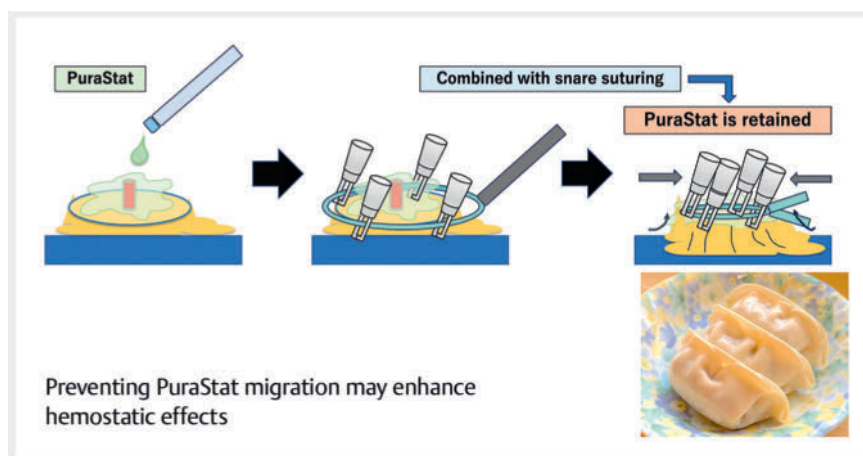


# The “Dumpling method:” Novel technique for preventing PuraStat migration and enhancing hemostasis

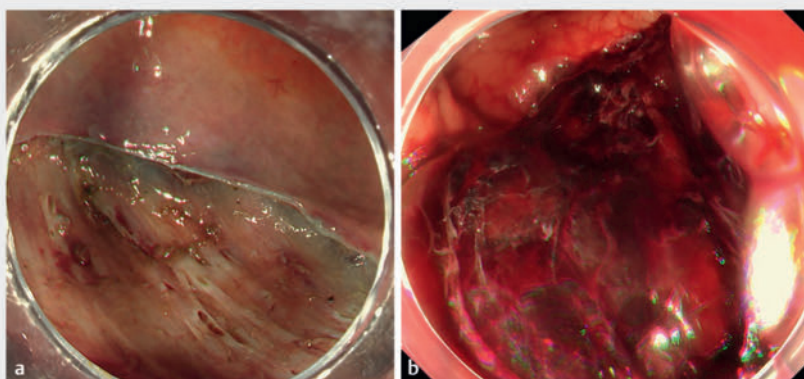
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Endoscopic submucosal dissection (ESD) is a minimally invasive and curative treatment for early-stage gastric cancer. However, post-ESD bleeding is sometimes challenging to stop. Therefore, an effective method to enhance hemostasis is needed. A self-assembling peptide hemostatic gel (PuraStat; 3 D Matrix Europe SAS, Caluire et Cuire, France) recently became available in Japan. PuraStat induces hemostasis during ESD, considerably reducing the required hemostatic procedures [1]. It gels when applied to the bottom of a post-ESD ulcer, coating the bleeding point and applying physical pressure, and may promote wound epithelialization. However, ulcer location and peristalsis of the gastrointestinal tract may cause early migration of PuraStat, resulting in inadequate hemostasis. Methods to prevent PuraStat dislocation during endoscopic sphincterotomy bleeding have been reported, but not in gastrointestinal endoscopy [2]. Herein, we describe a case of effective hemostasis using the novel “Dumpling method” technique, combined with snare suturing to prevent PuraStat migration (► Fig. 1).

A 74-year-old man was admitted to our hospital for ESD to resect an early-stage gastric tumor. The procedure was successfully performed without complications (► Fig. 2a). However, post-ESD bleeding occurred on postoperative Day 5 (► Fig. 2b). Endoscopic hemostasis was immediately performed using radiofrequency coagulation hemostasis to stop the bleeding. However, the patient repeatedly rebled twice after 2 and 3 days, and complete hemostasis could not be achieved. A case of hemostasis using PureStat in a lesion with delayed bleeding after suturing a post-ESD ulcer was previously reported [3]. Therefore, we thoroughly applied PuraStat to the post-ESD ulcer to ensure hemostasis. We subsequently sutured the post-ESD ulcer using an indwelling snare and clip



► Fig. 1 The “Dumpling method,” involving suturing the ulcer after using PuraStat.



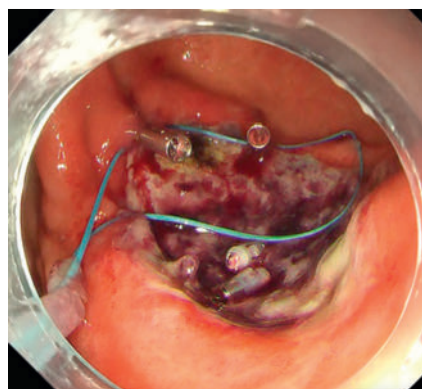
► Fig. 2 Endoscopic images showing post-ESD ulcer and bleeding. a Endoscopic image obtained immediately after ESD. b Post-ESD bleeding 2 days later.

(► Fig. 3, ► Fig. 4, ► Fig. 5, ► Fig. 6, ► Video 1). No postoperative rebleeding or complications occurred. The mechanism of PuraStat is primarily to achieve hemostasis by physical pressure, so it is thought to be more effective the longer it remains at the bleeding point by the sutured ulcer. In this case, abdominal x-rays performed on post-treatment days 1, 3, and 7 showed no change in clip position or shape. Thus, we conclude that the wound remained closed at least until the post-procedure Day 7. This is a suffi-

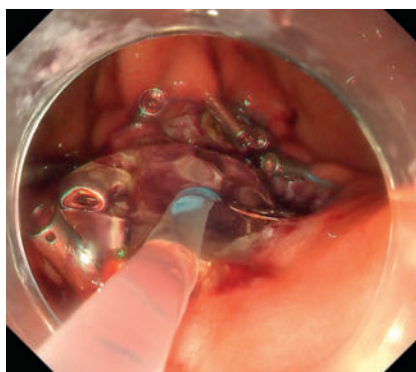
cient time to obtain hemostasis by physical pressure with PuraStat. This “Dumpling method” involves suturing the ulcer after using PuraStat and may prevent PuraStat migration and enhance hemostasis.

## Conflict of Interest

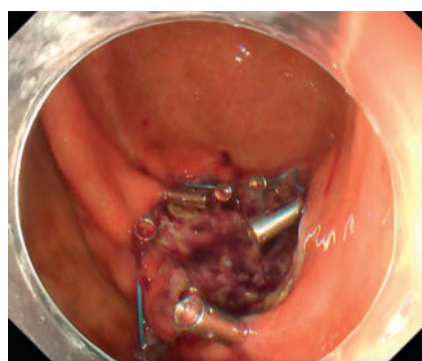
The authors declare that they have no conflict of interest.



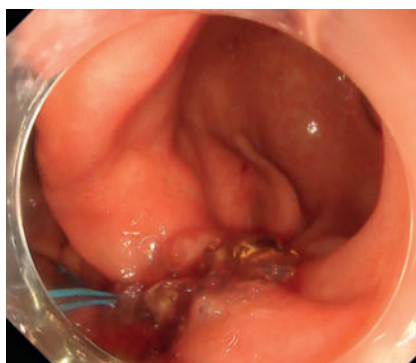
► **Fig. 3** The snare loop was fixed to the edge of the ulcer using clips.



► **Fig. 5** Thorough application of PuraStat to the post-ESD ulcer.



► **Fig. 4** The surgical area after securing the snare loop to the ulcer edge using several clips.



► **Fig. 6** The surgical area after suturing the ulcer using an indwelling snare. The ulcer is completely sutured, and sufficient PuraStat remains.

## VIDEO

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► **Video 1** The “Dumpling method”, which involves suturing the ulcer after using PuraStat, may prevent PuraStat migration and enhance hemostasis.

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