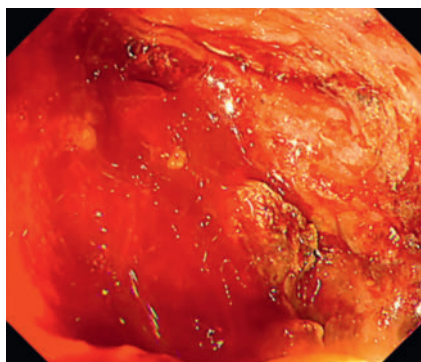
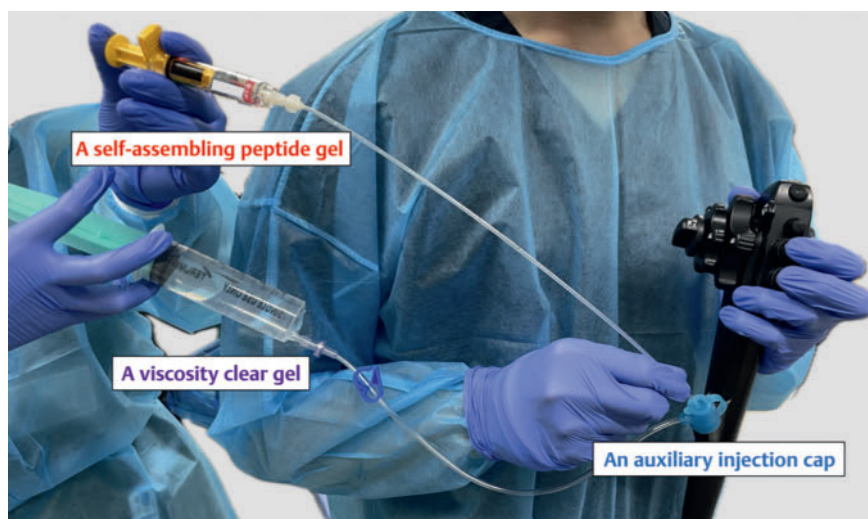


Enhancing visibility and hemostasis during necrosectomy for walled-off necrosis: the “dual-gel method”

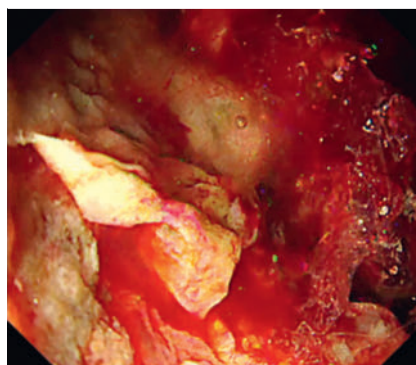


► **Fig. 1** The bleeding persisted, and the source of the bleeding remained uncertain due to the accumulation of blood in the walled-off necrosis.

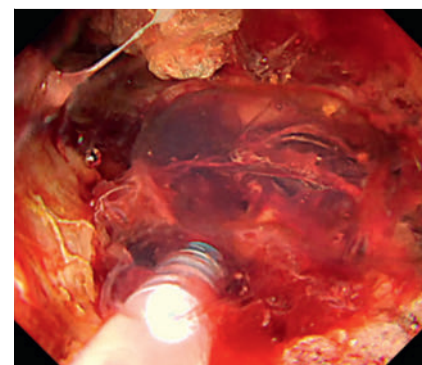


► **Fig. 2** An auxiliary injection cap (BioShield irrigator; US Endoscopy, Mentor, Ohio, USA) was used to free the channel, and a viscous clear gel (Viscoclear; Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan) was injected via the irrigation line. Subsequently, a self-assembling peptide gel (PuraStat; 3-D Matrix Europe SAS, Lyon, France) was injected through the forceps channel.

Endoscopic necrosectomy is an effective treatment for walled-off necrosis (WON); however, bleeding complications can be life threatening and require an immediate response [1]. Blood accumulation within the WON compartment makes identifying bleeding blood vessels difficult. Furthermore, the use of clips for hemostasis increases the risk of leaving long-term remains within the WON. Recently, a method for maintaining visibility during gastrointestinal bleeding involving the injection of a gel with an appropriate viscosity (Viscoclear; Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan) was reported [2,3]. Additionally, the hemostatic effect of a self-assembling peptide gel (PuraStat; 3-D Matrix Europe SAS, Lyon, France) used during gastrointestinal endoscopic procedures has been reported [4,5]. PuraStat is an aqueous peptide solution that becomes neutral upon contact with blood and body fluids, and its peptide molecules form fibers in solution to form a peptide hydrogel. This hydrogel quickly coats the bleeding point and stops the bleeding. In this case, we successfully employed a novel “dual-gel method” that uses Visvoclear and PuraStat to achieve hemostasis during endoscopic necrosectomy.



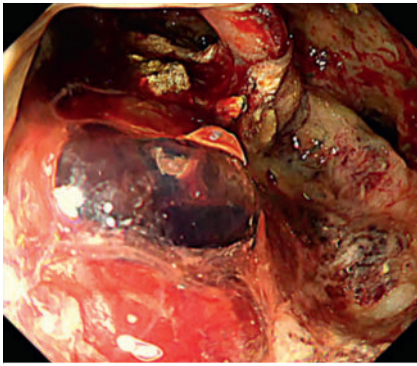
► **Fig. 3** The injection of Visvoclear (Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan) facilitated the separation of blood and gel, thereby enabling identification of the bleeding point.



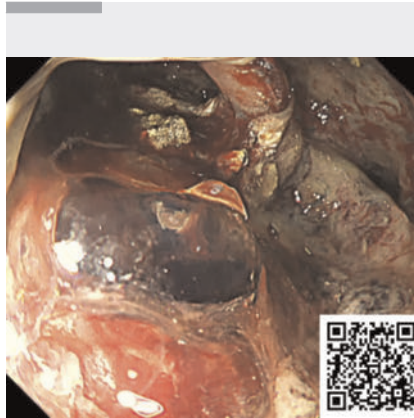
► **Fig. 4** Effective hemostasis was achieved following injection of PuraStat (3-D Matrix Europe SAS, Lyon, France).

A 58-year-old man presented with significant exudative bleeding during endoscopic necrosectomy. The bleeding continued unabated, and the exact location of the bleeding point was unclear because blood had pooled within the WON (► **Fig. 1**). An auxiliary injection cap (BioShield irrigator; US Endoscopy,

Mentor, Ohio, USA) was used to free the channel, and Visvoclear was injected via an injection cap (► **Fig. 2**). The injection of Visvoclear facilitated the separation of blood and gel, thereby enabling identification of the bleeding point (► **Fig. 3**). Subsequently, PuraStat injections resulted in effective hemostasis (► **Fig. 4**).



► **Fig. 5** The gel-forming property of PuraStat (3-D Matrix Europe SAS, Lyon, France) ensured its stability in the walled-off necrosis, sustaining its hemostatic efficacy.



► **Video 1** Endoscopic hemostasis using the “dual-gel method” for bleeding during endoscopic necrosectomy.

The gel-forming properties of PuraStat repaired the injured vessel wall, ensured stability, and sustained its hemostatic effect (► **Fig. 5**).

The “dual-gel method” is a useful hemostatic technique for managing exudative bleeding within confined spaces of WON (► **Video 1**).

Endoscopy_UCTN_Code_TTT_1AS_2AJ

Conflict of Interest

A. Katanuma has received honoraria as a lecture fee from Olympus Co. (Tokyo, Japan). K. Hama, H. Toyonaga, T. Ishii, M. Motoya, T. Kin, and T. Hayashi declare that they have no conflict of interest.

The authors

Kazuki Hama¹, Haruka Toyonaga¹, Tatsuya Ishii¹, Masayo Motoya¹, Toshifumi Kin¹, Tsuyoshi Hayashi¹, Akio Katanuma¹

¹ Center for Gastroenterology, Teine Keijinkai Hospital, Sapporo, Japan

Corresponding author

Haruka Toyonaga, MD

Center for Gastroenterology, Teine-Keijinkai Hospital, 1-40-1-12 Maeda, Teine-ku, Sapporo, Hokkaido 006-8555, Japan
toyonaga.pc@gmail.com

References

- [1] van Brunschot S, Fockens P, Bakker OJ et al. Endoscopic transluminal necrosectomy in necrotising pancreatitis: a systematic review. *Surg Endosc* 2014; 28: 1425–1438. doi:10.1007/s00464-013-3382-9
- [2] Yano T, Nemoto D, Ono K et al. Gel immersion endoscopy: a novel method to secure the visual field during endoscopy in bleeding patients (with videos). *Gastrointest Endosc* 2016; 83: 809–811
- [3] Hama K, Toyonaga H, Iwano K et al. Gel immersion cannulation during hemostasis of post-endoscopic sphincterotomy bleeding. *Endoscopy* 2023; 55: E486–E487
- [4] Toyonaga H, Hayashi T, Hama K et al. Rapid hemostasis using a self-assembling peptide matrix for midprocedural bleeding in endoscopic sphincterotomy. *Endoscopy* 2023; 55: E218–E219. doi:10.1055/a-1960-3198

- [5] Koga T, Ishida Y, Tsuchiya N et al. Novel hemostatic option using self-assembling peptide gel for endoscopic necrosectomy-related bleeding. *Endoscopy* 2023; 55: E598–E599. doi:10.1055/a-2051-8099

Bibliography

Endoscopy 2024; 56: E597–E598

DOI 10.1055/a-2344-8503

ISSN 0013-726X

© 2024. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution License, permitting unrestricted use, distribution, and reproduction so long as the original work is properly cited.

(<https://creativecommons.org/licenses/by/4.0/>)

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany



ENDOSCOPY E-VIDEOS

<https://eref.thieme.de/e-videos>



E-Videos is an open access online section of the journal *Endoscopy*, reporting on interesting cases

and new techniques in gastroenterological endoscopy. All papers include a high-quality video and are published with a Creative Commons CC-BY license. *Endoscopy E-Videos* qualify for HINARI discounts and waivers and eligibility is automatically checked during the submission process. We grant 100% waivers to articles whose corresponding authors are based in Group A countries and 50% waivers to those who are based in Group B countries as classified by Research4Life (see: <https://www.research4life.org/access/eligibility/>).

This section has its own submission website at <https://mc.manuscriptcentral.com/e-videos>