Saline-immersion peroral endoscopic septotomy: a case report

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As an evolution of underwater-assisted endoscopic resection,[1] saline-immersion therapeutic endoscopy has been gaining popularity over the past few years.[2] Particularly, the saline-immersion technique may become a precious alley for advanced third-space approaches soon. Indeed, the saline-immersion setting has been recently proposed for endoscopic submucosal dissection.[3,4] Although this assumption is supported by little evidence at the moment, the saline-immersion technique can bring multiple benefits for these complex procedures.

As already well-established for the underwater setting, the saline-immersion technique allows easier scope handling and, thus, better stability. Furthermore, it eliminates any gas–fluid interface within the distal cap, greatly improving the endoscopic view of the submucosal space. Moreover, a better exposure of the submucosal layer is provided by the saline-immersion setting and, hence, a more precise submucosal dissection can be performed. Additionally, saline-aided endotherapy carries significant advantages in terms of safety. The saline-immersion setting makes the detection of the bleeding point easier, which is paramount during the creation of the submucosal tunnel. Furthermore, the replacement of gas with saline avoids gas-related adverse events, such as subcutaneous emphysema and tension capnoperitoneum.

However, beyond these benefits, which are in common with the underwater technique, saline-immersion therapeutic endoscopy may bring some further advantages over underwater methods, especially for third-space approaches. In fact, being a 0.9% saline isotonic solution, as opposed to water, the risk of water intoxication is lower even if a large amount of fluid is instilled in the upper GI tube for long-lasting procedures. Moreover, saline solution allows a better conductivity than the underwater technique, without requiring higher diathermic energy settings for an effective dissection.

Abbreviations: CO_2, carbon dioxide; POES, peroral endoscopic septotomy.

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Here we report the case of a 52-year-old woman with a very short–septum (≤20 mm) Zenker diverticulum diagnosed on barium esophagogram and confirmed by endoscopy (Fig. 1). A high-definition gastroscope fitted with a clear distal cap was used. Endotracheal intubation was performed to avoid pulmonary aspiration. We started peroral endoscopic septotomy (POES) under carbon dioxide (CO_2) inflation. First, a submucosal injection was performed on top of the diverticular septum. A mucosal incision was carried out along the long axis of the diverticular septum (Fig. 2). After, a dissection of the immediately underlying submucosa was performed. However, the submucosal space appeared inaccessible because of the small septum. Thus, given the unfeasibility of the procedure under the CO_2 setting, we moved to saline-immersion POES. Thus, CO_2 was switched off, and room temperature sterile saline was infused into the lumen (Fig. 3). After, saline-immersion dissection of the submucosal layer was performed to create 2 short tunnels along both the esophageal and the diverticular sides of the septum (Fig. 4). Then, a complete saline-immersion myotomy was made through the incision of the fully exposed cricopharyngeal muscle fibers (Fig. 5). Finally, complete closure of the mucosal incision site was achieved with 2 hemostatic clips (Fig. 6).

No increase in end-tidal CO_2 or airway pressures was observed during this procedure. No adverse events were reported. After the procedure, the patient remained asymptomatic and afebrile. She was kept fasting for 8 hours and then had a successful trial of clear fluids. The day after the procedure, she resumed oral feeding with a soft diet without any trouble. Over the 2 following years, no recurrence of symptoms was reported by the patient during the scheduled follow-up phone calls.

This pilot experience showed that saline-immersion POES is a feasible option as a rescue therapy for Zenker diverticulum in challenging situations (Video 1, available online at www.videogie.org).

DISCLOSURE

Dr Maselli is a consultant for Fujifilm, ERBE, Apollo Endosurgery, 3D Matrix, and Laborie. Dr Repici is a consultant for Fujifilm, ERBE, Apollo Endosurgery, 3D Matrix, Laborie, and Medtronic. The other authors did not disclose any financial relationships.

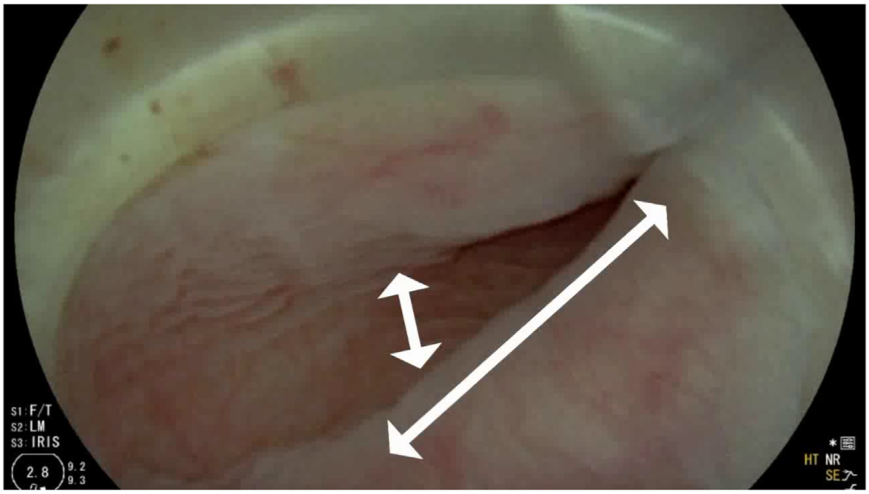

Figure 1. Zenker diverticulum with a very small septum.

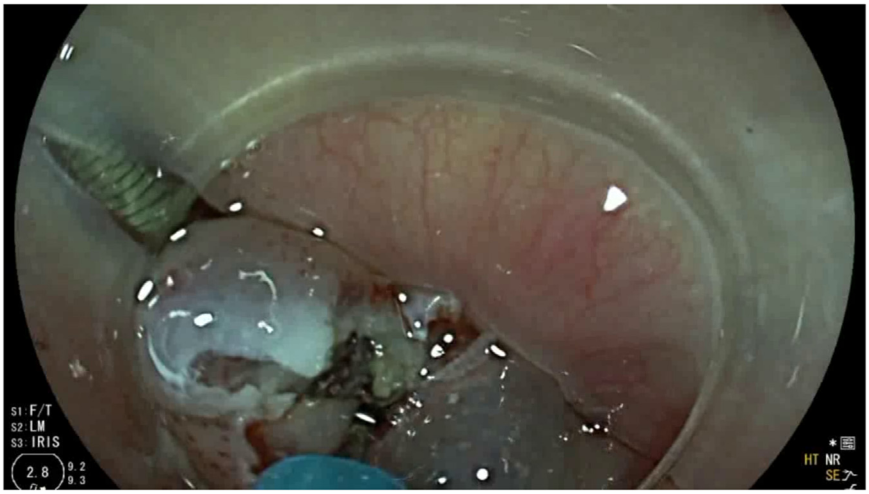

Figure 2. Mucosal incision along the long axis of the septum.

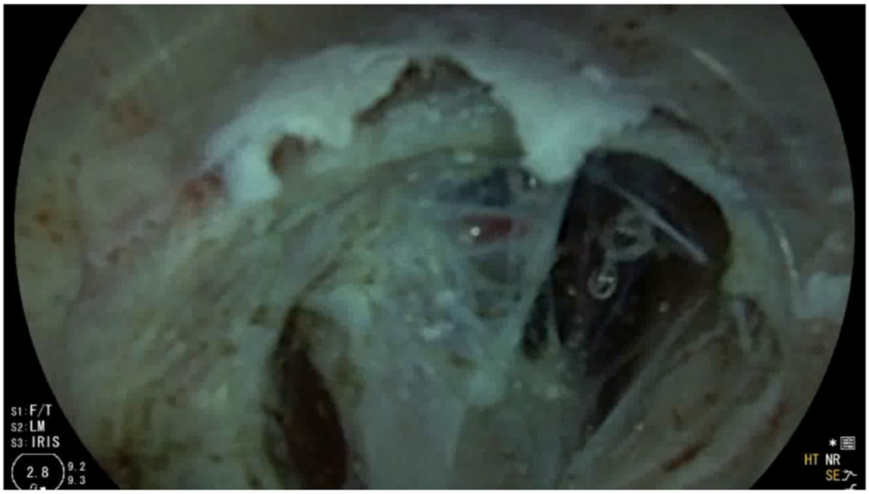

Figure 3. Saline-immersion access to the submucosal space.

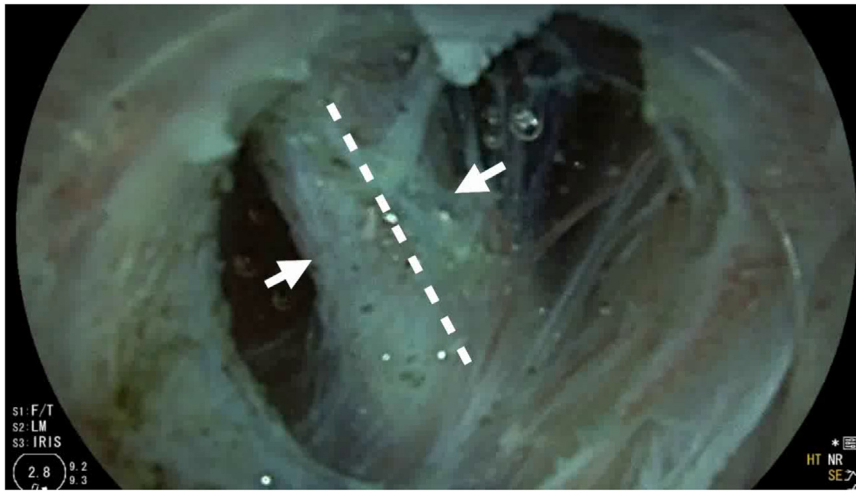

Figure 4. Exposure of the muscular septum through creation of 2 submucosal tunnels.

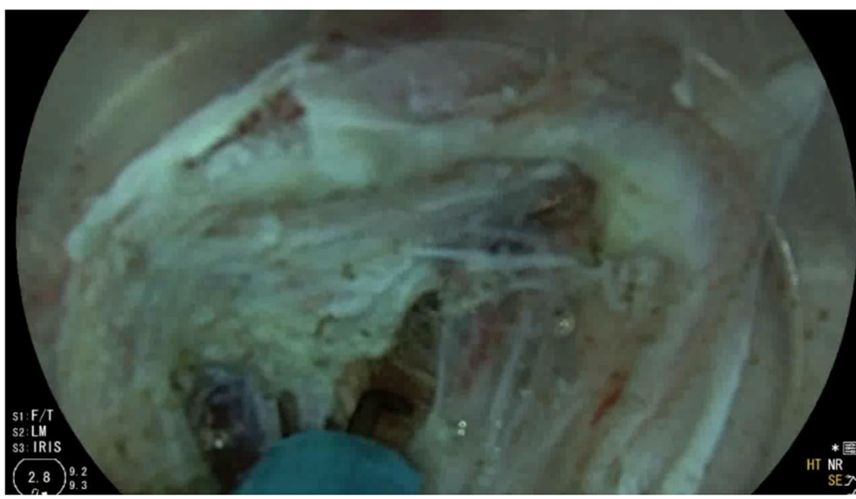

Figure 5. Saline-immersion myotomy of the muscular septum.

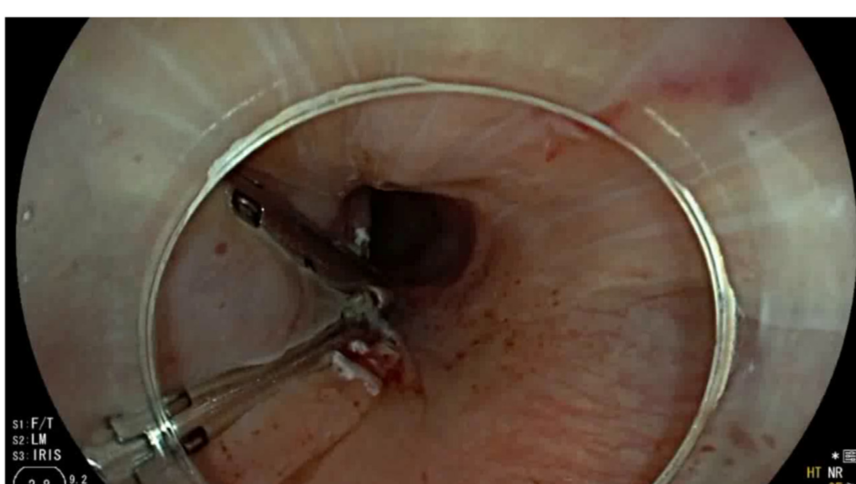

Figure 6. Closure of the mucosal incision site.

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