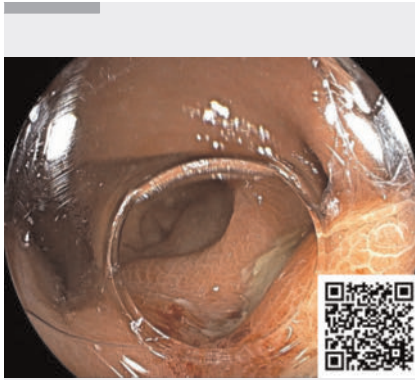
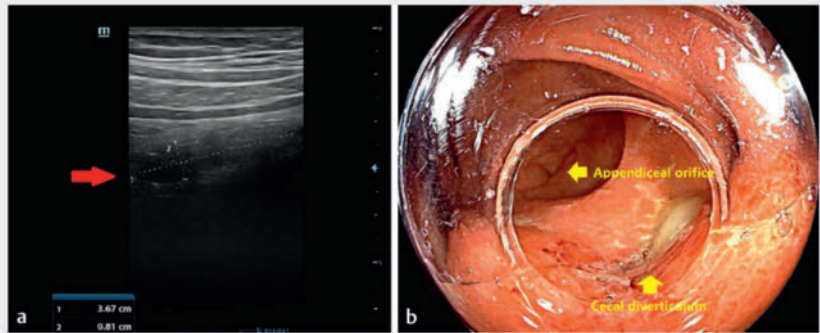


Endoscopic direct therapy for appendicitis and diverticulitis in one patient with right-sided abdominal pain

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▶ Video 1 Initial report on the application of digital single-operator cholangioscopy for endoscopic direct therapy.



▶ Fig. 1 **a** Abdominal ultrasonography showed a tubular mass in the right lower quadrant of the abdomen (3.67×0.81 cm), and appendicitis was considered. **b** Colonoscopy revealed appendicitis and cecal diverticulitis.

Acute appendicitis and cecal diverticulitis are both common causes of acute right-sided abdominal pain, but it is extremely rare for both to be found in one patient. Acute appendicitis and diverticulitis are mainly treated through medication and surgical intervention [1, 2]. Digital single-operator cholangioscopy (dSOC) has proven effective for managing inflammation in natural conduits such as the bile duct, pancreatic duct, and appendix [3, 4]. Herein, we present endoscopic direct therapy for appendicitis and diverticulitis in a man with right-sided abdominal pain (**▶ Video 1**).

A 33-year-old man presented with right-sided abdominal pain for 4 days. Abdominal ultrasonography showed a tubular mass in the right lower quadrant of the abdomen (3.67×0.81 cm) and appendicitis was considered (**▶ Fig. 1 a**). Colonoscopy revealed appendicitis and cecal diverticulitis (**▶ Fig. 1 b**). Endoscopic direct appendicitis therapy and endoscopic direct diverticulitis therapy utilizing dSOC was performed, and a milk-like pus was observed pouring out and a substantial volume of fecaliths (**▶ Fig. 2 a–d**). These fecaliths were meticulously fragmented, extracted, and removed using a disposable basket following repeated

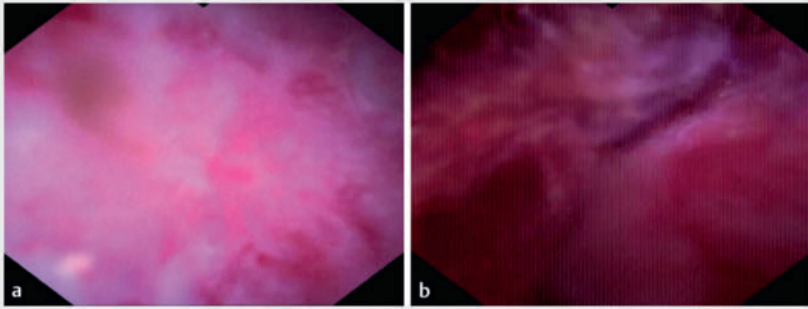


▶ Fig. 2 The process of endoscopic direct therapy. **a, b** A lot of milk-like pus was observed pouring out from the appendiceal orifice/cecal diverticulum. **c, d** A considerable amount of fecaliths within the diverticular cavity/appendiceal lumen was visualized using digital single-operator cholangioscopy (dSOC). **e, f** The fecaliths were dissected, extracted, and removed using a disposable basket under the visual guidance of dSOC.

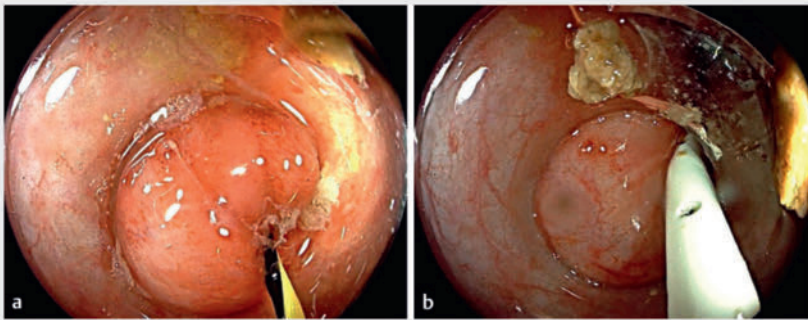
lavages with metronidazole and sodium chloride (**▶ Fig. 2 e, f**), rendering the mucosa cleansed yet characterized by roughness and swelling without evidence of perforation (**▶ Fig. 3 a, b**). A 7Fr pancreatic duct stent was strategically placed to ensure unobstructed drainage (**▶ Fig. 4 a, b**). The procedure was completed in 165 minutes. The patient's abdominal pain was relieved immediately

after the procedure. Subsequent computed tomography revealed fecaliths had been removed completely and the stent discharged (**▶ Fig. 5**). No recurrence or adverse events were noted during the 4-month follow-up.

As advancements in dSOC continue to evolve, significant innovations in the diagnosis and management of gastrointestinal diseases have been achieved



► **Fig. 3 a, b** Through endoscopic direct therapy, the diverticular cavity/appendiceal lumen was observed to be clear.



► **Fig. 4 a, b** The stent was strategically placed to ensure unobstructed drainage.

through endoscopic direct therapy. This therapy provided a feasible, safe, and effective alternative approach for diagnosis and management of acute right-sided abdominal pain. To the best of our knowledge, this is the first reported case of a successful cure of acute appendicitis combined with diverticulitis with fecalith using endoscopic direct therapy. This combined approach could reshape the management of acute right-sided abdominal pain, emphasizing the importance of technological integration in endoscopic practices.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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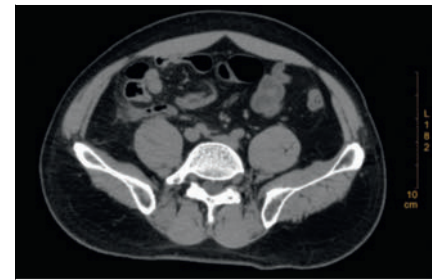
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► **Fig. 5** Postoperative computed tomography demonstrated fecaliths had been removed completely and the stent discharged.

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