



INTRODUCTION

Although they are designed for use in the esophagus, self-expanding esophageal metal stents are frequently used for treatment of lesions distal to the esophagus, such as in the duodenum. Migration of the stent to a location more distal in the small bowel is a potential risk. While stent migration to a location in the proximal small bowel can often be removed endoscopically, stent migration to the distal small bowel can be challenging to remove endoscopically and often requires surgery.

Device-assisted Enteroscopy enables endoscopic access throughout the small bowel. However, due to small bowel tortuosity, retrieval of a stent that has migrated to the distal small bowel can be extremely challenging and subsequently is performed infrequently. We describe a case in which a fully covered metal stent that migrated to the distal jejunum was successfully removed via double-balloon enteroscopy using a water immersion technique.

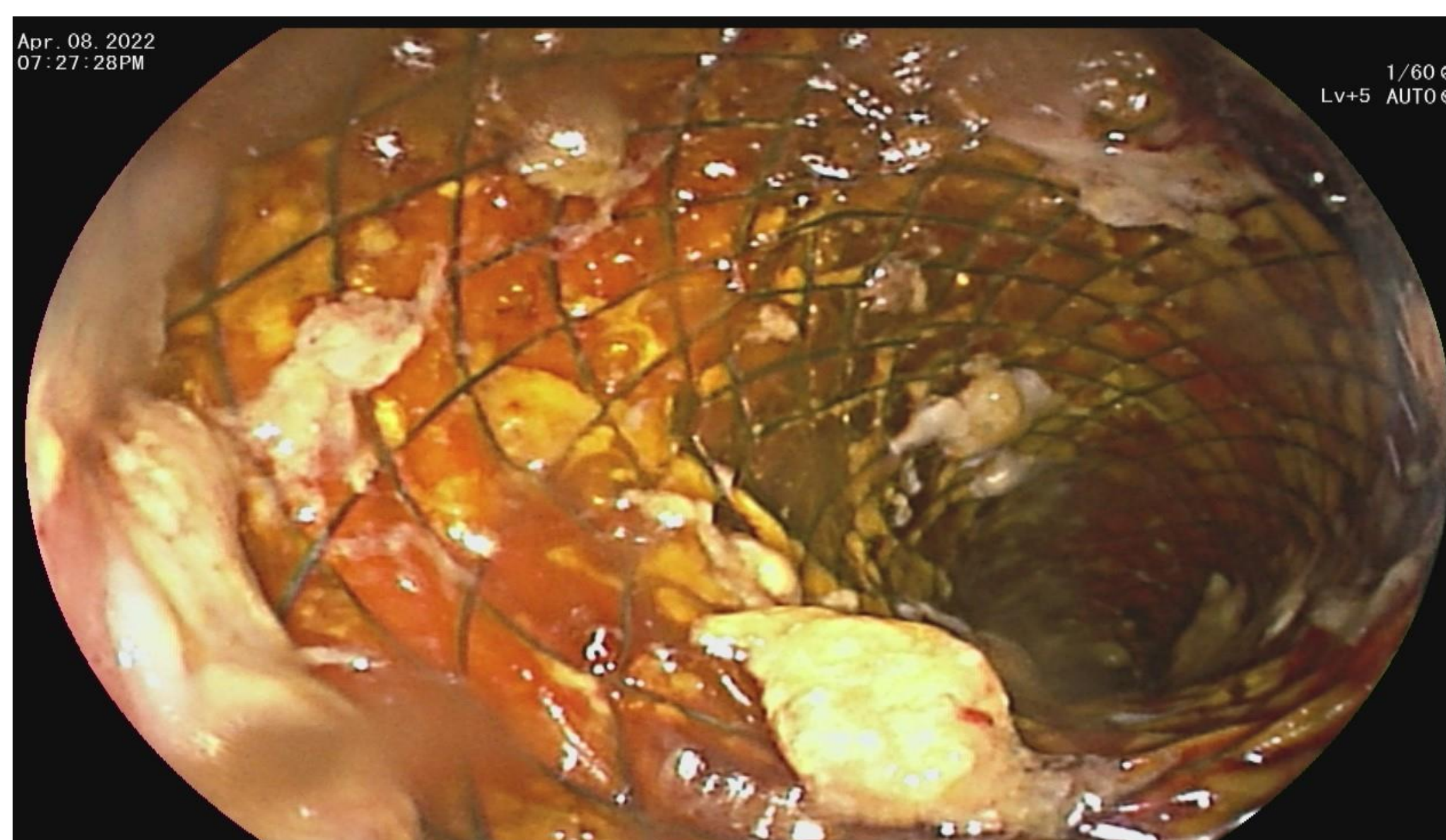


Figure 1. Stent in small bowel

OBJECTIVES

We describe a case in which a fully covered metal stent that migrated to the distal jejunum was successfully removed via double-balloon enteroscopy using a water immersion technique.

CASE HISTORY

A 43-year-old female s/p sleeve gastrectomy developed a symptomatic gastric body stricture and subsequently underwent placement of a 12 cm fully covered self-expanding metal stent (Hanarostent 22). 5 weeks after stent placement, she awoke suddenly at 3 AM with severe acute abdominal pain that would not subside. She presented to Cedars Sinai Medical Center Emergency Department for further evaluation.

CT scan of the abdomen revealed stent migration to small bowel loops located in the right upper quadrant of the abdomen, or the distal jejunum, with bowel dilation proximally to 3.4 cm. There was also small bowel thickening and peri-enteric stranding. Additionally, the small bowel loop containing the stent was compressing on the proximal ascending colon. Due to the patient's desire to avoid surgery, and the risk of worsening bowel obstruction and perforation if the stent was not promptly removed, antegrade double-balloon enteroscopy was performed in an attempt to retrieve the stent.

Endoscopic assessment revealed a few small erosions in the distal duodenum and erosions in the proximal and mid jejunum. In the distal jejunum, multiple serpiginous ulcers and large deep ulcers, some with active oozing, were identified. The stent was identified in the distal jejunum, located approximately 310 cm distal to the pylorus, and was embedded in the mucosa. Attempts to collapse the stent by pulling the strings with a rat tooth the forceps failed after the strings for the stent snapped and made removal of the stent challenging because the dumbbell stent head was embedded in the small bowel mucosa.

A 30 mm snare was used to collapse the head of the stent and the snare was then repositioned to collapse the proximal portion of the stent. The stent was slowly extracted from the mucosa and retracted proximally. However, due to expansion of the distal portion of the stent and the tortuosity and ulceration of the small bowel, stent retraction was repeatedly retarded when the stent encountered sharp turns in the jejunal lumen, with the distal portion of the stent frequently getting caught in the ulcerated mucosa, giving concern for the further small bowel mucosal trauma and potential perforation of the ulcerated mucosa with stent withdrawal.

FINDINGS

To keep the bowel distended and decrease mucosal trauma, the balloon on the enteroscope was inflated to 2/3 of its normal capacity, and water was infused using an infusion device with the needle inserted into the small bowel through the biopsy channel to distend the lumen. Infusion of water was initially challenging since the Fujinon EN580T-Double-Balloon Enteroscope does not have a water infusion channel, requiring use of a needle through the biopsy channel, which was simultaneously occupied by the snare that was being used to retrieve the stent.

After an initial large volume infusion of water to distend the jejunal lumen, additional water was intermittently infused into the small bowel during withdrawal to maintain luminal distension. The combination of the semi-inflated balloon and the partially water-filled small bowel enabled the stent to be safely extracted by keeping the lumen patent, reducing the angulation of small bowel turns, and minimizing stent contact and consequently, trauma to the ulcerated small bowel walls.

The stent was successfully extracted from the patient. A post procedure CT scan revealed no bowel wall damage and no evidence of bowel perforation. The patient's pain was immediately alleviated post procedure, and she was discharged home after a period of additional monitoring.

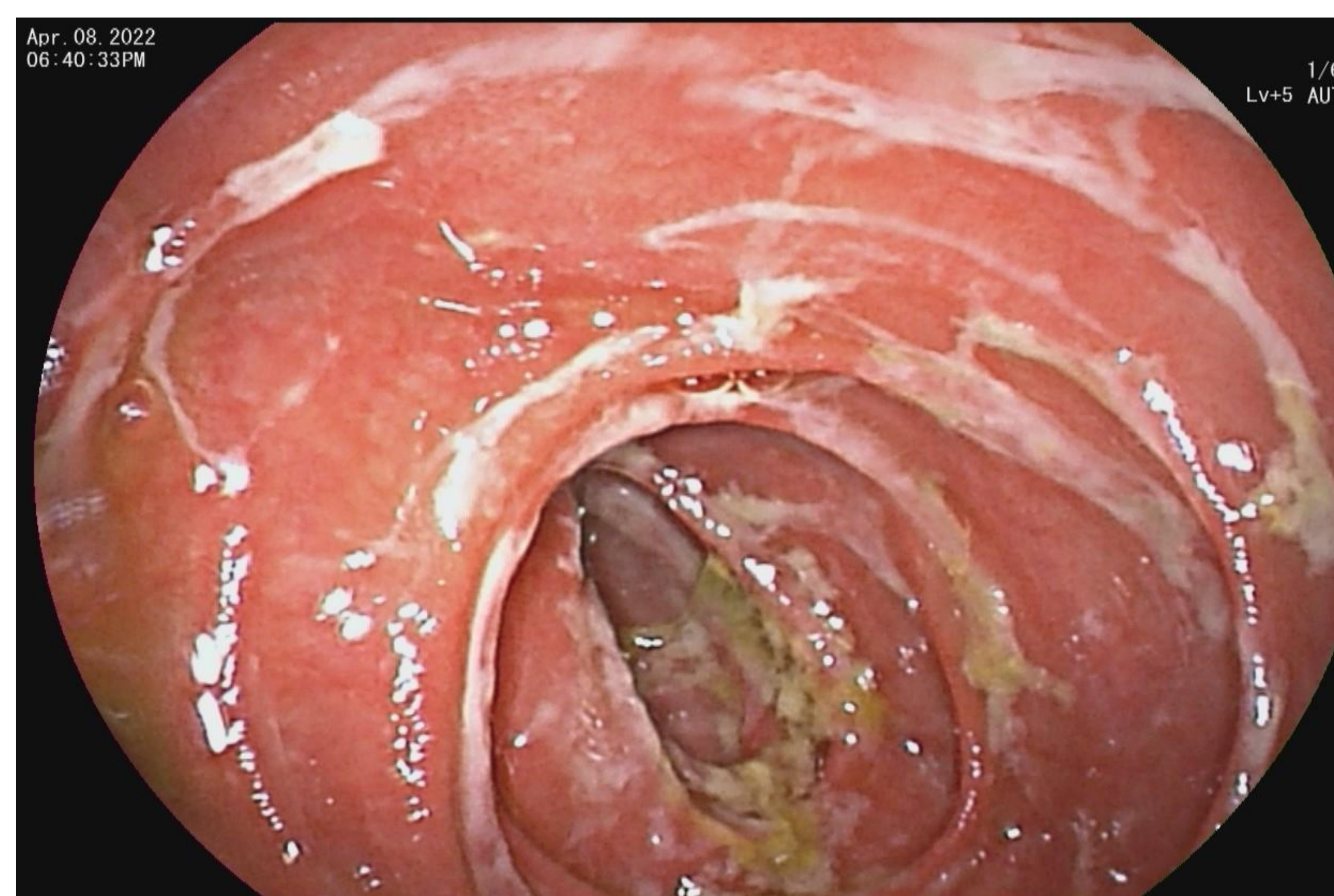


Figure 2. Jejunal ulceration from stent migration

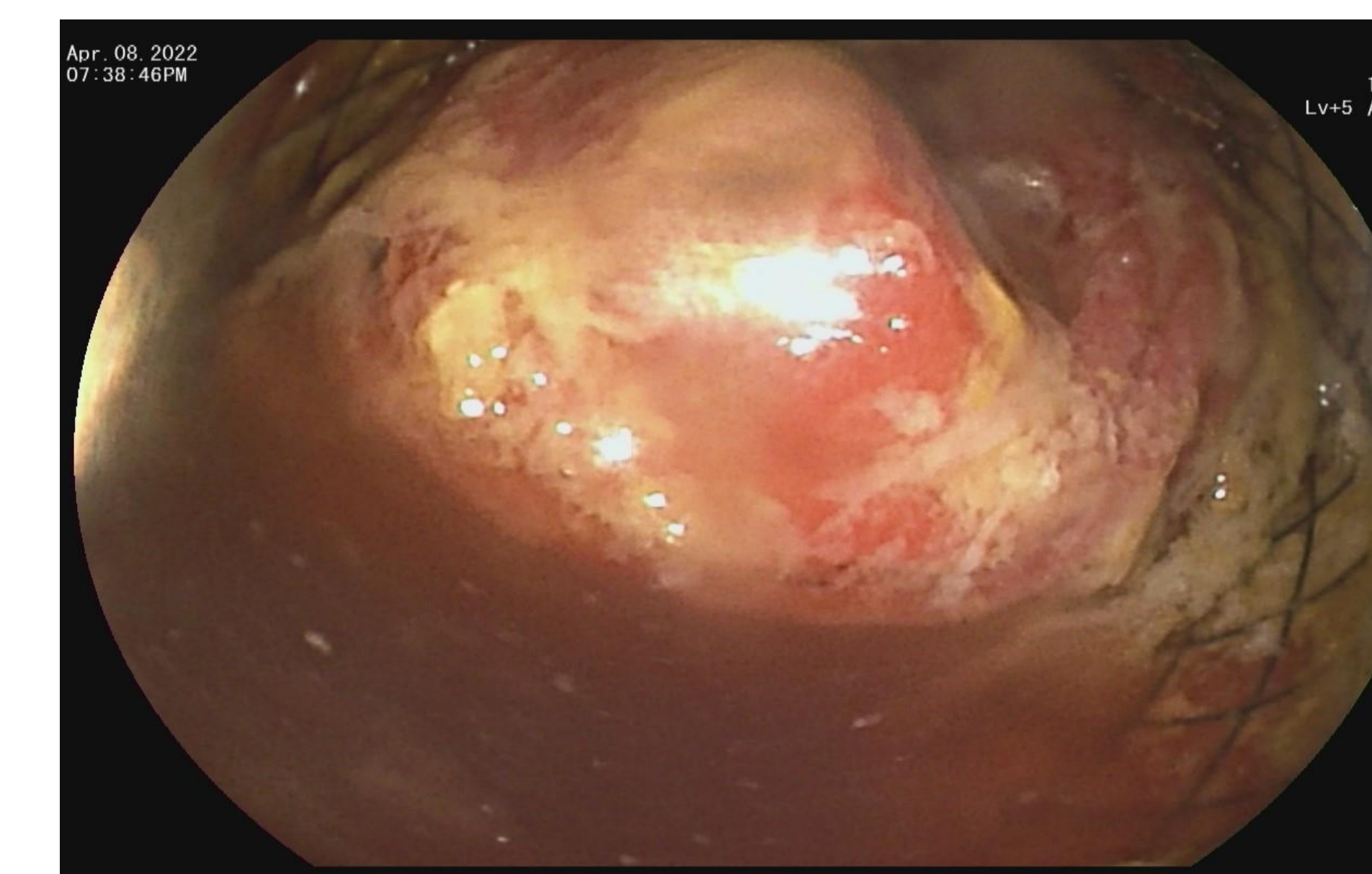


Figure 3. Distal end of stent in small bowel



Figure 4. Mucosa after stent removal

Discussion

We present a case of endoscopic removal of a stent migration in the distal small bowel, that was further complicated by significant mucosal ulceration due to stent trauma, and failure of the stent repositioning device to collapse the stent. Despite numerous complicating factors, the technique of water infusion and semi-inflation of the enteroscope balloon allowed for safe and efficient removal of the stent without mucosal trauma and despite the distal end of the stent remaining open. To our knowledge, this technique has not previously been described in the literature.

Stent migration and impaction in the small bowel can result in bowel obstruction and perforation. Hence prompt removal is important to avoid serious complications. Device assisted enteroscopy is an option for stent retrieval, and we have demonstrated that the combination of water immersion and partial insufflation of the enteroscope balloon may facilitate safe and efficient removal of the stent.

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