

## Retrograde double-balloon endoscopy-assisted electrohydraulic lithotripsy: Effective treatment of a true-enterolith associated with Crohn's disease

OPEN  
ACCESS



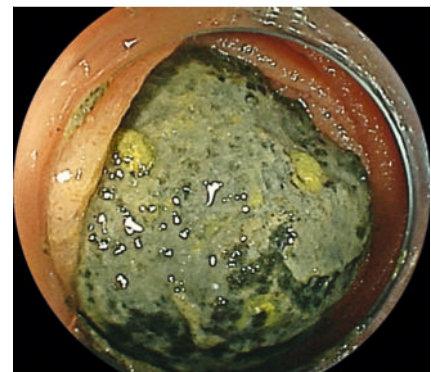
► **Fig. 1** X-ray revealed a 2.8-cm stone in the lower abdomen.



► **Fig. 2** CT scan showed a 2.8-cm high absorption enterolith in the ileum.

A 42-year-old man with a history of Crohn's disease was referred for treatment of an enterolith. The patient had no symptoms such as abdominal pain or nausea. Abdominal X-ray and computed tomography (CT) scan showed a 2.8-cm enterolith in the ileum (► **Fig. 1**, ► **Fig. 2**). Intestinal stenosis was found 10 cm proximal from the Bauhin's valve with an enterolith on the proximal side of the stenosis (► **Fig. 3**). The stenosis was dilated with a balloon catheter. Because the enterolith often moved into the oral side of the intestinal tract, retrograde double-balloon endoscopy (DBE) was performed using an EI-580BT endoscope (Fujifilm, Tokyo, Japan). We tried to crush the stone using biopsy forceps, polypectomy snares and crusher catheters, but the stone was too hard and none were effective. Surgery or electrohydraulic lithotripsy (EHL) were suggested as treatment options, and the patient chose EHL. We surrounded the stone with water, and EHL was performed (► **Video 1**). The stone gradually cracked and fragmented into pieces (► **Fig. 4**). We removed it using a disposable loop net

(► **Fig. 5**). Calculus analysis revealed that the main component of the enterolith was calcium oxalate, which indicates that the stone was a true-enterolith. Performance of EHL for enterolith [1,2], and treatment of enteroliths by balloon-assisted enteroscopy using other endoscopic devices [3] have been described. However, performance of EHL by double-balloon endoscopy for a true-enterolith in the ileum is extremely rare [4], and surgery is often selected for treatment [5]. Use of EHL was successful in avoiding surgery for a true-enterolith that could not be crushed with other endoscopic devices. Application of EHL could be recommended as a less invasive option to treat enteroliths.

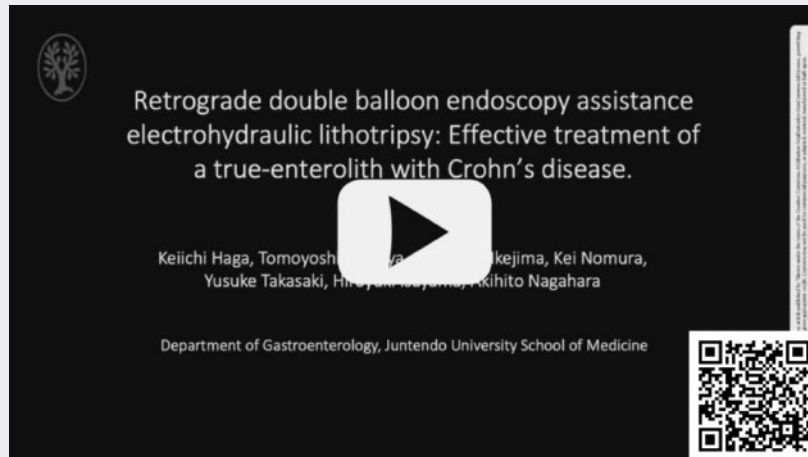


► **Fig. 3** An enterolith was found on the proximal side of the stenosis.

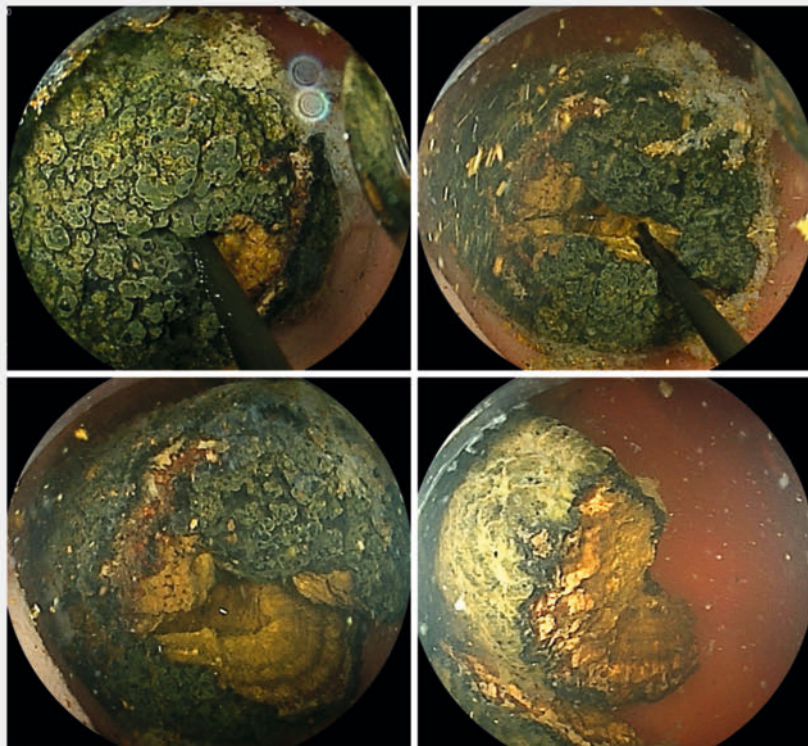
### Conclusions

In summary, we report the treatment of a true-enterolith in a patient with Crohn's disease using electrohydraulic lithotripsy by retrograde DBE endoscopy, thereby avoiding surgery.

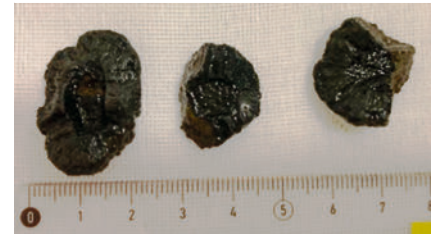
## VIDEO



► **Video 1** Treatment of an enterolith using electrohydraulic lithotripsy by double-balloon endoscopy. Video text: Retrograde double-balloon endoscopy was performed. Intestinal stenosis was found 10 cm proximal from the Bauhin's valve. The stenosis was dilated up to 15 mm with a balloon catheter. An enterolith was found on the proximal side of the stenosis. We surrounded the stone with water. Electrohydraulic lithotripsy (EHL) was performed. The stone gradually cracked, and finally split into two. Additional EHL was performed to further split the stone. The stone was removed using a disposable loop net.



► **Fig. 4** The stone gradually cracked, and split into two.



► **Fig. 5** The stones removed from the ileum.

## Conflict of Interest

The authors declare that they have no conflict of interest.

## The authors

**Keiichi Haga<sup>1</sup>, Tomoyoshi Shibuya<sup>1</sup>, Shunsuke Ikejima<sup>1</sup>, Kei Nomura<sup>1</sup>, Yusuke Takasaki<sup>1</sup>, Hiroyuki Isayama<sup>1</sup>, Akihito Nagahara<sup>1</sup>**

<sup>1</sup> Department of Gastroenterology, Juntendo University, Bunkyo-ku, Japan

## Corresponding author

### **Dr. Tomoyoshi Shibuya**

Juntendo University, Department of Gastroenterology, 2-1-1 Hongo, 113-8421 Bunkyo-ku, Japan  
tomoyosi@juntendo.ac.jp

## References

- [1] Jihye L, Hoonsub S, Sung WK et al. Endoscopic electrohydraulic lithotripsy of an enterolith causing afferent loop syndrome after Whipple's operation. *Endoscopy* 2020; 52: E1-E3
- [2] Hwa JK, Jong HM, Hyun JC et al. Endoscopic removal of an enterolith causing afferent loop syndrome using electrohydraulic lithotripsy. *Dig Endosc* 2010; 22: 220-222
- [3] Ishioka M, Jin M, Matsushashi T et al. True primary enterolith treated by balloon-assisted enteroscopy. *Intern Med* 2015; 54: 2439-2442 doi:10.2169/internalmedicine.54.520826424299
- [4] Grettve S. A contribution to the knowledge of primary treconcrements in the small bowel. *Acta Chir Scand* 1947; 95: 387-410
- [5] Ayantunde AA, Agrawal A. Gallstone ileus: diagnosis and management. *World J Surg* 2007; 31: 1292-1297 doi:10.1007/s00268-007-9011-917436117

**Bibliography**

Endosc Int Open 2023; 11: E928–E930

DOI 10.1055/a-2102-8703

ISSN 2364-3722

© 2023. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

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

