

CASE REPORT

## 십이지장 봉합부의 장석에 의한 담관 폐쇄

신재경, 최성훈<sup>1</sup>, 홍소담, 김새암, 조혜정, 홍희진, 김희경, 고광현<sup>2</sup>

CHA 의과학대학교 분당차병원 내과학교실<sup>1</sup>, 외과학교실<sup>1</sup>, 소화기센터<sup>2</sup>

### Common Bile Duct Obstruction Due to a Large Stone at the Duodenal Stump

Jae Kyoung Shin, Sung Hoon Choi<sup>1</sup>, So Dam Hong, Saeahm Kim, Hye Jeong Cho, Hee Jin Hong, Hee Kyung Kim, and Kwang Hyun Ko<sup>2</sup>

Departments of Internal Medicine and Surgery<sup>1</sup>, Digestive Disease Center<sup>2</sup>, CHA Medical Center, CHA University, Seongnam, Korea

Enterolith is a rare complication of Billroth II gastrectomy. Most enterolith cases have been reported in association with diverticula, tuberculosis, and Crohn's disease. We report the case of a huge enterolith that developed in the duodenal stump following common bile duct obstruction and cholangitis, necessitating surgery. The enterolith was clearly visible on the abdominal computed tomography. It was removed through a duodenotomy. The surgery was successful without any significant complications. (*Korean J Gastroenterol* 2016;67:150-152)

**Key Words:** Enterolith; Duodenal stump; Cholangitis

### INTRODUCTION

Epigastric pain with laboratory evidence of biliary stasis easily raises suspicion of cholangitis. Cholangitis associated with an enterolith is rare. We describe a case of cholangitis caused by an enterolith in the duodenal stump.

### CASE REPORT

A 77-year-old woman visited a local hospital for poor oral intake, general weakness, epigastric discomfort and low-grade fever. She underwent abdominal CT and was referred to this medical center for a blockage in the distal common bile duct (CBD) by a large impacted gallstone at duodenal stump on the abdominal CT. The patient underwent a Billroth II near-total gastrectomy for stomach cancer (T3N2M0) 14

years earlier and a modified radical mastectomy for breast cancer (T1N0M0) eight years ago.

At presentation, the physical examination revealed epigastric tenderness. Laboratory tests showed elevated white blood cells of 13,180/ $\mu$ L, ESR of 109 mm/hr, CRP of 9.45 mg/dL, procalcitonin of 0.25 ng/dL and biliary stasis (total bilirubin, 1.87 mg/dL; AST/ALT, 122/69 IU/L; ALP, 1,443 IU/L; GGT, 340 IU/L).

On the abdominal CT taken at a local hospital, there were mild intrahepatic duct and CBD dilatations due to distal CBD obstruction by a compacted large stone at a duodenal stump. The stone was about 4.8 cm in size, large, and calcified (Fig. 1).

Because an attempt to extract the stone using endoscopy was unsuccessful, for decompression a percutaneous cholecystostomy catheter was inserted. Three days after the decompression, although filling defects in gallbladder (GB)

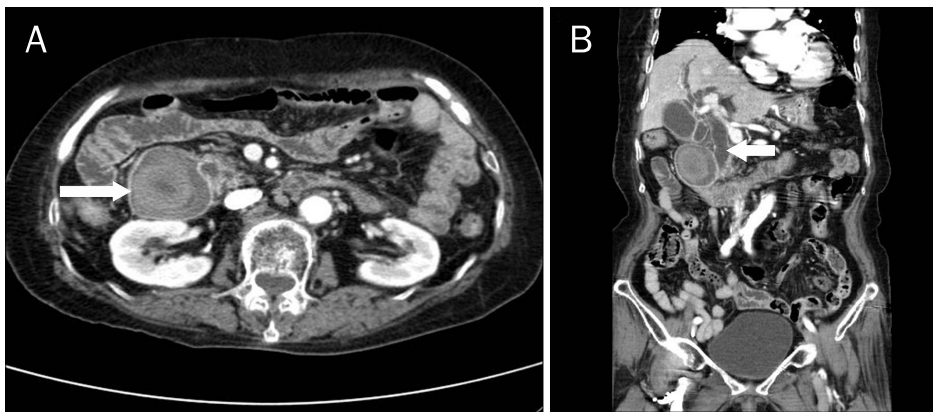
Received August 6, 2015. Revised September 14, 2015. Accepted October 23, 2015.

© This is an open access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.  
Copyright © 2016. Korean Society of Gastroenterology.

교신저자: 고광현, 13496, 성남시 분당구 야탑로 59, CHA 의과학대학교 분당차병원 소화기센터

Correspondence to: Kwang Hyun Ko, Digestive Disease Center, CHA Medical Center, CHA University, 59 Yatap-ro, Bundang-gu, Seongnam 13496, Korea. Tel: +82-31-780-5000, Fax: +82-31-780-5584, E-mail: bluehipp@cha.ac.kr

Financial support: None. Conflict of interest: None.



**Fig. 1.** Computed tomography scans of the abdomen. It shows a 4.8 cm sized, large, and calcified stone at a duodenal stump (A; arrow) and a dilated common bile duct, about 1.8 cm in diameter (B; arrow).

raised suspicion of GB stone, cystic duct and CBD looked clear on tubogram (Fig. 2). However, there was no visible passage of contrast medium to the duodenum. Therefore, laparoscopic surgery was performed to remove the enterolith through a duodenotomy. No intestinal obstruction was found and the stone was not in diverticulum. While GB stones were black, small and multiple, the enterolith in duodenum was about a 5 cm-size big brownish stone (Fig. 3).

There were no visible postoperative complications such as hematoma, abscess on follow-up CT. Without any significant complications, the patient was discharged 11 days after the operation.

## DISCUSSION

Enteroliths are most commonly found in association with diverticula diseases such as Meckel's diverticulum, Crohn's disease or surgical reconstructions with anastomosis.<sup>1-4</sup> Enterolith formation in duodenum after Billroth II gastrectomy is rarely reported, and only cases of afferent loop obstruction by enterolith are in the literature.<sup>1,5,6</sup> To the best of our knowledge, this is the first case report of cholangitis resulting directly from a single large stone at a duodenal stump, rather than by the secondary effect of afferent loop obstruction or by a biliary stone.

In this case, possible factors in the pathogenesis of the stone formation were stasis of biliary, pancreatic, and intestinal secretions in the afferent loop. Moreover, the mechanism of the enterolith formation in this case can be impaired duodenal evacuatory motor activity due to a prior gastrectomy.<sup>7</sup>

Another possible hypothesis of the stone formation is that it was formed originally in the diverticula and dislodged from the

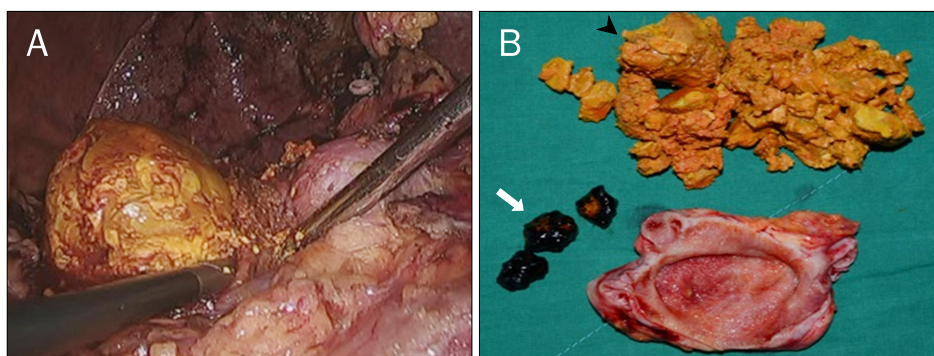


**Fig. 2.** Cystic duct and common bile duct were clear, while no visible passage of contrast medium to the duodenum was seen on tubogram.

diverticula to the intestinal lumen by accident, then became enlarged when mixed with intestinal and biliary secretions.

We believe that a preoperative image-guided intervention, percutaneous cholecystostomy catheter insertion, reduces surgical morbidity and mortality. In a case similar to ours, Carbognin et al.<sup>8</sup> and Santori et al.<sup>9</sup> attempted to extract the enterolith endoscopically, without success.

In summary, the enterolith is a very rare, but possible, direct cause of CBD obstruction. The afferent loop enterolith formation is extremely rare but should be considered when the patient has a history of Billroth II gastrectomy. Image-guided drainage should be considered for such patients. Surgical removal of an enterolith could be the best treatment to choose when the CBD is obstructed by an enterolith of the afferent loop.



**Fig. 3.** (A) Under laparoscopy, the duodenal stump was enlarged and filled with a large mass. (B) While gallbladder stones were black, small and multiple (white arrow), the enterolith in the duodenum was about 5 cm-size big brownish stone, which was crushed into several pieces for extraction during the operation (black arrow head).

## REFERENCES

1. Tien YW, Lee PH, Chang KJ. Enterolith: an unusual cause of afferent loop obstruction. *Am J Gastroenterol* 1999;94:1391-1392.
2. Shocket E, Simon SA. Small bowel obstruction due to enterolith (bezoar) formed in a duodenal diverticulum: a case report and review of the literature. *Am J Gastroenterol* 1982;77:621-624.
3. Gadhia U, Raju D, Kapoor R. Large enterolith in a meckels diverticulum causing perforation and bowel obstruction: an interesting case with review of literature. *Indian J Surg* 2013;75(Suppl 1):177-179.
4. Monchal T, Hornez E, Bourgouin S, et al. Enterolith ileus due to jejunal diverticulosis. *Am J Surg* 2010;199:e45-e47.
5. Cartanese C, Campanella G, Milano E, Saccò M. Enterolith causing acute afferent loop syndrome after Billroth II gastrectomy: a case report. *G Chir* 2013;34:164-166.
6. Kim HJ, Moon JH, Choi HJ, et al. Endoscopic removal of an enterolith causing afferent loop syndrome using electrohydraulic lithotripsy. *Dig Endosc* 2010;22:220-222.
7. Tan WS, Chung AY, Low AS, Cheah FK, Ong SC. Enterolith formation in the roux limb hepaticojejunostomy. *Dig Dis Sci* 2007;52:3214-3216.
8. Carbognin G, Biasiutti C, El-Khalidi M, Ceratti S, Procacci C. Afferent loop syndrome presenting as enterolith after Billroth II subtotal gastrectomy: a case report. *Abdom Imaging* 2000;25:129-131.
9. Sartori N, Falconi M, Contro C, Bassi C, Pederzoli P. Symptomatic stone in the duodenum after gastrectomy. *Surgery* 2001;129:238-239.