Gallbladder Pseudodiverticulosis Mimicking a Multiseptate Gallbladder with Stones

Tae Hoon Lee, Sang-Heum Park, Ji-Young Park, Chang-Kyun Lee, Il-Kwun Chung, Hong Soo Kim, and Sun-Joo Kim

Division of Gastroenterology, Department of Internal Medicine, Soon Chun Hyang University College of Medicine, Cheonan Hospital, Cheonan, Korea

Gallbladder diverticula have the appearance of hernia-like protrusions of the gallbladder wall. This disorder may not be diagnosed until surgically resected because it has no clinical significance unless there are associated diseases. Gallbladder pseudodiverticula have an acquired cause, multiple fundal lesions, an association with gallstones, internal saccular lesions without external hernia-like protrusions, and little to no smooth muscle in the gallbladder wall. We report a unique anomaly of multiple pseudodiverticula presenting with calculous cholecystitis, which was pathologically different from true diverticula and had a unique shape similar to a bunch of grapes and a septation infilling pattern on endoscopic retrograde cholangiography. (Gut and Liver 2009;3:134-136)

Key Words: Gallbladder; Pseudodiverticulum

INTRODUCTION

Diverticular diseases of the gallbladder are unusual congenital or acquired diseases occurring only in 0.1% to 0.2% of cases in previous studies of resected gallbladder specimens.1-3 These diseases are divided into congenital (true) diverticula and acquired pseudodiverticula according to different developmental, clinical, and pathological features.4,5

We describe a unique imaging case of pseudodiverticulosis of the gallbladder mimicking multiseptate gallbladder accompanied with multiple stones, as confirmed by surgical operation.

CASE REPORT

A 70-year-old woman presented with right upper quadrant abdominal pain radiating to the right lower abdomen; the pain had begun to aggravate the subject 8 to 9 hours earlier. Her medical history contained no significant events or diseases. Clinical examination revealed mild tenderness in the right upper quadrant of the abdomen. Laboratory tests revealed the followings: white blood cell count, 8.900×10⁹/L; hemoglobin, 13.4 g/dL; amylase, 36 IU/L; aspartate aminotransferase, 42 U/L; alanine aminotransferase, 50 U/L; and alkaline phosphatase, 162 IU/L.

Fig. 1. Endoscopic retrograde cholangiography showing multiple linear septated radiolucent defects and multiple variable-sized saccular filling defects in the gallbladder lumen.
Abdominal ultrasonography revealed multiple hyperechoic lesions in the gallbladder and linear septum-like structures in the fundus of the gallbladder. Subsequently, endoscopic retrograde cholangiography (ERC) was performed to evaluate the lesion; it showed multiple linear septated radiolucent defects and a diffusely scattered bunch of grape-like saccular filling defects in the elongated gallbladder (Fig. 1). Operative findings showed a normal outer surface of the elongated gallbladder without any protruding lesions fixed on the gallbladder fossa of the liver (Fig. 2). Grossly, multiple black stones and a round saccular lesion with an intervening septum-like structure were noted on the dissected gallbladder specimen (Fig. 3). Microscopic findings showed mucosal gland structures downsloping into a thin muscle layer (characteristically, the muscle layer is not thickened), which was different from adenomyomatosis (Fig. 4).

**DISCUSSION**

Gallbladder anomalies are diversely classified according to the shape and position of the Phrygian cap, multiseptation, and diverticula. ERC can be helpful in making a diagnosis and in the differentiation of these anomalous
Table 1. Differential Diagnosis of Gallbladder Pseudodiverticulosis, Congenital Diverticula, and Adenomyomatosis

|                      | Pseudodiverticula | True diverticula | Adenomyomatosis |
|----------------------|------------------|------------------|-----------------|
| **Cause**            | Acquired         | Congenital       | Acquired        |
| Clinically, Calculi  | Usually present  | Usually no clinical significance | Pigmented debris or calculi |
| **Gross findings**   | Normal surface contour | Outpouching of the entire gallbladder wall | Usually normal surface |
| Mucosal herniation   | through the muscle layer (incomplete herniation) | Normal wall structure | Deep and branching |
| and muscular thinness| and muscular thinness | Rokitansky-Aschoff sinus with hyperplasia of the muscular layer (3 to 5 times) | |

Diseases. One septum or fold of the gallbladder between the fundus and the body is called the "Phrygian cap," whereas, multiseptate gallbladders are characterized by multiple internal septa of various sizes, and a faintly boaselled external surface.6,7 Gallbladder diverticulum is an unusual congenital disease, which has the appearance of a hernia-like protrusion of the normal gallbladder wall. This disorder may not be diagnosed until surgically resected because it has no clinical significance unless there are associated diseases.1-3 Gallbladder pseudodiverticulum is a different type of adenomyomatosis pathologically, and can be differentiated from other similar anomalies based on some important factors. Pseudodiverticula have an acquired cause, multiple fundal lesions, an association with gallstones, internal saccular lesions without external hernia-like protrusions, and little to no smooth muscle in the gallbladder wall (Table 1).7,8

In our case, ERC revealed a unique shape similar to a bunch of grapes and a septation infilling pattern, contrasting with the fundus of a lengthened gallbladder. We found a multiseptate gallbladder; it was characterized by a "honeycomb" multicystic pattern and further characterized by multiple fixed lucent defects within an opacified gallbladder. However, operative findings showed a grossly normal gallbladder without any outpouches of the wall or inflammatory changes, and we could see multiple saccular out pouches internally with multiple gallstones when the gallbladder was opened. Histopathologic examination revealed multiple pseudodiverticula, which were characterized by multiple downslopings of the mucosal gland to a thin muscle layer of fundus. This lesion was different from the fundal type of lesion that is typical of adenomyomatosis or true diverticula, in terms of the definitive muscle thinness.

In summary, we diagnosed a unique, acquired anomaly of multiple pseudodiverticula presenting with calculous cholecystitis, which was pathologically different from true diverticula, adenomyomatosis, or multiseptate gallbladders.

REFERENCES

1. Gross RE. Congenital anomalies of the gallbladder; a review of one hundred and forty eight cases with report of a double gallbladder. Arch Surg 1936;32:131-162.
2. Kramer AJ, Bregman A, Zeddies CA, Guynn VL. Gallbladder diverticulum: a case report and review of the literature. Am Surg 1998;64:298-301.
3. Williams I, Slavin G, Cox A, Simpson P, de Lacey G. Diverticulat disease (adenomyomatosis) of the gallbladder: a radiological-pathological survey. Br J Radiol 1986;59:29-34.
4. Garg P, Dass B. Multiple diverticula of gall bladder. Indian J Gastroenterol 1998;17:32-33.
5. Sirakov M, Trichkov V, Megdanski Kh, Mrmarov M, Trichkov Zh. Diverticula and pseudodiverticula of the gall-bladder in chronic calculous cholecystitis. Khirurgiia (Sofia) 1996;49:35-36.
6. Foster DR. Triple gall bladder. Br J Radiol 1981;54:817-818.
7. Kramer EL, Rumancik WM, Harkavy L, Tiu S, Banner HJ, Sanger JJ. Hepatobiliary scintigraphy of the compartmentalized gallbladder. AJR Am J Roentgenol 1985;145:1205-1206.
8. Edell S. A comparison of the "phrygian cap" deformity with bistable and gray scale ultrasound. J Clin Ultrasound 1978;6:34-35.