—**Report on Experiments and Clinical Cases**—

Simple Closure of a Perfoated Duodenal Diverticulum: "A Case Report"

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Abstract

Spontaneous perforation of a duodenal diverticulum is a rare but serious complication with significant mortality rates. Just over 100 cases have been reported in the world literature. One case of perforated duodenal diverticulum treated by simple closure is reported.

An elderly female was admitted to our hospital with an acute abdomen. Computed tomography of the abdomen showed retroperitoneal air around the duodenum and right kidney. Laparotomy with a Kocher maneuver disclosed a perforated diverticulm in the second portion of the duodenum. Although diverticulectomy is the most common treatment, simple closure of the perforated duodenal diverticulum with drainage was performed to avoid injury to the distal common bile duct and ampulla of Vater, which were close to the diverticulum. The patient has fully recovered and has been asymptomatic with no signs of recurrence for 25 months.

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Key words: duodenal diverticulum, perforation

Introduction

Duodenal diverticula occur in up to 20% of the population, but few patients require surgery. Duodenal diverticula can lead to diverticulitis, perforation, hemorrhage, pancreatitis, or biliary obstruction. Perforation is the rarest of the complications, and just over 100 cases have been reported in the world literature.

Here one more case of perforated duodenal diverticulum is reported and the surgical management is discussed.

Case Report

A 68-year-old-woman was referred to our hospital with an acute abdomen. One day prior to admission, abdominal drainage was performed in another hospital following a diagnosis of cryptogenic peritonitis. She complained of right-sided abdominal pain. Her temperature was 38.5℃ and she exhibit tenderness with rebound and guarding on the right side of her abdomen. The white blood cell count was 8,900/mm^3, and the C-reactive protein concentration was greater than 26.24 mg/d*l*. Liver function tests

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Fig. 1 Abdominal radiographs reveal retroperitoneal and periduodenal air (←).

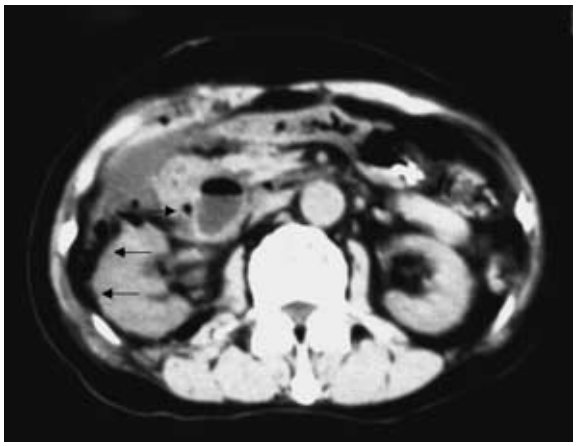

Fig. 2 Computed tomography of the abdomen shows retroperitoneal air around the duodenum, right kidney, and ascending colon (←).

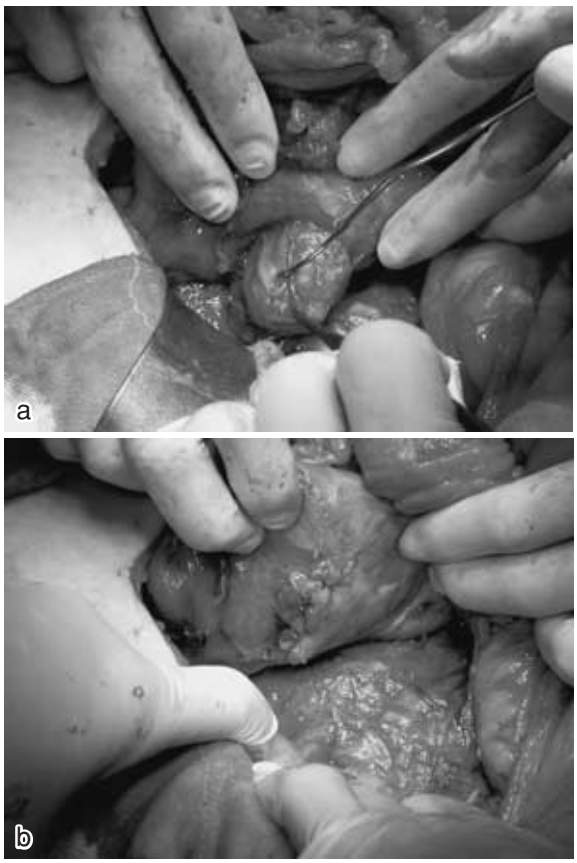

Fig. 3 Intraoperative photographs of a patient with a perforated duodenal diverticulum.
A. Kocher maneuver discloses a perforated diverticulum in the second portion of the duodenum. The diverticulum measured about 2 cm in diameter.
B. Simple closure of the perforated diverticulum with drainage was performed.

and alkaline phosphatase and amylase concentrations were normal. Abdominal radiographs revealed retroperitoneal and periduodenal air (**Fig. 1**).

Computed tomography of the abdomen showed retroperitoneal air around the duodenum, right kidney, and ascending colon (**Fig. 2**). Perforation of the ascending colon was suspected.

At laparotomy, a periduodenal phlegmon and retroperitoneal abscess were found. Kocher maneuver disclosed a perforated diverticulm in the second portion of the duodenum. The diverticulum was about 2 cm in diameter (**Fig. 3a**). Simple closure with drainage was performed (**Fig. 3b**), because the location of the ampulla of Vater and distal common bile duct could not be determined with certainty. One mouth after surgery, endscopy showed a duodenal diverticulum on the medial wall, close to the ampulla of Vater (**Fig. 4**).

The patient recovered fully and has been asymptomatic for 25 months.

Fig. 4 One month after surgery, endoscopy showed a diverticulum with no signs of information on the medial wall, close to the ampulla of Vater.

Discussion

Duodenal diverticula are not rare, but complications are uncommon. Most duodenal diverticula are detected incidentally during ERCP or endoscopy. Surgical treatment is required in only 1 to 2% of patients who have duodenal diverticula[1], and complications include hemorrage, diverticulitis, perforation, and biliary obstruction[2,3]. Perforation is the rarest, but the most serious complication and is frequently associated with significant mortality and morbidity. Juler et al.[4] and Duarte et al.[1] reported 101 cases of perforation of a duodenal diverticulum. In 89% of these, the perforated diverticulum was in the second portion of the duodenum. In 70% of the cases, the perforation was retroperitoneal.

Since there are no pathognomonic signs or symptoms, pre-operative diagnosis is often missed or delayed, and making the correct diagnosis intro-operatively requires a high index of suspicion. Only 13 cases were diagnosed preoperatively[1,4]. Abdominal radiographs showed retroperitoneal air in only 27% of cases[1]. Computed tomography is useful for the identification of small amounts of retroperitoneal air around the duodenum[5,6]. In our patient, computed tomography showed retroperitoneal air around the duodenum, right kidney and ascending colon.

Duarte et al.[1] reported that only 2 of 101 patients were treated successfully with conservative therapy. So far it has been thought that diverticula perforation occurs because inflammation extends to the whole of the diverticulum. The standard treatment for perforated duodenal diverticula is surgery, consisting of a diverticulectomy with two-layer closer of the duodenum. However, surgical complications are common, and Duarte et al. reported a complication rate of 41% in 45 cases. The main complications are common bile duct injury, pancreatitis, duodenal fistula[1]. The problem is that identification of the ampulla of Vater can be difficult when there is extensive periduodenal inflammation. To avoid surgical misadventure, we performed closure and drainage without divertiunlectony close to the distal common bile duct and ampulla of Vater simple closur of a perforated duodenal diverticulum with drainage is a viable option when the surgical anatomy is ambiguous and inflammation does not extend to the whole of the diverticulum.

References

1. Duarte B, Nagy KK, Cintron J: Perforated duodenal diverticulum. Br J Surg 1992; 79: 877–881.
2. Munnell ER, Preston WJ: Complication of duodenal diverticula. Arch Surg 1966; 92: 152–156.
3. Brian JF, Stair JM: Noncolonic diverticular disease. Surg Gynecol Obstet 1985; 161: 189–195.
4. Juler GL, List JW, Stemmer EA, Connolly JE: Perforating duodenal diverticulitis. Arch Surg 1969; 99: 572–578.
5. Glazer GM, Buy JN, Moss AA, Goldberg HI, Federle MP: CT detection of duodenal perforation. AJR 1981; 137: 333–336.
6. Gore RM, Ghahremani GG, Kirsch MD, Nemcek AA Jr, Karoll MP: Diverticulitis of the duodenum: Clinical and radiological manifestation of seven cases. Am J Gastroenterol 1991; 86: 981–985.

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