



## A Rare Case of Primary Aortoduodenal Fistula

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Aortoduodenal fistula is a rare but life-threatening condition that can cause gastrointestinal bleeding. Due to its rarity, it is often overlooked as a cause of gastrointestinal blood loss. Notably, the mortality rate of aortoduodenal fistula is nearly 100% in undiagnosed and untreated cases. We report a case of aortoduodenal fistula, which resulted in the patient's death. This report highlights the importance of considering even extremely rare causes of gastrointestinal bleeding in the differential diagnosis in patients with such a presentation. (**Korean J Helicobacter Up Gastrointest Res 2020;20:164-166**)

**Key Words:** Aortic aneurysm, abdominal; Endoscopy; Fistula

### INTRODUCTION

Aortoduodenal fistula is an abnormal communication between the aorta and the duodenum.<sup>1-3</sup> It is a rare but fatal cause of gastrointestinal bleeding.<sup>2,3</sup> Early diagnosis is challenging, since there are not always active bleeding on the endoscopy.<sup>2,4,5</sup> Thus, abdominal CT with intravenous contrast helps a high index of suspicion.<sup>4,5</sup> Herein, we report a case of aortoduodenal fistula which gives us a lesson that a high index of suspicion even for extremely rare causes is always needed in evaluation of gastrointestinal bleeding. This case is unique in that the fistula formed as a result of an atherosclerotic infrarenal aorta and a visible vessel in the duodenum the etiology of which was not clear.

### CASE REPORT

A 79-year-old man presented to Incheon St. Mary's Hospital because of hematochezia for 3 days. He had no abdominal symptoms, and physical examination was unremarkable. His vital sign was blood pressure of 110/60 mmHg, heart rate of 97/min, respiratory rate of 20/min, and body temperature of 37.1°C. Laboratory findings were

non-specific except hemoglobin level of 9.9 g/dL. He had a history of coronary artery disease and received percutaneous coronary intervention 4 years ago. He was taking aspirin due to the past history. Upper gastrointestinal endoscopy showed a visible vessel in the second portion of the duodenum (Fig. 1A). Hemoclippping was performed at the lesion (Fig. 1B) and the patient was admitted to intensive care unit for monitoring. However, after a few hours later from endoscopic hemostasis, the patient's vital sign became unstable. His blood pressure was dropped to 70/40 mmHg, and heart rate was raised to 160/min. The follow-up hemoglobin level dropped to 5.7 g/dL. Contrast-enhanced abdominal CT revealed a 4-cm partially thrombosed aneurysm (Fig. 1C) with internal air density in the infrarenal aorta. There was also extravasation of contrast dye into the duodenum suggesting an aortoduodenal fistula (Fig. 1D). The patient planned to receive emergency operation or embolization, however, the patient expired within 12 hours after arriving to Incheon St. Mary's Hospital. As early diagnosis is mandatory for improved survival, aortoduodenal fistula should be suspected when a visible vessel is present without an ulcer.

### DISCUSSION

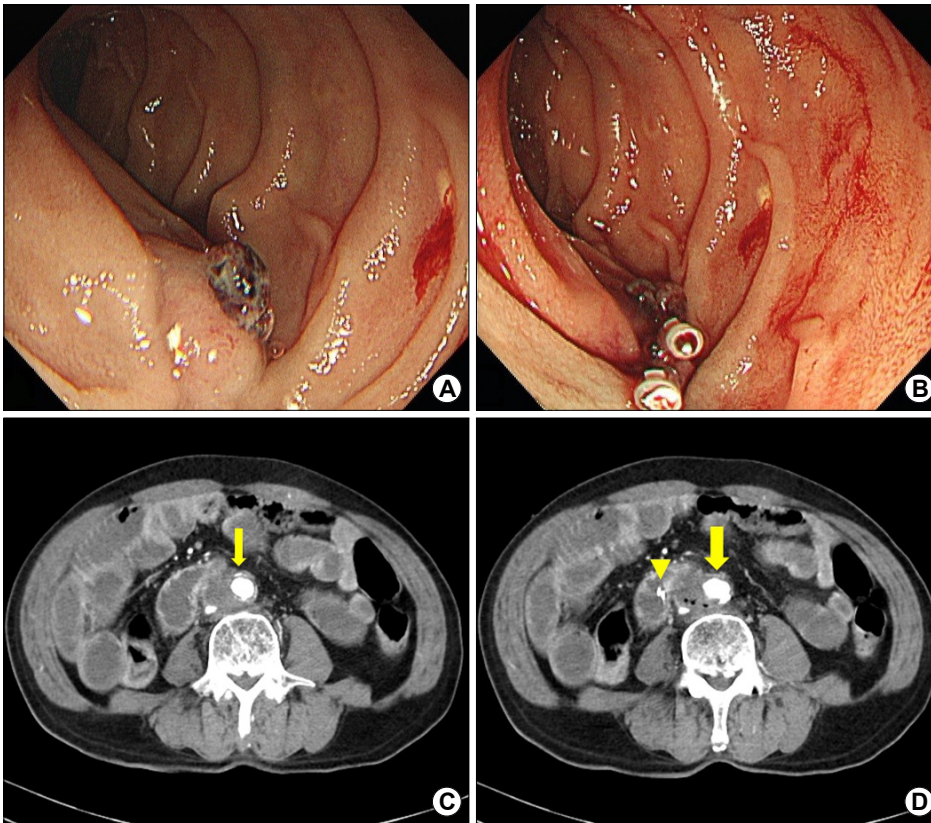
Primary aortoenteric fistula is defined as a tract between naïve aorta and any site of gastrointestinal tract, in the absence of aortic reconstructive surgery or other pro-

Received: October 15, 2019 Revised: November 12, 2019 Accepted: November 15, 2019

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**Fig. 1.** (A) Endoscopic image showing a vessel in the second portion of the duodenum. (B) Endoscopic image showing injection of epinephrine and clipping of the vessel with two hemoclips for hemostasis. (C) Contrast-enhanced CT scan showing a partially thrombosed aneurysm (4 cm) of the infrarenal aorta (arrow). (D) Contrast-enhanced CT scan showing extravasation of contrast material (arrowhead) from the aortic aneurysm into the duodenal lumen, visible as an area of internal air density (arrow).

cedures with vascular prostheses.<sup>1,2,5,6</sup> It is one of extremely rare causes of gastrointestinal bleeding, with an incidence of 0.04~0.07%.<sup>7-10</sup> At large, the duodenum is the most common part of aortoenteric fistula, especially the third portion due to its fixed retroperitoneal position with covering the aorta.<sup>5-9</sup>

In 1843, the first case of primary aortoduodenal fistula was reported.<sup>7</sup> Since then, about 300 cases have been reported in literature.<sup>9,10</sup> However, the pathogenesis of primary aortoduodenal fistula is unclear.<sup>6</sup> The most common cause of primary aortoduodenal fistula is reported as abdominal aortic aneurysm with atherosclerosis.<sup>1,2,5-8</sup> Other causes include infection, tumor, foreign body, and radiotherapy.<sup>1,4,7,8</sup> Clinical triad is known as gastrointestinal bleeding, abdominal pain, and a pulsating abdominal mass, though it occurs in 11~25% of primary aortoduodenal fistula cases.<sup>1-3,8,9</sup>

Endoscopy is the most common diagnostic tool of choice for upper gastrointestinal bleeding.<sup>2-4</sup> Unfortunately, endoscopy seldom provides a confirmative diagnostic clue of pri-


mary aortoduodenal fistula.<sup>1,3,8,9</sup> Therefore, a high index of suspicion and an aggressive diagnostic approach is recommended.<sup>4,5,8-10</sup> If endoscopy is inconclusive for consistent gastrointestinal bleeding, then CT with contrast should be considered as a next step.<sup>1,2,4</sup> Evidences of primary aortoduodenal fistula are an extravasation of contrast from the aorta to the duodenum, a calcified aneurysm with gas in it, an aneurysm with adjacent bowel loop and extraluminal gas in periaortic area, or bowel wall thickening overlying an aneurysm.<sup>2,3</sup> And if there is no specific focus even in CT, angiography could be an alternative choice.<sup>5,8</sup>


The early diagnosis of primary aortoduodenal fistula is extremely difficult because of its nonspecificity and diversity of clinical presentation.<sup>1,4,8</sup> Not only the diagnosis, but also the treatment is quite challenging. If undiagnosed and untreated, the mortality rate becomes nearly 100%.<sup>1,7,9</sup> Therefore, if the diagnosis is confirmed, immediate exploratory laparotomy should be proceeded.<sup>1,3,5,10</sup> Endovascular repair is becoming an attractive treatment option.<sup>3,4</sup>

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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