

## Gastric ulceration after fundoplication: A complication to keep in mind

Fundoplikasyon sonrası gastrik ülser: Akılda tutulması gereken bir komplikasyon

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To the Editor,

Laparoscopic fundoplication has become the standard surgical procedure for the treatment of gastroesophageal reflux diseases such as reflux esophagitis and hiatal hernia (1). Long-term complications of fundoplication include prolonged dysphagia, increased flatulence, gas-bloat syndrome, and gastric ulcers (GU). Of these complications, GU occurs in nearly 1-5% of the patients (2). These ulcers occur predominantly in the upper part of the lesser curvature of the stomach, which is distinctly different from the usual location of gastric peptic ulcers.

The etiology of GU in this clinical setting is unclear, but pyloric incompetence, reflux gastritis, delayed gastric emptying, inadequate operative technique, local ischemia, and trauma to the vagus nerve have each been proposed as possible causative factors (3). The mechanism of the development of GU after fundoplication may be multifactorial (4).

The treatment of GU after fundoplication usually includes the administration of proton pump inhibitors, eradication of *Helicobacter pylori* and sometimes gastrectomy (4).

Here, we report a case with GU occurring after laparoscopic fundoplication. If the diagnosis of 'GU due to laparoscopic fundoplication' had been recalled earlier, the patient would have been spared a number of useless and expensive examinations.

A 69-year-old male patient admitted to our Outpatient Clinic with complaints of bloating and fatigue. He had no chronic disease or medication but had undergone laparoscopic fundoplication operation for a large hiatal hernia four months before. The gastroscopy performed after the operation revealed a 4 cm ulcer in the pericar-

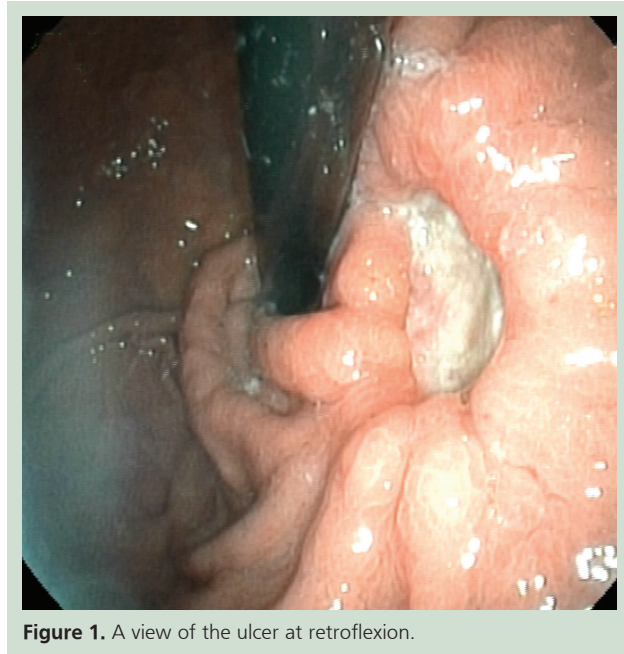


Figure 1. A view of the ulcer at retroflexion.

diac region. Thereafter, a number of blood tests, computerized tomography (CT), positron emission tomography (PET)-CT, three gastroscopies with biopsies from ulcer margins, and finally an endoscopic ultrasound (EUS) examination were performed in search of a malignancy, but always with negative results.

We performed another gastroscopy and saw a large and deep, 4 cm ulcer at the aforementioned site; peri-ulcer biopsies were negative for a malignancy and the antral biopsies revealed *H. pylori* positivity. The patient was started on a 14-day modified concomitant therapy for *H. pylori* eradication (5).

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A follow-up gastroscopy revealed *H. pylori* negativity with antral biopsies, but there was no sign of healing at the ulcer; on the contrary, the GU deepened (Figure 1). It was decided that the GU was a complication of the fundoplication. For fear of gastric perforation at the ulcer site, the patient was sent back to the surgeon who performed the operation. The patient underwent a second operation, subtotal gastrectomy, and has been doing well during the follow-up.

Since its introduction in 1991, laparoscopic fundoplication has become the surgical treatment of choice for the definitive therapy of gastroesophageal reflux disease refractory to medical therapy and hiatal hernia (6, 7). Long-term complications of fundoplication include dysphagia, flatulence and gas-bloat syndrome, and GUs. These ulcers occur predominantly in the upper part of the lesser curvature of the stomach, which is distinctly different from the typical location of gastric peptic ulcers.

According to Maher and Cerda (8), secondary gastric stasis and hypergastrinemia due to vagal dysfunction associated with the surgical procedure are among the

risk factors for the onset of GUs. Furthermore, there are reports on the importance of protecting the vagus nerve. Local ischemia in the upper part of the lesser curvature and mechanical trauma were also involved in the onset of ulcers. The eradication of *H. pylori* may be an effective therapeutic mean to prevent GUs after fundoplication (4). After all, the mechanism may be multifactorial.

In our case, a deep and wide cardia ulcer appeared after laparoscopic fundoplication and proved to be refractory to proton pump inhibitors, antacids and *H. pylori* eradication. Trauma of the vagus nerve and local ischemia may have been the causative factors. To prevent perforation, the patient underwent subtotal gastrectomy.

This case represents a typical 'GU due to laparoscopic fundoplication', and the preoperative gastroscopy revealed no sign of ulcer or malignancy there. Efforts were wasted in search of a malignant ulcer. A gastroenterologist must take a careful medical history before performing any diagnostic effort, and the diagnosis 'GU due to laparoscopic fundoplication' must be called to mind in a similar setting.

## REFERENCES

- 1- Laine S, Rantala A, Gulichsen R, et al. Laparoscopic vs conventional Nissen fundoplication: a prospective randomized study. *Surg Endosc* 1997; 11: 441-4.
- 2- Luostarinen M. Nissen fundoplication for reflux esophagitis. *Ann Surg* 1993; 217: 329-37.
- 3- Bremner CG. Gastric ulcer after the Nissen fundoplication. *S Afr Med J* 1977; 1: 791.
- 4- Omura N, Kashiwagi H, Yano F, et al. Gastric ulcer after laparoscopic fundoplication for gastroesophageal reflux disease: significance of the eradication of *Helicobacter pylori*. *Surg Laparosc Endosc Percutan Tech* 2007; 17(3): 193-6.
- 5- Toros AB, Ince AT, Kesici B, et al. A new modified concomitant therapy for *Helicobacter* eradication in Turkey. *Helicobacter* 2011; 16(3): 225-8.
- 6- Humphries LA, Hernandez JM, Clark W, et al. Causes of dissatisfaction after laparoscopic fundoplication: the impact of new symptoms, recurrent symptoms and the patient experience. *Surg Endosc* 2013; 27: 1537-45.
- 7- Manduch M, Rossiter JP, Depew WT, et al. Fatal hemorrhage from a gastroaortic fistula secondary to gastric ulceration associated with Nissen fundoplication and nonsteroidal anti-inflammatory drug use. *Can J Gastroenterol* 2008; 22(3): 299-302.
- 8- Maher JW, Cerda JJ. The role of gastric stasis in the genesis of gastric ulceration following fundoplication. *World J Surg* 1982; 6: 794-9.