Transarterial Embolization of Massive Gastric Ulcer Bleeding in Gastrostomy Patients Caused by a Balloon Replacement Tube: A Case Report

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We present the case of a 77-year-old woman with massive gastric ulcer bleeding caused by a balloon replacement tube that required emergent transcatheter left gastric arterial embolization to stop the ulcer bleeding.

Index words: Gastrostomy
Stomach, ulcer
Embolization

Percutaneous gastrostomy is a widely performed procedure in patients who require enteral nutrition or gastric decompression. Minimally invasive techniques, such as percutaneous endoscopic gastrostomy (PEG) or percutaneous radiologic gastrostomy (PRG) have largely replaced surgical gastrostomy in clinical practice [1]. Several studies have been undertaken to evaluate the success and safety of percutaneous gastrostomy [2, 3]. Major complications have been reported to range from 0 to 6% and minor complications from 2.9-15% [2-4].

There have been few reports of gastric ulcer bleeding related to indwelling gastrostomy tubes [5-7]. In previous cases, ulcer bleeding was controlled by endoscopic local injection with epinephrine. However, to our knowledge, no studies have reported on massive gastric ulcer bleeding related to a gastrostomy tube that required transcatheter arterial embolization to stop the gastric ulcer bleeding. We present a case of massive gastric ulcer bleeding caused by a balloon replacement tube that required transcatheter arterial embolization to stop the gastric ulcer bleeding.

Case Report

A 77-year-old woman was referred to interventional radiology for embolization of acute gastrointestinal rebleeding. Two days previously, she had experienced a first episode of acute gastrointestinal bleeding, and had received local injection with a solution of epinephrine in sodium chloride into the bleeding gastric ulcer by an endoscopic approach.

The patient had a history of a cerebrovascular accident 10 years previously. Initial PEG had been performed for nutritional support three years previously at another hospital using a 20-F mushroom type tube, which was changed three times over a short time period with identical tube types.

Twenty days before her acute bleeding episode, a gastrostomy feeding tube was replaced by endoscopic approach with a 24-F balloon replacement tube (WILSON-COOK, Winston-Salem, NC., U.S.A.) due to previous tube dislodgement. At this time, an upper endoscopy revealed no gastric ulcer.

The patient subsequently underwent an upper endoscopy; acute bleeding due to a gastric ulcer was observed at the posterior wall of the gastric angle. The gas-
Trostomy tube was placed at the anterior wall of the lower body opposite the gastric ulcer; the tip of the balloon replacement tube was near the gastric ulcer (Fig. 1A). Endoscopic local injection with a solution of epinephrine in sodium chloride was performed to stop the ulcer bleeding. Two days later, the patient had a second episode of massive bleeding. Laboratory testing showed the following: 7.1 g/dL hemoglobin, 5.4 mg/dL total bilirubin, 2.8 g/dL albumin and a 13.1 sec prothrombin time. The blood pressure was 90/60 mmHg, and six units of whole blood were transfused.

Emergent left gastric arteriography was performed, and showed active contrast media extravasation with a pseudoaneurysm at the posterior branch of the left gastric artery (Fig. 1B). Transcatheter arterial embolization was performed using a 3-F coaxial microcatheter (Renegade; Medi-Tech/Boston Scientific, Natik, MA., U.S.A.) using histoacryl (histoacryl 0.5 mL and iodized oil 1 mL mixture) to stop the gastric ulcer bleeding (Fig. 1C); this procedure was successful and the bleeding stopped. However, the patient deteriorated due to multi-organ failure. Ten days after the embolization, she died of respiratory and hepatic failure.

Discussion

Gastrostomy feeding is a well-tolerated and efficient method of providing enteral nutrition in patients who cannot tolerate oral feeding. The methods used for such alimentation have been associated with minimal stress, morbidity, and mortality, and have acceptable long-term patient outcome.

Many studies have demonstrated the safety and efficacy of percutaneous gastrostomy (1-4). Wollman et al. (2) performed a comparative meta-analysis of PRG, PEG, and surgical gastrostomy and concluded that PRG had the highest success rate and the lowest complication rate. However, the long-term success of this tube has

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Byong Jong Youn, et al.: Transarterial Embolization of Massive Gastric Ulcer Bleeding in Gastrostomy Patients Caused by a Balloon Replacement Tube

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Fig. 1. A 77-year-old woman presented with acute gastrointestinal bleeding. 
A. Upper endoscopy revealed a bleeding gastric ulcer at the posterior wall of the gastric angle [black arrows]. A balloon replacement tube was placed at the anterior wall of the lower body opposite the gastric ulcer. The tip of the balloon replacement tube is in close proximity with the gastric ulcer [white arrow].
B. Left gastric arterial angiography showing contrast media extravasation with pseudoaneurysm at the posterior branch of the left gastric artery [long arrows]. Note the overlapped digital subtraction artifact of the endogastric balloon [short arrows] and the balloon replacement tube with extravasated contrast media.
C. Transcatheter arterial embolization was performed using a 3-coaxial microcatheter with histoacryl [histoacryl 0.5 mL and iodized oil 1 mL mixture]; gastric bleeding then stopped.

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been limited by problems with catheter obstruction and dislodgement; this may be related to the gastrostomy tube conformation.

Reports of a gastric ulcer development after balloon gastrostomy tube placement are scarce (5-7). Explanations have been published regarding the mechanism underlying the development of gastric ulcer after balloon gastrostomy tube placement. Kanie et al. (8) reported that a PEG tube with a long protruding tip was associated with a significantly higher frequency of post-PEG gastric ulcer due to contact injury to the gastric mucosa caused by the tip of the tube. In our case, the gastric ulcer was observed on the posterior wall of the gastric angle, where the tip of the balloon tube came into contact with the mucosa. Moreover, the ulcer appeared in a previously stable patient shortly after the initial gastric tube was replaced by a balloon replacement tube. This outcome suggests that the development of a gastric ulcer, after balloon gastrostomy tube replacement, may be due to mechanical injury caused by the tip of the tube to the gastric mucosa.

Delatore et al. (5) reported two cases of gastric ulcer bleeding following balloon gastrostomy tube replacement; in these cases, the ulcer was located at the site where the tip of the tube was wedged against the posterior gastric wall. The ulcer was treated by local injection with a solution of epinephrine in sodium chloride which was sufficient to stop the ulcer bleeding. However, in our case, endoscopic local injection was insufficient to stop the gastric ulcer bleeding; emergent left gastric arterial embolization was required to treat the bleeding.

The time interval between gastrostomy placement and the development of gastric ulcer is uncertain. In several case reports, gastric ulcer bleeding occurred two weeks to six months following gastrostomy tube placement (5, 7). However, there is one case report where gastric ulcer bleeding occurred 12 years after gastrostomy tube placement (6). In our case, gastric ulcer bleeding occurred three weeks after the balloon tube replacement.

The case reported here demonstrates that balloon replacement tube placement can cause massive gastric ulcer bleeding; in this case, transarterial embolization was needed to stop the ulcer bleeding. Therefore, choosing the appropriate tube type may be crucial for preventing gastric ulcer bleeding after gastrostomy tube replacement.

References
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