



## Recurrence of gastric cancer caused by implantation of tumor cells after percutaneous transesophageal gastrostomy

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To the Editor,

We read with interest the article by Nakaoka et al. [1], which reported a rare gastric cancer recurrence case caused by tumor cell implantation in a mucosal laceration after curative gastric endoscopic submucosal dissection (ESD). The authors concluded that endoscopists should be aware of such a recurrence. Similarly, we found a recurrence of gastric cancer caused by implantation of tumor cells after percutaneous transesophageal gastrostomy (PTEG). Preoperative double PTEG (dPTEG) was reportedly effective for addressing pyloric stenosis in patients with gastric cancer [2]. However, we should understand the rare and serious complications of PTEG.

A patient in his 90s with diffuse infiltrative-type gastric cancer as well as lower gastric body and antrum stenosis was admitted to our hospital. Sixteen days preoperatively, dPTEG was performed to achieve decompression and establish enteral nutrition. Intraoperatively, distant metastasis was not detected. Laparoscopic total gastrectomy with Roux-en-Y reconstruction was performed. The patient had a favorable postoperative course without complications. He was pathologically diagnosed with moderately differentiated adenocarcinoma (tub2), pT4a, N2, M0, stage IIIA. Adjuvant chemotherapy with tegafur/gimeracil/oteracil was administered for 1 year. The patient had good oral intake and could

independently perform activities of daily living. One year postoperatively, the PTEG tube was removed; there was no noted recurrence or metastasis. One month after PTEG tube removal, a 3-cm enlarging indurated mass, localized at the PTEG removal site, was noted (Supplemental Fig. 1). Neck tumor resection was performed under local anesthesia. The pathological diagnosis was metastasis of adenocarcinoma, tub2. Immunohistochemistry was performed to clarify that the neck tumor at the PTEG site was a recurrence of gastric cancer. Interestingly, both tumors were diffusely positive for MUC2, MUC5AC, and MUC6 and negative for CD10. The patient did not have a recurrence during the 1.5-year postoperative follow-up period.

PTEG complications include tube malfunction, bleeding, superficial infection, leakage, and pneumonia [3–6]. In our hospital, 180 patients underwent PTEG from 2013 to 2021. The PTEG-related complications were aspiration pneumonia, bleeding, and mediastinal emphysema in three (1.6%), two (1.1%), and one patient (0.6%), respectively. dPTEG was performed in 59 patients (32.7%) to achieve decompression and establish enteral nutrition. Postoperative PTEG was used to establish enteral nutrition in combination with oral nutrition by removing the tube used preoperatively and re-placing the tip in the jejunum.

This was the first report of gastric cancer recurrence localized at the PTEG removal site. The recurrence likely developed via implantation, when the fistula was exposed to gastric juices through the esophagus during preoperative decompression [1, 7]. Intra-gastric exfoliation of the primary tumor owing to mechanical stimulation of the PTEG tube might have resulted in recurrence. Preoperative gastric washing by distilled water through the PTEG drainage tube might have reduced free gastric cancer cells to prevent implantation into the PTEG site [8].

PTEG is indicated for patients requiring palliative nutrition and decompression for unresectable malignancies. Preoperative decompression is an effective treatment option

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for obstructive gastric cancer. When performing PTEG, the spread of tumor components in the gastric juice to the fistula should be prevented.

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## Declarations

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**Informed consent** Written informed consent was obtained from the patient for the publication of this report and any accompanying images.

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