

Case Report

Colocutaneous fistula as a complication of percutaneous endoscopic gastrostomy

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We present an unusual complication of percutaneous endoscopic gastrostomy (PEG), colocutaneous fistula. The patient was a 74-year-old woman with multi-infarct dementia. PEG tube was placed by the standard "pull" technique without difficulty. Colocutaneous fistula was discovered five months later, during the procedure of replacement of the tube following inadvertent tube removal. Abdominal CT showed the fistula tract penetrating right in the middle of the intestinal wall of the transverse colon. In the course of conservative treatment, the fistula healed spontaneously. There were no symptoms or findings associated with peritonitis. As the reinsertion of PEG tube was considered to involve a great risk of repeated injury in the transverse colon, percutaneous trans-esophageal gastrostomy was applied and the patient left the hospital. In abdominal X-ray of gastrografin contrast study at a week after the initial tube placement, the internal bumper of the tube slightly overlapped the inferior border of the transverse colon. When these X-ray findings were combined with the above abdominal CT findings, it was indicated that the marginal part of the transverse colon was tucked in between the bumper of PEG tube and the abdominal wall, and prolonged pressure against the intestinal wall resulted in the formation of colocutaneous fistula. This event is unpredictable, but is likely in elderly and pediatric patients whose mesenteries and gastrocolic ligaments are lax. Frequency of occurrence is thus considered to remain in a certain percentage, though it should be very low.

(Key words : colocutaneous fistula, percutaneous endoscopic gastrostomy, intestinal injury, complication)

Introduction

Percutaneous endoscopic gastrostomy (PEG) has become the standard method of providing long-term enteral nutrition in both adults and children. However, complications associated with PEG are not ignorable; the overall complication rate ranges from 4.9% to 10.8%¹⁻³. Reports of cases include wound infections such as cellulitis, tube malfunction or dislodgment, aspiration

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pneumonia, acute hemorrhage, and lacerations in the stomach, the small bowel or in the colon^{1,2}.

The following case report describes a rare complication of PEG, colocutaneous fistula. The mechanism, clinical course and treatment of this complication are discussed with reference to the literatures.

Case report

A 74-year-old woman with no history of abdominal surgery underwent PEG tube placement, because she was unable to swallow foods due to severe multi-infarct dementia and had recurrent aspiration pneumonia. The standard "pull" technique was used for the tube placement. Transillumination and clear finger indent confirmed the site of the puncture. The needle punctured the abdominal wall perpendicularly and the PEG tube was placed at the anterior middle body of the stomach. The time required for this procedure was about ten minutes. A week later, gastrografen contrast examination was carried out to ensure that the tube was correctly positioned (Fig 1). Enteral feeding was started without any trouble except for mild wound infection, and the patient was discharged. The PEG tube functioned well until five months later, when her caretaker noticed that the PEG tube was pulled out of the body. The patient was hospitalized for re-insertion of the tube.

At the time of admission, her vital signs and laboratory data were normal. The abdomen was soft with no sign of peritonitis and the PEG site was clean and dry. There was a small amount of blood at the site. A 10Fr Forley catheter was smoothly inserted, but gastrografen examination showed the tube located in the transverse colon (Fig 2) with fecal material sucked in. Because no gastrografen flowed into the stomach after second insertion, we could not recognize the finding of gastrocolic fistula in the Gastrografen study and we supposed that the gastrocolic fistula had closed up soon after the PEG tube was pulled out. Formation of colocutaneous fistula became evident and the fecal material was aspirated as much as possible from the tube. The colocutaneous fistulography on the next day confirmed that there was no leakage into the peritoneal cavity. Four days later, the tube was removed after making sure



Fig 1. Gastrografen study through the PEG tube at a week after the initial tube placement. The new tube was properly placed in the stomach and there was no leakage of gastrografen. The internal bumper of the PEG tube slightly overlapped the inferior border of the transverse colon. St: Stomach. TC: Transverse colon.



Fig 2. Gastrografin study during the procedure of tube replacement. The tube penetrated the middle of the intestinal wall. There was no contrast of stomach and no leakage into the peritoneal cavity.

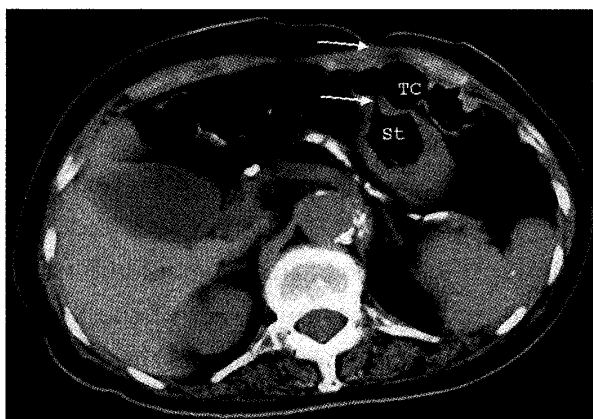


Fig 3. Abdominal CT after removal of the colcutaneous tube revealed that the fistula tract penetrated the middle of the colonic lumen. The white arrows indicate the route of the fistula tract. St: Stomach. TC: Transverse colon.

that there was no spillage of fecal material from the tube, and the patient was subjected to central venous hyperalimentation. The colcutaneous fistula healed spontaneously. Abdominal CT showed absence of free air and contrast material in the peritoneal cavity. There was none of such findings indicating peritonitis as abdominal defense, fever, increase in white blood cell count or in CRP.

In view of the abdominal CT findings of the fistula tract penetrating the transverse colon to reach the stomach (Fig 3), we considered that further PEG tube placement carried a considerable risk of injury in the transverse colon. Based on her overall condition, percutaneous trans-esophageal gastrotubing (PTEG)⁴ was preferred to surgically or laparoscopically placed gastrostomy tube. After the placement of PTEG, gastrografin study demonstrated no contrast material in the transverse colon and no intra-abdominal extravasation. Feeding was started without any trouble and the patient was discharged.

Discussion

Colocutaneous fistula is one of the rare complications of PEG. Its characteristic signs are

enteral formula in stool, feculent vomiting, fecal drainage from the PEG tube and the occlusion of the tube^{2,5-12}. The symptoms of colocutaneous fistula are insidious and usually the event is not discovered until the checkup of the tube. A few case reports described the event found after the replacement of the tube, as in the present case, following inadvertent removal of the original one⁷.

In most of the cases patients were treated by conservative therapy after removal of the tube in the fistula, and spontaneous healing of the fistula was achieved². There is also an isolated report in which natural healing of gastrocolic fistula did not occur⁵. We consider it is important to decompress the inside of the colon by aspiration of feculent material before removing the colocutaneous tube. Another placement of PEG tube is not assessed to be appropriate because the gastrocolic adhesion increases the risk of further injury in the transverse colon. There is actually a report of such a case⁶. Application of percutaneous trans-esophageal gastrostomy (PTEG)⁴ should be considered when the invasive procedures of surgically or laparoscopically placed gastrostomy are not suitable.

Occurrence of colocutaneous fistula is attributed to the perforation in the transverse colon, made either acutely by erroneous puncture during the initial PEG tube placement, or chronically by an erosion in the adjacent intestinal wall². In the present case, gastrografen study at a week after the initial PEG tube placement demonstrated the internal bumper of the PEG tube slightly overlaid the transverse colon (Fig 1). However, abdominal CT and gastrografen examination showed the fistula tract penetrating the middle of the intestinal wall of the transverse colon. We considered that the marginal part of the transverse colon was tucked in between the internal bumper and the abdominal wall, and the colocutaneous fistula was caused by prolonged pressure on the intestinal wall. When the original PEG tube was removed, the anterior rotation of the transverse colon occurred and the hole of the fistula moved to the middle part in the X-ray image. It is not likely that the perforation in the transverse colon was made at the time of re-insertion of the tube, because the fistulography on the following day showed only the shape of the fistula tract and the patient showed no sign of peritonitis.

Some author described that the amount of air insufflation into the stomach was important as excessive air induced a transverse colon drift on the stomach by gastric rotation and push of the distended small intestine⁵. In our patients, however, we did not recognize excessive air insufflation and the time required for the procedure was short. The site of puncture was carefully confirmed by transillumination and clear finger indent. Other authors reported occurrence of injuries in the transverse colon encountered in appropriate and smooth PEG procedures^{10,13}.

We should be aware that, although the incidence of colocutaneous fistula in PEG is very low, it will remain in a certain percentage. One of the reasons is that PEG is a preferred method of enteral feeding in elderly or pediatric patients whose mesenteries of the colon and gastrocolic ligaments are lax. For the prevention of the unpredictable event that a part of the intestine is trapped in the narrow space between the bumper and the abdominal wall, abdominal ultrasonography or a fluoroscopy prior to the puncture may be useful. Further, gastrografen examination through the PEG tube should be carried out at the time of the first replacement of the tube for

early diagnosis and treatment.

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内視鏡的胃瘻造設術後に皮膚結腸瘻をきたした一例

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要 約

多発性脳梗塞の74歳女性に pull 法による内視鏡的胃瘻造設術 (PEG) を施行した。5ヶ月後、PEG チューブが事故的に抜去され入院となった。チューブ再挿入後造影したところ、横行結腸が造影され皮膚結腸瘻と診断された。保存的治療で瘻孔は自然に閉鎖し、腹膜炎は発症しなかった。経皮的経食道胃管挿入術を施行後退院とした。PEG 造設 1 週間後の造影検査で PEG チューブの先端は横行結腸ガス像の辺縁

にあった。PEG 造設直後に腹膜炎を発症しなかったことも考えると、本症例では造設時の横行結腸誤穿刺よりは、横行結腸壁が Bumper と腹壁の間に挟まれて慢性的に瘻孔を形成したという方が考えやすいと思われた。稀ではあるが Bumper で胃壁を腹壁に固定する際に腸管を挟み込むことの予測、予防は難しく、本合併症は一定の頻度で起こりえるものと考えられ、初回のチューブ交換時には念頭に置く必要がある。

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