

## Colocutaneous fistula after percutaneous endoscopic gastrostomy in a remnant stomach

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Received: 26 June 1997/Accepted: 8 May 1998

**Abstract.** An 82-year-old woman underwent percutaneous endoscopic gastrostomy (PEG) 5 years after partial gastrectomy for cancer. Four months after PEG insertion, a colocutaneous fistula was noted at exchange of the PEG tube. Colocutaneous fistula is a rare and major complication of PEG with 10 reported cases to date. In eight of the 11 reported cases, including this case, fistulas appeared late (>6 weeks) after PEG insertion. This complication may heal after removal of the PEG alone, if the fistula has formed completely; otherwise a surgical approach is necessary for the treatment. Since five of the 11 reported patients had previously undergone abdominal surgery, prior abdominal surgery may increase the risk of a colonic injury after PEG. Open surgical gastrostomy is a wiser option when performing gastrostomy in patients with prior abdominal surgery.

**Key words:** Colon — Colocutaneous fistula — Percutaneous endoscopic gastrostomy (PEG) — Gastrostomy — Remnant stomach — Adhesions — Diarrhea

Since Gauderer et al. [4] first introduced percutaneous endoscopic gastrostomy (PEG) in 1979, it has become an alternative to operative gastrostomy because of its safety and convenience. The complication rate of PEG is low (13.6%), and the complications tend to be minor ones, such as wound infections, aspiration, and stomal leaks [7]. Puncture of a viscus at PEG is rare but serious complication, and several cases with those complications have been reported.

Herein we present the case of a patient who underwent PEG of a remnant stomach, which resulted in a colocutaneous fistula. We also discuss the clinical features of this complication with reference to the literature.

### Case report

An 82-year-old woman suffered a left cerebrovascular accident resulting in right hemiplegia, aphasia, and difficulty

in swallowing. The patient had undergone distal gastrectomy with Billroth I reconstruction for gastric cancer 5 years earlier. Nevertheless, she underwent PEG for feeding. The PEG was performed without difficulties using the push-through technique. Feeding was well tolerated for 4 months.

Because the patient was going to be transferred to another hospital for additional treatment for palsy, the original PEG was replaced with a new tube before transference. Thereafter, she presented with watery diarrhea and no other symptoms. A Gastrografin contrast study through the PEG revealed the tube in the transverse colon with no evidence of a gastrocolic fistula (Fig. 1). The PEG tube was removed and the fistula healed rapidly. The patient underwent repeat PEG in which care was taken to avoid injury to the colon. However, she developed a gastrocolocutaneous fistula again. Subsequently, the patient underwent open surgical gastrostomy. Since that time, she has done well.

### Discussion

Colocutaneous fistula is a rare complication of PEG. To date, there have been only 10 prior reported cases [1–3, 5, 6, 8, 10–12, 15] (Table 1). The actual incidence of this complication is unknown. However, three cases of gastrocolic fistula [9, 14] and one case of jejunoscutaneous fistula [2] have also been reported. There is a likelihood that these conditions have been underreported because they are awkward complications of PEG. Furthermore, colocutaneous fistulas may be masked until fecal material appears in the tube. Thus, the incidence of this complication is probably much higher than has been reported.

The probable etiology of this complication is penetration of the transverse colon interposed between the stomach and the abdominal wall. Manipulation of the PEG tube with excessive tension and tube exchanges may result in migration from the stomach into the colon. It is only then that this complication becomes apparent. Up to this point, the PEG functions normally.

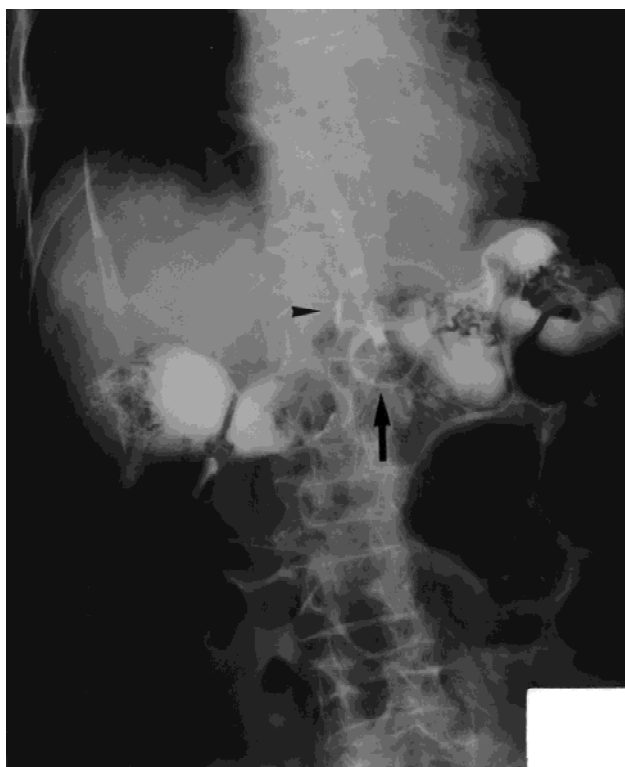
This situation most likely results from adhesions from

**Table 1.** Reported cases of colcutaneous fistula after percutaneous endoscopic gastrostomy

Author (yr)	Age (yr)	Sex	Previous surgery	Interval from insertion and onset	Treatment
Saltzberg et al. (1987)	76	M	exploratory laparotomy	8.5 mo <sup>a</sup>	removal of the PEG
Hacker & Cattau (1987)	66	M	resection of bladder cancer	6 mo <sup>a</sup>	nd
Bui et al. (1988)	29	M	nd	54 days <sup>a</sup>	surgical gastrostomy
van Gossum et al. (1988)	56	M	partial gastrectomy	6 wk <sup>a</sup>	removal of the PEG
Fernandes et al. (1988)	10	M	nd	1 yr <sup>a</sup>	surgical gastrostomy
Berger & Zarling (1991)	75	M	nd	2 wk	removal of the PEG
Scapa et al. (1993)	54	M	nd	3 days	surgical gastrostomy
Minocha et al. (1994)	53	F	nephrectomy and splenectomy	2 yr <sup>a</sup>	removal of the PEG
Levine et al. (1995)	72	F	nd	several days	laparotomy
Siddique et al. (1996)	64	M	nd	1 yr	surgical gastrostomy
Present case (1998)	82	F	partial gastrectomy	4 mo <sup>a</sup>	surgical gastrostomy

nd, not documented.

<sup>a</sup>The onset of colcutaneous fistula was at the time of exchange of the tube.



**Fig. 1.** Gastrografin study through the PEG showing the tube (arrow) in the mid-transverse colon without evidence of a gastrocolic fistula. Auto-suture staples (arrowhead) at the distal gastrectomy anastomosis can be seen near the tube.

previous surgery. In fact, of the 11 reported cases (including this case), five occurred in patients with a prior history of abdominal surgery. Although Stellato et al. [13] stated that PEG can be performed safely in patients with a history of prior abdominal surgery, we consider this a relative contraindication. Before PEG for such patients, evaluation via a contrast study is needed, whether or not the stomach and transverse colon overlap each other.

Clinically, the most common symptoms are watery diarrhea containing feeding solution and the appearance of fecal material in the PEG tube. The diagnosis is easily made using contrast radiography via the PEG. In most cases, there is no evidence of intraperitoneal leakage or gastrocolic fistula.

In eight of the 11 reported cases, the complication was identified >6 weeks after insertion. One of the reasons for the late appearance of this complication is the tight compression of the colonic injury between the stomach and the abdominal wall, while the colon remains its lumen transporting feces. Transverse colon is pressed tightly between the stomach and the abdominal wall. However, the transverse colon is not obstructed completely but the transverse colon keeps its intracolonic space partially, in which feces and flatus can pass. Another reason may be adhesions from previous abdominal surgery.

If intraperitoneal leakage or diffuse peritonitis occur, the treatment is emergency surgery. Because most of these complications occur late, the PEG tube should be removed without laparotomy. The fistula usually closes spontaneously in a few days. Repeat PEG in such patients is associated with a high risk of injury to a viscus. We recommend open surgical gastrostomy in this situation.

In conclusion, PEG in patients with previous abdominal surgery has a risk of injury to the transverse colon and other viscera. This silent complication is masked until a colcutaneous fistula becomes apparent. Open surgical gastrostomy is a safe and reliable option when performing gastrostomy in patients who have previously undergone abdominal surgery.

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