

The buried bumper syndrome: The usefulness of retrieval PEG tubes in its management

Buried bumper sendromu tedavisinde retrival tip perkütan endoskopik gastrostomi tüpünün yararı

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Percutaneous endoscopic gastrostomy is a safe and easy method and carries a low mortality and complication rate. The buried bumper syndrome is a rare and late complication of percutaneous endoscopic gastrostomy tube placement. An 80-year-old man with bilateral basal ganglia bleeding was unable to swallow safely and required tube feeding. A Flexiflo Inverta percutaneous endoscopic gastrostomy tube was successfully inserted by pull technique. One year later, he was readmitted to our clinic because of nonfunctioning tube and peristomal cellulites. Endoscopy demonstrated dimpling of the gastric mucosa on the anterior wall of the stomach. Abdominal computed tomography revealed the bumper to be buried in the abdominal wall. The tube was removed by external traction, without any abdominal incision, and a different site was used for the insertion of a new percutaneous endoscopic gastrostomy tube. No further problems were encountered over the follow-up period of nine months. As a result, the Flexiflo Inverta percutaneous endoscopic gastrostomy tubes with externally removable internal bumpers were found useful in the treatment of buried bumper syndrome, and the buried bumper was easily removed by external traction without any endoscopic or surgical methods.

Key words: Percutaneous endoscopic gastrostomy, buried bumper syndrome.

Perkütan endoskopik gastrostomi enteral beslenmede mortalite ve komplikasyon oranı çok düşük olan kolay ve güvenli bir yöntemdir. Buried bumper sendromu, perkütan endoskopik gastrostominin nadir ve geç komplikasyonlarından biridir. Bilateral bazal ganglion hasarı olan, oral yoldan beslenemeyen ve bu nedenle tüple beslenme ihtiyacı olan 80 yaşındaki bir erkek hastaya kliniğimizde pull tekniği ile beslenme tüpü takıldı. Bu hasta yaklaşık 1 yıl sonra kliniğimize tüpün tıkanması ve peristomal sellülit nedeniyle yatırıldı. Yapılan endoskopide midenin ön duvarında kabarıklık olmasına rağmen perkütan endoskopik gastrostomi tüpünün iç mantarı görülemedi. Batın tomografisinde de iç mantarın batın duvarı içinde gömülü olduğu görüldü. Tüp herhangi bir insizyon yapılmadan eksternal traksiyonla çekildi ve başka bir alandan yeni bir perkütan endoskopik gastrostomi tüpü takıldı. Daha sonraki 9 aylık takipte başka herhangi bir problem yaşanmadı. Eksternal traksiyonla çıkarılabilen iç mantarı olan flexiflo inverta tip perkütan endoskopik gastrostomi tüpleri buried bumper sendromu için yararlıdır. Gömülen mantar herhangi bir endoskopik ya da cerrahi bir müdahale olmadan eksternal traksiyonla kolaylıkla çıkarılabilir.

Anahtar Kelimeler : Perkütan endoskopik gastrostomi, buried bumper sendromu

INTRODUCTION

Since it was described in 1980 (1), percutaneous endoscopic gastrostomy (PEG) has been a widely used method for insertion of a gastrostomy tube in patients who are unable to swallow or maintain adequate nutrition. PEG is a safe and easy method and has a low mortality and complication rate (1). Buried bumper syndrome is a rare and unusual complication of PEG and was first described by Klein et al. in 1990 (2). The condition results from excessive tension between the external and inter-

nal bumpers. This leads to mucosal erosion and embedding of the internal bumper in the gastric wall, causing obstruction to feeding. Several attributing factors may predispose the internal bumper to embedding in the gastric or abdominal wall (3). Removal of the PEG tube with its buried bumper and re-insertion of a new tube is often necessary. Several reports on the non-operative management of the buried internal bumper have been published (4-6). We report a case of buried bumper

syndrome as a late complication of PEG placement. We removed the buried bumper by external traction without the need for endoscopic or external incision and placed a new PEG tube in a different tract.

CASE REPORT

An 80-year-old man was admitted to the Neurology Unit of our hospital in July 2001 due to hypertensive bilateral basal ganglia bleeding. He had a difficult course complicated by coma and bilateral bulbar paralysis, requiring intensive care treatment. A tracheostomy tube had been inserted. He was unable to swallow safely and required tube feeding. A PEG tube (Flocare PEG Set Nutricia Healthcare S.A., The Netherlands) was inserted using the pulling technique. No complication developed related to the PEG during the hospitalization period and the patient was discharged with medical therapy. Two years later, he was admitted to our clinic with deforming tube. The PEG tube was evaluated and replaced with a new PEG with a soft silicone, externally removable internal bumper (Flexiflo Inverta-PEG 20 Fr, Abbott Laboratory, Columbus, OH, USA). One year later, he was readmitted to our clinic because of nonfunctioning tube and peristomal cellulites. On examination, the stoma site was reddish, and at endoscopy, we were unable to see the internal bumper. Endoscopy demonstrated dimpling of the gastric mucosa on the anterior wall of the stomach (Figure 1). We could not inject fluid under pressure through the gastrostomy tube. Abdominal computed tomography (CT) revealed the bumper to be buried in the abdominal wall (Figure 2). According to these findings, a diagnosis of buried bumper syndrome was established. The tube was removed by external traction, without any abdominal incision, and a different site was used for the successful insertion of a new PEG tube by pull technique. At the same time, we started cephazolin sodium (1 g i.m. for 5 days) for peristomal wound infection. The original tract was completely closed in 10 days. No further problems were encountered over the follow-up period of nine months.

DISCUSSION

The buried bumper syndrome occurs when the internal bumper of a PEG tube erodes through the stomach wall into the subcutaneous tissues, and migrates out of stomach (3). It probably occurs as a result of excessive tension between the internal



Figure 1. Endoscopic view of the anterior wall of the stomach showing dimpling of the gastric mucosa

and external bumpers leading to gastric ulceration at the bumper site, which is the main factor in buried bumper syndrome. Other factors include the physical characteristics of the internal bumper, increased abdominal wall thickness and excessive traction on the tube involuntarily (6, 7). A long interval is generally required for the occurrence of ischemic necrosis of the gastric mucosa and the complete coverage of the internal bumper by gastric mucosa. The syndrome usually becomes



Figure 2. Abdominal computed tomography revealed the bumper (arrow) buried in the abdominal wall

apparent two to four months after gastrostomy tube placement (2, 6). However, Frascio et al. (8) reported an interval of as long as seven years. In the present patient, the interval between the insertion of the tube and the occurrence of this complication was one year. The incidence of buried bumper syndrome has been reported as 1.5% to 1.9% (9,10). At our institute, we performed PEG tube placement in 184 patients for various reasons between 1999 and 2006, and this complication was encountered in 1 patient (0.6%). Inability to infuse feeding solution through the tube, peritubular leakage and abdominal pain are the most common manifestations of buried bumper syndrome (4, 6, 8). Most of the cases can be easily diagnosed endoscopically, with findings of nonvisualization of the internal bumper, and on physical examination (4, 6). In addition, abdominal CT or endoscopic ultrasound (EUS) of the gastric wall can reveal the bumper buried in the abdominal wall, and can facilitate its localization. CT or EUS imaging provides valuable additional information in deciding whether a surgical or endoscopic approach should be attempted to remove the PEG (11, 12). In the present patient, CT revealed the burial level of the internal bumper in the abdominal wall. The "needle-knife" technique, first described by Ma et al. (9), had been used for removing the PEG tube in the management of buried bumper syndrome. Another method was described by Frascio et al. (8) in which an external superficial incision is made around the PEG exit site, under local anesthesia, until the internal bumper is exposed. This method can be used if the internal bumper is embedded in the superficial abdominal wall. In recent years, an

externally removable PEG tube with a soft end retrieval internal bumper has been widely used (13). In a case report, two cases of the buried bumper syndrome were successfully managed by simple external traction without any incision and a new PEG tube was inserted in the same tract (4). We managed to remove the bumper using this technique. The tube was removed by external traction, without any abdominal incision. However, because of the peristomal cellulites, we were unable to use the same tract and a new PEG tube was inserted in a different tract. A buried bumper can result in very serious complications, such as perforation of the stomach, peritonitis and death, as in one case report (11). The physician and the caregivers must be careful after gastrostomy tube placement. To prevent buried bumper syndrome, it is advisable to allow for an additional 1.5 cm between the external bumper of the PEG tube and the skin to minimize the risk of pressure necrosis. The PEG tube is periodically pushed in and out of the stomach for 1 to 2 cm and rotated to make sure the internal bumper is not becoming buried in the stomach wall. The length of the tube protruding beyond the abdominal wall should be examined at regular intervals so that migration can be recognized (4, 6, 9).

In conclusion, physicians should be aware of this uncommon but serious complication of PEG placement and of the various approaches for removing the buried bumper. Removing the PEG tube by external traction without abdominal incision can resolve buried bumper syndrome easily, especially in cases in whom retrieval type PEG tubes have been inserted.

REFERENCES

- Gauderer MW, Ponsky JL, Izant RJ Jr. Gastrostomy without laparotomy: a percutaneous endoscopic technique. *J Pediatr Surg* 1980; 15: 872-5.
- Klein S, Heare BR, Soloway RD. The "buried bumper syndrome": a complication of percutaneous endoscopic gastrostomy. *Am J Gastroenterol* 1990; 5: 448-51.
- Schapiro GD, Edmundowicz SA. Complications of percutaneous endoscopic gastrostomy. *Gastrointest Endosc Clin N Am* 1996; 6: 409-22.
- Vu CK. Buried bumper syndrome: old problem, new tricks. *J Gastroenterol Hepatol* 2002; 17: 1125-8.
- Sauer B, Staritz M. Buried bumper - a new method of non-surgical removal. *Z Gastroenterol* 2004; 42: 227-32.
- Gencosmanoglu R, Koc D, Tozun N. The buried bumper syndrome: migration of internal bumper of percutaneous endoscopic gastrostomy tube into the abdominal wall. *J Gastroenterol*. 2003; 38: 1077-80.
- Boyd JW, DeLegge MH, Shamburek RD, Kirby DF. The buried bumper syndrome: a new technique for safe, endoscopic PEG removal. *Gastrointest Endosc* 1995; 41: 508-11.
- Frascio F, Giacosa A, Piero P, et al. Another approach to the buried bumper syndrome. *Gastrointest Endosc* 1996; 43: 263.
- Ma MM, Semlacher EA, Fedorak RN, et al. The buried gastrostomy bumper syndrome: prevention and endoscopic approaches to removal. *Gastrointest Endosc* 1995; 41: 505-8.
- Finocchiaro C, Galletti R, Rovera G, et al. Percutaneous endoscopic gastrostomy: a long-term follow-up. *Nutrition* 1997; 13: 520-3.
- Anagnostopoulos GK, Kostopoulos P, Arvanitidis DM. Buried bumper syndrome with a fatal outcome, presenting early as gastrointestinal bleeding after percutaneous endoscopic gastrostomy placement. *J Postgrad Med* 2003; 49: 325-7.

12. Braden B, Brandstaetter M, Caspary WF, Seifert H. Buried bumper syndrome: treatment guided by catheter probe US. *Gastrointest Endosc* 2003; 57: 747-51.
13. Cass OW, Rowland K, Bartram JR, et al. Insertion, efficacy, and removal of a nonendoscopically removable percutaneous endoscopic gastrostomy (PEG) tube. *Surg Endosc* 1999; 13: 516-9.