

# Abdominal Wall Metastasis After PEG Placement in Patients with Oropharyngeal Cancer

by Tarun Narang, Stacy Ugras, Mark Pochapin, Michael Lieberman

## BACKGROUND

**P**ercutaneous endoscopic gastrostomy (PEG) is commonly used in patients with head and neck cancer in order to provide sufficient enteral nutrition peri-operatively and during radiation therapy. Recognized complications of PEG include infection, bleeding, dislodgement, peritonitis, bowel perforation, and aspiration pneumonia. (1). Metastases to PEG sites are rare but are being recognized with increasing frequency (2–6). This complication carries a grave prognosis, and mean survival in the reported cases so far has been noted to be approximately three-to-four months (7).

We report our experience of a patient with stage 4 base of tongue squamous cell cancer who developed a metastatic lesion at the gastrostomy site ten months after PEG placement using the “pull technique.” Our case is unique as it depicts a rare and usually fatal complication of PEG insertion. In addition, disease free survival of eight months after removal of PEG site metastasis is extremely rare.

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Tarun Narang, M.D., Clinical Research Assistant, Jay Monahan Center, Division of Gastroenterology and Hepatology; Stacy Ugras, M.D., Resident, Department of Surgery; Mark Pochapin, M.D., Jay Monahan Center, Division of Gastroenterology and Hepatology; and Michael Lieberman, M.D., Jay Monahan Center, Department of Surgery; New York Presbyterian Hospital, Weill Cornell Medical Center, New York, NY.

## CASE REPORT

A 66-year-old white male presented in May 2007 with a two week history of an enlarging right-sided neck mass subsequently diagnosed as squamous cell carcinoma from a primary tumor at the base of the tongue. Bilateral neck metastases and a left-sided lung nodule were present at the time of initial presentation. He underwent a left video-assisted thoracoscopic surgery, upper lobe wedge metastatectomy, and laryngoscopy with biopsy of the base of tongue tumor. This was followed by PEG placement using the “pull” technique. Post-operatively he received a two month course of chemotherapy and radiation followed by brachytherapy. The PEG was used during this time for feeding without issues. Subsequent surveillance PET/CT scans revealed resolution of the primary tumor as well as the lung nodule.

PEG was removed in January 2008, eight months after placement as the patient was maintaining adequate nutritional status orally. In March, 10 months after diagnosis and approximately two months after PEG removal, he presented with a two week history of a rapidly enlarging bulky ulcerative mass of his abdominal wall, at the site of the prior gastrostomy.

PET/CT revealed a 9.6 cm hyper-metabolic mass within the abdominal wall inseparable from the gastric wall at the site of the prior PEG (Figure 1). Biopsy revealed invasive and poorly differentiated squamous cell carcinoma (Figure 2). No other metastatic lesions were noted. Subsequently, the patient underwent exci-

### A CASE TO REMEMBER



**Figure 1.** Abdominal wall mass at PEG tube site.

sion of the abdominal wall tumor and sleeve gastrectomy with abdominal wall reconstruction. Pathology revealed poorly differentiated squamous cell carcinoma involving the skin, subcutaneous tissue, and adjoining stomach, with mucosal and lymphatic invasion. The patient had an unremarkable post-operative course and was discharged home on post-operative day five tolerating a diet.

### DISCUSSION

Supplemental enteral feeding is commonly needed in patients with advanced head and neck cancer due to dysphagia and odynophagia secondary to the tumor as well as the side effects of radiation therapy. Due to its ease of insertion and lower rates of complications (8-10), PEG replaced the traditional open Stamm gastrotomy. Different techniques of PEG placement have been described—Ponsky-Gauderer pull-string method, Sachs-Vine push-over-wire method, introducer or Russell method, and Seldinger radiologic-assisted method (11–15). The stomach is endoscopically inflated pushing the gastric wall against the trans-illuminated abdominal wall. A catheter is placed through an incision into the stomach and a thread (pull method) or guide-wire (push method) is passed through the catheter. The “pull” method is the most common technique utilized by gastroenterologists (16). This technique involves the thread being pulled endoscopically thereby passing through the abdominal wall, stomach,

esophagus and pharynx, exiting through the mouth. The end of the gastrostomy tube is then tied to the end of the thread leaving the mouth. The other end of the thread that leaves the abdominal wall is then pulled, moving the tube through the mouth into the stomach. The tube is finally pulled through the abdominal wall creating an exit channel (12,17–20). The “push” technique involves a guide-wire being brought out of the patient's mouth instead of the thread, followed by a Sachs-Vine tube being pushed over the wire until the tip exits through the abdominal wall. The “Russell Introducer” method involves direct puncture of an endoscopically insufflated stomach. Introducer and outer peel-away sheaths are inserted over which the gastrostomy tube is pushed (21–23). The complication rate of PEG placement is approximately 5% in patients with head and neck cancer (24). Also, it may be unsuccessful secondary to pharyngeal or esophageal obstruction, inadequate abdominal trans-illumination or intra-operative respiratory distress (25,26).

PEG site metastatic malignant seeding is an extremely rare complication of PEG insertion in patients with advanced head and neck cancer, though it is being seen more commonly. This was first reported in 1977 by Algaratham (27). Most reported cases involve advanced (stage 3 or 4) squamous cell carcinomas. Interval time from procedure to development of stomal metastasis has ranged from three-to-16 months. Anti-cancer therapy was not given prior to PEG placement in most reported cases. The case presented has similarities to other reported cases but an eight month survival after removal of PEG site metastasis makes our case unique.

The mechanism of tumor spread to the PEG stoma site remains controversial but most authors agree that one or more of three possible mechanisms may be responsible: direct implantation, lymphatic spread, or vascular spread. The direct implantation theory is conceptually sound as the passage of an endoscope or gastrostomy tube through the primary tumor site provides a direct route of spread to a fresh and susceptible wound. Direct spread is further supported by the fact that oropharyngeal, esophageal and laryngeal cancers rarely metastasize to the body of the stomach (24,28–32). The alternate hypotheses of lymphatic or

*(continued on page 36)*

### A CASE TO REMEMBER

(continued from page 34)



**Figure 2.** CT abdomen revealing 9 cm abdominal wall mass in continuity with gastric wall.

hematogenous spread of tumor cells preferentially to injured or inflamed areas is in harmony with the current established idea of the mechanism of cancer metastases (33–36). However, metastases to other skin incision sites including wounds and central line sites has never been reported, leading us to believe that there must be at least some element of direct spread from the oropharyngeal tumor.

In light of this mode of spread, several suggestions have been made over the years including the use of tumorocidal agents and also a shielding device to protect the endoscope and PEG tube from contact with the primary malignancy (2,34). Some authors suggest PEG placement only after treatment of the primary tumor (4,37,38). Some have advocated abandoning the “pull” technique in any patient with upper aerodigestive tract malignancy (3,28,32). Sachs-Vine push-over-wire method, Introducer or Russell method, and Seldinger radiologic-assisted method are reasonable options of PEG placement. Nevertheless, these suggestions are not routinely followed. Techniques of PEG insertion other than the “pull” technique, and also open gastrostomy are rarely utilized.

### CONCLUSION

PEG site metastases are rare, though are being seen with increasing frequency among patients with head

and neck cancer. This phenomenon is a potentially fatal complication of PEG placement. Our patient has survived eight months after removal of PEG site metastasis, though mean survival has been noted to be approximately three-to-four months (7). Further studies are needed to prove survival advantage after surgical resection of the PEG site metastasis. Our experience with this case, as well as our review of the literature at this time supports direct malignant cell implantation over other theories of PEG site metastasis. Stomal metastasis is seen usually with the pull technique and most often when the PEG is performed before treatment of the active cancer.

Despite the increasing frequency of the phenomenon of PEG site metastasis, PEG placement with the “pull” technique continues to be a common practice in patients with head and neck cancer. Recognition of the likelihood of this complication necessitates the need for care in PEG placement. Further research is encouraged to determine the risk of the “pull” technique compared with those of open gastrostomy and other PEG placement techniques. Until such studies are performed, physicians need to increase their awareness of this risk. This is a preventable complication and we suggest that in patients with untreated active oro-pharyngeal cancer, alternate methods of PEG tube insertion be used that avoid direct contact between the tube and primary tumor site. PEG placement after resection of the primary tumor is a reasonable option to minimize the risk of stomal metastasis. However, this may not be an option in patients treated primarily with radiation.

Further, the PEG site should be evaluated at regular intervals and any suspicious lesion should be biopsied. Large size, rapid or polypoid growth, induration, ulceration, friability/bleeding and persistent peristomal drainage may signify metastasis. Wide en bloc resection of the tumor at the gastrostomy site may be indicated as was done in our patient. ■

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(continued on page 38)

(continued from page 36)

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