Laparoscopic-assisted percutaneous endoscopic gastrostomy tube insertion in the immediate post-partum period for head and neck cancer

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Abstract

Percutaneous endoscopic gastrostomy (PEG) tube placement serves as a well-tolerated and efficacious technique for long-term enteral access in patients with medical conditions precluding oral food intake. The nutritional optimisation of patients with oral cancer is mostly achieved via PEG tube placement. However, certain special situations, such as pregnancy and the immediate post-partum period, may render the placement of PEG tubes to be a challenge. A 28-year-old pregnant female patient presented to us with the diagnosis of squamous cell carcinoma of the tongue during her third trimester. Definitive surgical resection was planned post-delivery along with simultaneous PEG tube placement. Immediately following delivery via an elective Caesarean section, she successfully underwent laparoscopic-assisted PEG tube placement. A gravid uterus or an immediately post-partum distended uterus poses significant difficulties whilst attempting PEG insertion. However, laparoscopic-assisted PEG insertion in a controlled setting may make the process safer to perform.

Keywords: Head and neck cancer, Percutaneous endoscopic gastrostomy, Pregnancy.

Introduction

Head and neck cancer has an annual incidence of 550,000 cases worldwide.[1] Surgical intervention often serves as an integral part of the treatment plan.[1] Post-operative complications such as wound infections, fistulae, and sepsis contribute to poor long-term outcomes and increased cost-of-care and hospital stay. Alterations in host defences coupled with post-operative radiotherapy make such patients highly susceptible to infections and post-operative complications.[2]

Nutritional optimisation in such patients is often challenging. Long-term parenteral nutrition is fraught with complications such as electrolyte disturbances and infections. Several modes of enteral nutrition have been described for patients with medical conditions precluding oral food intake.[3] First described in 1980 by Gauderer and Ponsky, the percutaneous endoscopic gastrostomy (PEG) technique is generally well-tolerated and efficacious for long term enteral access.[4] PEG placement, like all procedures involving abdominal wall manipulations, can cause uterine rupture or induce premature labour.[5] Therefore, this mode of nutritional access is often challenging to achieve in patients with a gravid uterus.

Herein we describe our experience procuring enteral access safely for nutritional optimisation in a pregnant patient with oral cancer. The patient simultaneously underwent delivery via Caesarean section (c-section) and definitive cancer surgery.

Case Presentation

In December 2012, a 28-year-old female (gravida 3; para 2) presented in her 31st week of pregnancy with complaints of a slowly growing mass on the right side of her tongue. She first noticed this lesion about one year prior to presentation and had been evaluated at that time and advised a biopsy. She was then lost to follow-up. A biopsy of the lesion was eventually done which showed an infiltrative moderately differentiated squamous cell carcinoma (SCCA). Following further workup, her case was presented at the Head and Neck Multidisciplinary Tumour Board meeting. The consensus decision was to proceed with surgical resection and gastrostomy tube insertion as soon as possible.

In collaboration with her obstetrician, she was monitored closely over the next four weeks. She was then brought to the operating room where an elective low segment c-section was first performed via a Pfannenstiel incision. At this time, a 5mm laparoscopic port was inserted at the umbilicus under direct vision so as not to cause any inadvertent uterine injury. Once the Pfannenstiel incision was closed, the abdomen was insufflated with carbon dioxide to a pressure of 8 mmHg and the patient was placed in the reverse Trendelenburg position.

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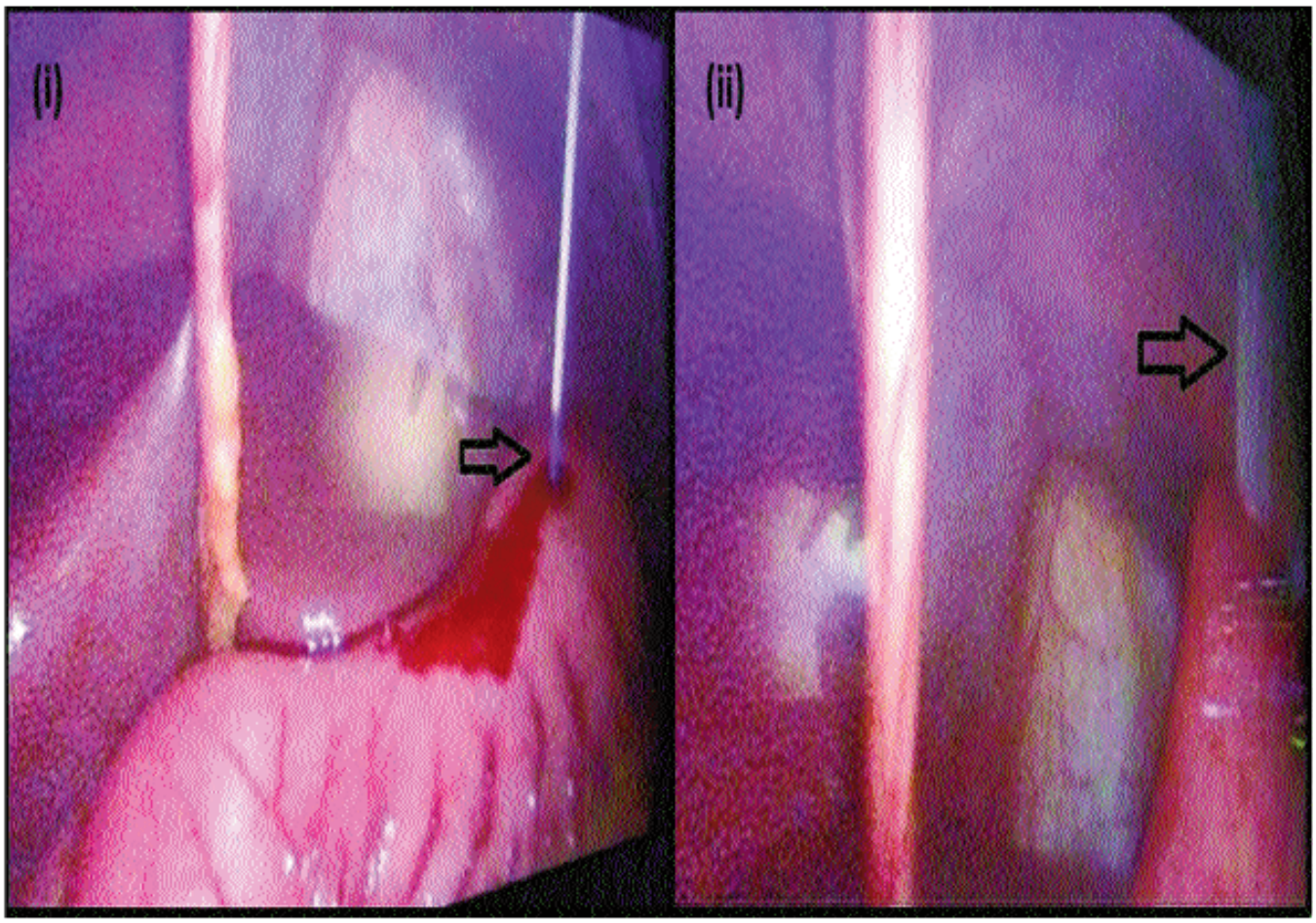

Figure: i) Laparoscopic view of guide wire delineating a path from the gastric cavity to the skin. ii) Laparoscopic view of the gastrostomy tube entering the gastric cavity.

An Olympus GIF-H180 endoscope was then advanced transorally into the stomach, which was then insufflated and percutaneously punctured through the left upper quadrant of the abdomen under laparoscopic vision. A guide-wire was introduced into the stomach (Figure-i). A 24-French (Fr) PEG tube was then placed using the standard pull technique (Figure-ii).

The patient next underwent a right-hemiglossectomy and bilateral modified radical neck dissection. Histopathology report showed a T3N0 moderately to poorly differentiated SCCA. She is currently receiving neo-adjuvant chemo-radiation.

Discussion

This case illustrates the safe and successful insertion of a PEG tube in a pregnant patient suffering from SCCA of the oral cavity. Enteral nutrition is frequently indicated in patients with neurological deficiencies, chronic malnutrition, and in patients unable to swallow due to oro-pharyngeal lesions and obstruction. Goncalves-Dias and colleagues established that 35-50% of such patients undergoing radiotherapy are undernourished.[2] Tissue disruption from localised radiotherapy following surgery precludes oral intake. An alternate route of alimentation in such patients hastens healing with continued nutritional support.[2]

PEGs have proven to be effective for long-term alimentation in patients such as ours. Rustom et al[6] concluded that PEG tubes were superior to radiologically inserted gastrostomy (RIG) tubes and surgically placed tubes. A systematic review comparing the outcomes of PEG and RIG tubes in head and neck cancer suggests that there is a lower risk of mortality and complications with the use of PEG technique.[7]

Risks of complications rise with increasing gestational age, fundal height and abdominal pressure during labour.[5] Despite delivery, the uterus continues to remain

distended in the immediate postpartum period, making tube manipulation difficult. In advanced pregnancies, abdominal organs are pushed upwards by the gravid uterus. Trans-illumination and indentation with an endoscope are often insufficient to identify the presence of small- or large-bowel in the path of the trocar, between the stomach and the overlying skin.[8]

Measures such as sonographically defining the fundal dome prior to the procedure and trans-illumination of the PEG tube for identification and differentiation from uterus and the rib cage have been suggested to improve outcomes. It is recommended that the procedure be abandoned in favour of total parenteral nutrition (TPN) if trans-illumination is not achieved convincingly in advanced pregnancies. It would be prudent to emphasise that an obstetrician be on hand during PEG tube insertion and the operating room be equipped to deal with complications triggered as a result of the procedure.[5,8]

Our case demonstrates a technique at reducing the risk of visceral damage during PEG-tube insertion. By introducing a laparoscope and low-pressure abdominal insufflation, we were able to mitigate the aforementioned risks. However, this patient was undergoing delivery simultaneously, which obviated the risks of general anaesthesia which would have been present had this been done where the pregnancy was ongoing. The alternative in this particular case would have been to proceed with a surgical gastrostomy, the drawbacks of which have been highlighted in this discussion.

Conclusion

Our patient's disease, pregnancy and resulting surgical intervention had put her at high risk of developing nutritional deficiencies and poor subsequent surgical outcomes. A difficult PEG-tube insertion proved to be effective at continuing enteral nutrition.

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