

Percutaneous transesophageal gastro tubing: nutrition for a patient with ventriculoperitoneal shunt

Tetsuya Yamamoto, M.D., Ph.D. (1), Takao Enomoto, M.D., Ph.D. (2)

(1) Department of Neurosurgery, Institute of Clinical Medicine, University of Tsukuba, Tsukuba City, Ibaraki, Japan

(2) Department of Neurosurgery, Tsukuba Central Hospital, Ushiku City, Ibaraki, Japan

Corresponding: Tetsuya Yamamoto, M.D., Ph.D.

Department of Neurosurgery

Institute of Clinical Medicine

University of Tsukuba

1-1-1 Tennodai, Tsukuba

Ibaraki 305-8575, Japan

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## Abstract

**Objective and Importance** - We report a Percutaneous transesophageal gastrostomy (PTEG) placement in a patient in whom ventriculoperitoneal shunt had been inserted beforehand for a purpose of shunt protection from inadvertent infection.

**Technique** – Using nonsurgical esophagostomy under ultrasonographic control, a feeding tube has been inserted for a 29-year-old male with ventriculoperitoneal shunt.

**Conclusion** - PTEG seems to be one of the alternatives to PEG in a patient with VP shunt insertion. Further investigation for the risk of infection related to PTEG and PEG in patients with VP shunt will be needed.

## Introduction

Percutaneous transesophageal gastrostomy (PTEG), nonsurgical esophagostomy under ultrasonographic control, has been reported as an alternative means of percutaneous endoscopic gastrostomy (PEG). PTEG became to be accepted as a good option to PEG, nasogastric tubing and surgical gastrostomy<sup>3</sup>. Less severe and frequent complications in PTEG compared to PEG have also been reported. In this paper, we report a PTEG placement in a patient in whom ventriculoperitoneal (V-P) shunt had been inserted beforehand for a purpose of shunt protection from inadvertent infection.

## Case report

A 29-year-old male was referred to our hospital for possible rehabilitation. The patient developed epileptic seizure at 12 years old. Later an AVM was identified just in the motor strip on the right side. Because of its anatomical reason radical operation had been postponed until at 26 years old when he developed intracerebral hemorrhage with secondary intraventricular tamponade leading to hydrocephalus. Emergency rescue surgery was performed followed by several operations including ventriculoperitoneal shunting. He was fed thereafter by nasogastric tube until the present admission for physical and swallowing rehabilitation. The nasal tubing, irritating the patient's nostrils and nasopharyngeal mucosa, seemed uncomfortable to him as conscious level improved. To prevent an inadvertent shunt infection diversion of abdominal catheter to atrium or pleural cavity was discussed but taking abdominal surgeon's opinion we decided to adopt PTEG.

The procedure of PTEG (Sumitomo Bakelite, Tokyo) is as follows. At first, a straight guide wire is inserted into the esophagus via the nasal cavity and a rupture-free balloon (RFB) catheter is inserted over the guide wire. An extracorporeal ultrasonography is applied on the neck to observe the cervical organs and RFB is placed between the thyroid gland and the carotid artery. After an angle-type guidewire placement is completed, a 16-Fr dilator with a peeled-away sheath is inserted into the esophageal cavity over the guidewire, both the dilator and the guidewire are removed, leaving the sheath in place. Finally, a placement tube is inserted through the sheath. The sheath is peeled off and the PTEG procedure is completed (Fig. 1). For a detail refer to the original article<sup>3</sup>. Postoperative course was uneventful in this case. The

patient started to utter very simple words and even phrases and transoral intake was further encouraged after removing the nasal tubing. The tube is replaced with a new one every 4 weeks if needed. Placement of the tube is very easy once the skin roll is established. The tube in this patient is planned to be removed when per os intake becomes sufficient.

## Discussion

PEG placement in a patient with pre-existing V-P shunt has been generally accepted for low incidence of shunt infection. Graham et al.<sup>6</sup> found no wound nor intra-abdominal complications in a series of 15 adult patients who underwent PEG placement following a minimum of 1 week after a ventriculoperitoneal shunting operation. All patients in this series received periprocedural prophylactic antibiotics. However, some complications have been reported including an extrusion of the peritoneal catheter, peritoneal infection, as well as shunt malfunction<sup>1,3,2,5</sup>. Tylor et al.<sup>5</sup> reported an increased risk of infection, requiring shunt revision, with simultaneous placement of a PEG and a VP shunt especially in the presence of a tracheostomy. Sane et al.<sup>2</sup> reported 2 peritonitis with subsequent shunt infection in 23 children who had PEG insertion at least 1 month after VP shunt insertion, showing a greater risk of infection by PEG in child patient with VP shunt.

PTEG is an emergent technique to insert a feeding tube without approaching to the gastrointestinal system through peritoneal cavity route. Therefore, it theoretically has no chance of intra-peritoneal infection associated to the procedure of PTEG, even in a patient who has already undergone VP shunt insertion. Oishi et al.<sup>3</sup> reported 115 PTEGs for difficult causes. According to the paper no major complications were encountered in

his series while wound infection, stomal leakage, tube obstruction, unrecovered tube migration and minor bleeding occurred in 23.5%. The majority (14 of 17) cases with wound infection and stomal leakage related to gastric drainage rather than to tube feeding. Therefore taking all these factors into consideration, PTEG seems to be one of the alternatives to PEG in a patient with VP shunt insertion. Further investigation for the risk of infection related to PTEG and PEG in patients with VP shunt will be needed.

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#### Legend

Fig. 1 Schematic illustration of Percutaneous transesophageal gastrostomy (PTEG), showing a feeding tube without approaching to the gastrointestinal system through peritoneal cavity route.