Effect of Percutaneous Endoscopic Gastrostomy Tube Placement on the Outcome of the Fecal Occult Blood Test

Pragnesh Patel1*, Robert Yeh2, Rasna Gupta3, Colette Renaud Maher2, Jamil Akhras2 and Martin Tobii
1Division of Geriatrics, Department of Medicine, Wayne State University, Detroit, MI, USA
2Section of Gastroenterology, Department of Medicine, John D. Dingell Veterans Administration Medical Center and Wayne State University School of Medicine, Detroit, MI, USA
3Section of Gastroenterology, VA Medical Center, University of Pennsylvania, Philadelphia, PA, USA

Abstract

Background: Patients undergoing percutaneous, endoscopic gastrostomy tube placement represent a population of patients with a background of serious disease, many at risk from gastrointestinal hemorrhage. It is common practice to monitor stool for GI blood loss using the FOBT. It is unknown whether the presence of a gastrostomy tube will render the FOBT positive. We evaluated a population for the effect of tube placement on FOBT outcome.

Methods: 67 consecutive patients undergoing tube placement were selected on basis of a FOBT having been performed before and/or after the procedure and divided into two groups. In group one, 31 patients had a test before and 10 patients had test after tube placement with 7.3% having positive FOBT before or after placement. In group two, 26 patients were tested both before and after the procedure with 12% having positive FOBT after tube placement. Indications for tube placement were for neurological disease, dysphagia and nutritional support. Indications for performing the FOBT after tube placement were suspicion or confirmation of GI bleeding in 13 patients. Non-steroidal anti-inflammatory medications were taken by 47% of patients. The mean time of pre-procedure FOBT was 9.3 ± 10 months and of post-procedure testing was 4.4 ± 6.0 months.

Results: 7.3% patients of group 1 were FOBT positive before or after tube placement, as opposed 12% of group 2 were FOBT positive after placement (p > 0.05). In group two, 3% remained positive before and after the test, 7.5% reverted to negative after having positive FOBT prior to tube placement, and 16.4% were negative before and after tube placement. Survival in months tended to be less in subgroup of patients who had positive FOBT after tube placement (8.87 ± 8.59 months) compared to patients who had positive FOBT prior to tube placement and negative FOBT respectively (24.00 ± 24.00 months and 18.67 ± 25.78 months; p = 0.15 and p = 0.09 respectively).

Conclusion: The tube placement does not appear to affect the outcome of FOBT positive status whether measured cross-sectionally or overall prevalence or longitudinally by status change after tube placement. Although survival in months was not statistically significant between the two groups, there was a strong trend towards reduced survival rate in the group with positive FOBT after tube placement. Thus, presence of a tube is an unlikely explanation for a positive FOBT and other causes may need to be considered. Future larger prospective studies are needed to assess the implication of positive FOBT with regard to survival in patients with a gastrostomy tube.

Keywords: Percutaneous endoscopic gastrostomy (PEG) tube; Fecal occult blood test (FOBT); Bleeding

Introduction

Enteral tube feeding by percutaneous endoscopic gastrostomy tube (PEG) is being used in patients with advanced dementia, dysphagia secondary to neuromuscular diseases, cachexia from cancer, and any patient who is unable to eat for prolonged period [1-6]. Thus most of the patients undergoing PEG have background severe disease, with many at risk for gastrointestinal (GI) hemorrhage. PEG tube placement is associated with major and minor complications defined by established criteria with rates ranging from 4% to 23.8% of cases [6-13]. Most common are minor complications such as ileus, cellulitis, stomal leakage, buried bumper syndrome, gastric ulcer, fistulous tracts or inadvertent removal but about 4% have major complications such as aspiration, hemorrhage, peritonitis, necrotizing fasciitis, tumor implantation and death [2,3,6-13]. During PEG placement acute bleeding occurs in approximately 1% of cases in patients who are on anticoagulation or have anatomic variations [6,10]. It is common practice to monitor stool for GI blood loss by the fecal occult blood test (FOBT) whether in a screening setting for colorectal cancer or in the clinical workaround of anemia. Whether the placement of PEG tube can acutely or chronically result in a positive hemoccult test resulting in endoscopy to establish a GI source of bleeding, is unknown. With this in mind, we retrospectively evaluated effect of PEG tube placement on FOBT result.

Methods

Clinical and management data for cases of PEG tube placement were reviewed at the John D. Dingell VA Medical Center (VAMC) from period between July 1996 and May 2006.

Sixty seven consecutive patients undergoing PEG placement were selected on basis of a FOBT having been performed before and/or after the procedure. In all cases the PEG tube was endoscopically placed by a gastroenterologist. Patients were divided in to two groups. Group one had FOBT done before or after PEG tube placement, and group 2 had FOBT both before and after PEG tube placement. The mean time of pre-procedure FOBT was 9.3 ± 10 months and of post procedure testing was 4.4 ± 6 months. In group one, 31 patients had a test...
before and 10 patients had a test after PEG with 7.3% having positive FOBT before or after PEG placement. In group two, 26 patients were tested both before and after the procedure with 12% having positive FOBT after PEG placement. Indications for PEG placement were for neurological disease, dysphagia, and nutritional support. Indications for performing the FOBT after PEG placement were suspicion or confirmation of GI bleeding in 13 patients. A positive test was defined as a blue color developing in any single window regardless of the number of cards returned, as is the standard at our center where the centralized pathology laboratory performs and documents the results of all FOBT, using Hemoccult II, Insta­cull or Starline guaiac-impregnated FOBT cards. Statistical analysis was by Fisher’s Exact test and two-tailed student’s t-test with a probability value of p < 0.05 was considered significant.

Results

The most common indication for PEG placement was dysphagia in 26 patients followed by “malnutrition” in 8 patients, and 5 patients each with stroke/dementia and weight loss. Less common indications were anorexia in 4, cancer in 2 and vocal cord paralysis in 1 patient. In 10 patients an indication was not clearly documented. Six patients had PEG replacement. Mean age at time of PEG placement was 70.46 ± 10.86 years, and all of the patients were male. Forty-three patients were African American, 22 Caucasian and 2 Hispanic. Eighteen patients had life threatening conditions like colon cancer (2), lung cancer with metastasis (2), lung cancer without metastasis (2), prostate cancer (5), and 5 patients had similar lesions with EGD performed after PEG tube and likewise 3 out of 4 patients on colonoscopy performed after PEG tube placement. The results of endoscopic work-up prior to the PEG placement compared to those after PEG tube were not numerically statistically significant (p > 0.05) for any possible cause of bleeding in patients with positive FOBT.

Out of 67 patients, 16 had iron deficiency anemia. Eight of 16 patients with iron deficiency anemia had colonoscopy and this represents 8 out of 19 patients who underwent colonoscopy. Eleven patients had colonoscopy 12.5 ± 7.7 months prior to PEG placement and 5 patients 8.6 ± 10.7 months after PEG placement. Of remaining 4 patients, the date of colonoscopy was not clearly documented. The results of colonoscopy were summarized in (Table 3).
with this particular subject. We therefore believe that this is the first or "gastrostomy tube"/ "PEG tube" did not reveal any citations dealing who underwent endoscopy. Since our study was performed at a Veterans reason for the post-procedural positive hemoccult test result in those hours to days after PEG placement [15-18]. There was no dominant those patients with positive FOBT after PEG tube placement, a positive severe bleeding requiring blood transfusion after PEG placement. In our patients all had an edoscopically placed PEG tube except those who endoscopically or radiologically with almost similar success rate [2], the most common reason being dysphagia from various causes. Although there are several ways of accessing the gut for enteral nutrition, the most common method when enteral feeding is needed for more than a month is the PEG tube [1,2]. Although the PEG tube can be placed endoscopically or radiologically with almost similar success rate [2], our patients all had an edoscopically placed PEG tube except those who had a replacement PEG tube placed using a replacement tube "buttons" (Bard Access Systems, Salt Lake City, UT; Ross, Abbott laboratories, Abbott Park, IL). Despite the overall safety of PEG tube placement, complications such as bleeding, infection, aspiration pneumonia and peritonitis can occur [2,3,6-15]. It is common practice to order a pump inhibitors or H2-receptor blockers post PEG tube FOBT would be positive since bleeding is known to occur after PEG tube placement in the first few hours to days likely caused by puncture of mucosal or abdominal wall vessel [15-18] which would not be affected by proton pump inhibitor treatment. Even if patients were on H2-receptor blocker prior to PEG tube placement, the mechanism of gastric ulcer formation that may cause positive FOBT is mechanical injury of mucosa from PEG tube [5,19] rather than acid injury and conceivably H2-receptor blocker should therefore not affect the outcome of the FOBT. Occasionally in other studies, a screening FOBT is ordered inappropriately as for patients with life-limiting comorbidities [20]. Nineteen patients had life-limiting condition and follow-up endoscopy after positive FOBT did identify a cause in all the patients. Although overall survival in months was not statistically significant between the three groups (Table 4), there was a strong trend towards reduced survival rate in the group with positive FOBT after PEG placement emphasizing the need for future prospective studies.

Thus, at this time PEG tube placement does not appear to affect the outcome of FOBT positive status whether measured cross-sectionally by overall prevalence, or longitudinally by status change after PEG placement. The presence of a PEG tube is an unlikely explanation for a positive FOBT and other causes may need to be considered. Future larger prospective studies are needed to assess the implication of PEG tube on FOBT.

Discussion

Enteral feeding is indicated in patients with dysphagia secondary to advance dementia or neuromuscular diseases and is also not uncommonly used in patients with cachexia from cancer [1-4]. Our patients all had similar indications for PEG tube placement with the most common reason being dysphagia from various causes. Although there are several ways of accessing the gut for enteral nutrition, the most common method when enteral feeding is needed for more than a month is the PEG tube [1,2]. Although the PEG tube can be placed endoscopically or radiologically with almost similar success rate [2], our patients all had an edoscopically placed PEG tube except those who had a replacement PEG tube placed using a replacement tube "buttons" (Bard Access Systems, Salt Lake City, UT; Ross, Abbott laboratories, Abbott Park, IL). Despite the overall safety of PEG tube placement, complications such as bleeding, infection, aspiration pneumonia and peritonitis can occur [2,3,6-15]. It is common practice to order a hemoccult test in patients at risk for colorectal cancer or those who are anemic from various causes. How to interpret positive FOBT in setting of insertion and other comorbidities is unknown. In our study the mean time of post procedure FOBT was 4.4 ± 6 months as it usually takes 3 to 6 weeks for the fistulous tract to re-epithelialize reducing the chance of "false positive" FOBT. The rate of conversion to positive FOBT after PEG placement was higher in group 2 compared to group 1 (8 patients versus 3 patients); however there was no statistically significant increase in positive FOBT after PEG placement. There were no cases of severe bleeding requiring blood transfusion after PEG placement. In those patients with positive FOBT after PEG tube placement, a positive FOBT could be secondary to bleeding which usually occurs in first few hours to days after PEG placement [15-18]. There was no dominant reason for the post-procedural positive hemoccult test result in those who underwent endoscopy. Since our study was performed at a Veterans Administration Medical Center (VAMC) the patient demographics are similar to patient population seen at other VAMC facilities namely a predominance of male patients.

Our search of the e-literature using terms "hemoccult test" and/or "gastrostomy tube"/ "PEG tube" did not reveal any citations dealing with this particular subject. We therefore believe that this is the first study to critically assess and address clinical implication of a positive FOBT peri-PEG tube placement.

One of the limitations of our study is the possible bias resulting from a small patient population possibly affecting outcomes and conclusion. Therefore, future larger prospective studies are needed. Another potential pitfall is that we did not fully assess the impact of proton pump inhibitor or H2- receptor blocker in our patient population. Proton pump inhibitors can be used to treat some of the conditions like esophagitis, gastritis, or gastric ulcer and may prevent bleeding. However, we believe that even if patients were taking proton pump inhibitors or H2- receptor blockers post PEG tube FOBT would be positive since bleeding is known to occur after PEG tube placement in the first few hours to days likely caused by puncture of mucosal or abdominal wall vessel [15-18] which would not be affected by proton pump inhibitor treatment. Even if patients were on H2-receptor blocker prior to PEG tube placement, the mechanism of gastric ulcer formation that may cause positive FOBT is mechanical injury of mucosa from PEG tube [5,19] rather than acid injury and conceivably H2-receptor blocker should therefore not affect the outcome of the FOBT. Occasionally in other studies, a screening FOBT is ordered inappropriately as for patients with life-limiting comorbidities [20]. Nineteen patients had life-limiting condition and follow-up endoscopy after positive FOBT did identify a cause in all the patients. Although overall survival in months was not statistically significant between the three groups (Table 4), there was a strong trend towards reduced survival rate in the group with positive FOBT after PEG placement emphasizing the need for future prospective studies.

Acknowledgements

The authors would like to thank Dr. Gupta, Dr. Parks and Dr. Boparai for their invaluable help. We are indebted to Bradley Axelowd for his invaluable assistance with statistical analysis. We would like to dedicate this paper to the memory of William P. McDermott.

References


