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ORIGINAL ARTICLE

Role of Surgical Feeding Gastrostomy in Patients Requiring Prolonged Nutrition in a Neurosurgical Department

Muhammad Mujahid Sharif [1], Rayif Rashid Kanth [2], Umar Farooq [3], Asim Shahzad [4], Mehwish Aslam [5], Sami ur Rehman[6], Khaleeq uz Zaman [7]

[1] Classified Neurosurgeon, Fouji Foundation Hospital Rawalpindi
[2] Assistant prof Neurosurgery Islamabad Medical & Dental College, Islamabad
[3-6] Postgraduate Residents Pakistan Institute of Medical Sciences Islamabad
[7] Professor neurosurgery Pakistan Institute of Medical Sciences Islamabad.

ABSTRACT

Objective: To build up the nutritional status of the neurosurgical patients with an easy and practical way.

Patients and Methods: This prospective study was conducted in Neurosurgery department of Pakistan Institute of Medical Sciences Islamabad in a six months' time. In total thirty adult patients of either gender with H/O road traffic accident with severe head injury and GCS less than 8/15, persistent vegetative state, brain tumor patients who had developed lower cranial nerve palsies were included in the study. 28 for two way Foleys catheter was used in feeding gastrostomy.

Results: Thirty patients, with the median age of 35 years (range, 18-55 years) underwent feeding gastrostomy. Before the gastrostomy tube insertion, 18 patients had enteral nutrition by a nasogastric tube and 10 had parenteral nutrition (PN), with a median duration of 14.5 (range, 4-60) and 12 (range, 7-25) days, respectively. Two patients accidentally pulled out the gastrostomy tubes 10 and 11 days after insertion. Buried bumper syndrome developed in 1 patient. Two patients died 8 and 34 days after the procedure in the neurosurgical ICU. Twenty-eight patients were discharged from the hospital while being fed via the gastrostomy tubes. In 11 patients who were able to resume oral feeding, the tube was removed, with a median interval of 62 (range, 25-150) days. There was no Procedure-related mortality.

Conclusion: An improvised method of nutritional support according to our circumstances. This study can be extended to other surgical and medical patients who need nutritional support for longer period of time.

Key words: Surgical Gastrostomy, Enteral feeding, Nutrition, Nasogastric tube, Percutaneous endoscopic gastrostomy.

Author`s Contribution
[1,2] Conception, synthesis, planning of research and manuscript writing Interpretation and discussion
[3-5] Data analysis, interpretation and manuscript writing, [6,7] Active participation in data collection.

Address of Correspondence
Rayif Rashid Kanth
Email: rayif.kanth@gmail.com

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Introduction

There is a consensus that nutritional support, which must be provided to patients in intensive care, influences their clinical outcome.[1] Malnutrition is associated in critically ill patients with impaired immune function and impaired ventilator drive, leading to prolonged ventilator dependence and increased infectious morbidity and mortality.[2,3] Enteral nutrition is an active therapy that attenuates the metabolic response of the organism to stress and favorably modulates the immune system.[4,5] It is less expensive than parenteral nutrition and is preferred in most cases because of less severe complications and

better patient outcomes, including infections, and hospital cost and length of stay.[6,7]

The use of gastrostomy has expanded over the past decade, and new techniques have been developed, that have made the procedure simpler and less risky.[8-10] Gastrostomy is specifically a technique that allows direct access to the stomach to provide food to disabled patients for several reasons.[11,12] Most commonly, this condition occurs in patients with neurological diseases, impairment following a stroke or obstructive head and neck tumors.[13,14] Percutaneous endoscopic gastrostomy (PEG) feeding is widely used in stroke patients suffering from persistent dysphagia.[15-18] There is widespread acceptance of PEG as the insertion technique of choice owing to its simplicity and effectiveness, but certain patients are not candidates for an endoscopic approach.[19-21] There are evidences that percutaneous endoscopic gastrostomy (PEG) is associated with deficiencies of the minerals and trace elements.[22-25]

The objective of this study was to highlight the importance of open surgical gastrostomy in building up the nutritional status of the patients as this technique is cost effective, diet plan is very simple; just mash and grind and give through the wide bore 28 fr Foley's catheter whatever is cooked for the rest of the family.

Patients and Methods

This prospective study was conducted in the Department of Neurosurgery, Pakistan Institute of Medical Sciences (PIMS) Islamabad in six months' duration. In total 30 patients were recruited in this study after the informed consent from every patient. Patients were selected using non-probability consecutive sampling. Patients of severe head injury cases with age from 18-55 years, persistent vegetative state, brain tumors with lower cranial nerves involvement and patients who would not resume oral feeding within 3 to 4 weeks were included in the study. Detailed history was taken and thorough central nervous system examination performed to assess the preoperative status of patient and relevant investigations were done. All the patients who meet the inclusion criteria were included in the study. Their GCS recorded. Only severe (GCS:3-8) head injury patients were included in the study. After preoperative assessment, informed consent was taken for inclusion in study. Surgery was performed by the trainee researcher. Outcome was assessed at three months of follow up. Follow up was ensured through telephonic contact. Data was collected on preformed performa and results were compiled.

Data was analyzed on SPSS version 17.0. Surgical gastrostomy was compared with nasogastric feeding with different variables like risk of aspiration, malnutrition and cost effectiveness. Surgical gastrostomy was also compared with percutaneous endoscopic gastrostomy with different variables like availability, cost effectiveness, expertise, tube diameter.

Results

Adult patients of either gender who were cases of severe head injuries were included. Detailed history taken. Surgical feeding gastrostomy was performed in the same setting when patient was taken for traechostomy in severe head injury cases. midiline linear supraumbilical incision was used for the mini laparotomy (figure 1). Dissection proceeded further till stomach was visible and held with babcock forceps (figure 2) in the mean time the gastrostomy tube which is 28fr foleys catheter was passed from skin into abdomen (figure 3) with a mini stab introduced into the stomach (figure 4).

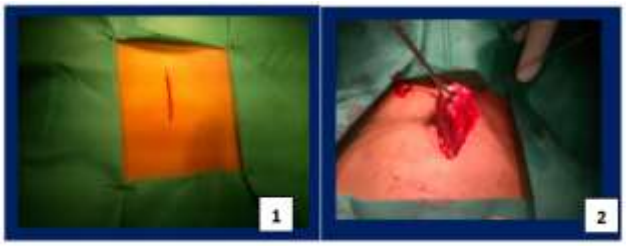


Figure 1: Linear midline supra-umbilical incision. Figure 2: Exposure of stomach through mini laparotomy

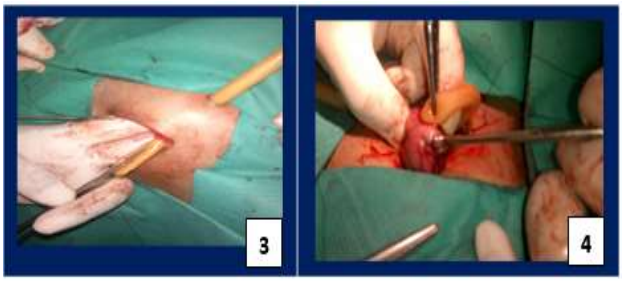
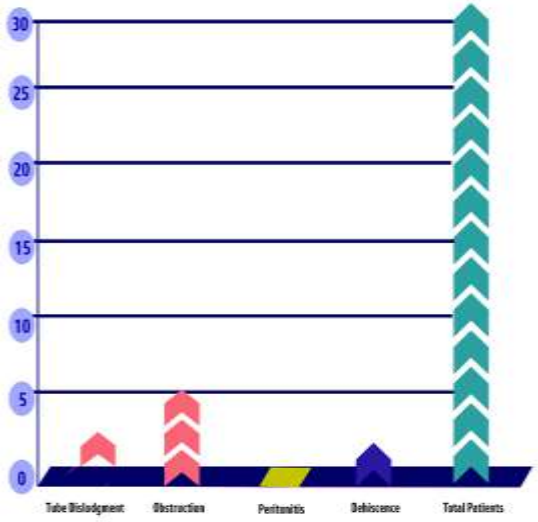


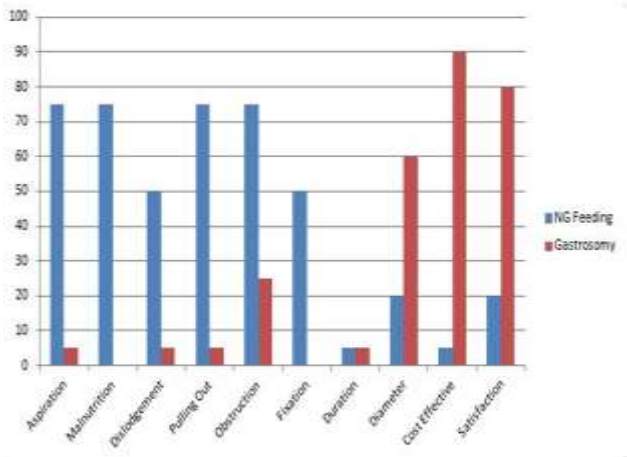
Figure 3: Introduction of gastrostomy tube into the peritoneum. Figure 4: Insertion of gastrostomy tube into stomach

Stomach was anchored with the posterior abdominal wall and balloon of the gastrostomy tube inflated n filled with water. Abdomen was closed in layers and dressing applied on the wound and around the feeding tube (figure 5). There was no heroic diet plan or any liquid formulation to feed the tube. Food which was given to the patients by the hospital was grinded/blended and given to the patients through gastrostomy tube with the 60ml syringe. This grinded food is in the form of thick paste which cannot not be given by a nasogastric feeding tube or percutaneous endoscopic gastrostomy tube.it can be given by this wide bore 28fr Foley's catheter. If this tube is blocked, then it can be washed or totally changed by just deflating the balloon and inserting the new tube and inflate it. We trained the attendants to feed their patients and take care of the gastrostomy tube.

Figure 5: Closure of laparotomy with dressing applied on the wound and around the feeding tube.



Graph 1: Frequency of complications associated with feeding gastrostomy



Graph 2: Comparison of different variables of nasogastric tube feeding and surgical feeding gastrostomy

Discussion

The primary indication for enteral and parenteral feeding is the provision of nutritional support to meet metabolic requirements for patients with inadequate oral intake.[1-3] Enteral feeding is usually the preferred method over parenteral feeding in patients with a functional gastrointestinal (GI) system due to the associated risks of the intravenous route, higher cost and inability of parenteral nutrition to provide enteral stimulation and subsequent compromise of the gut defense barrier.[5,6] It has been shown that enteric feeding can decrease the risk of bacterial translocation and corresponding bacteremia.[7-9] Tube feeding through the GI tract is mainly considered in patients with insufficient oral intake who have a functional GI system and tube insertion into their alimentary tract can be safely maintained.[10-11] In our patients we placed gastrostomy tube through mini laparotomy. We selected those head injury patients who would require prolonged nutritional support due to unconsciousness. Nasogastric tube is a norm in most of the setups in our country but we observed that the patients who are on nasogastric tube feeding are getting weaker day by day. We thought about other different options of feeding and the most feasible method was gastrostomy feeding. In percutaneous endoscopic gastrostomy, the diameter of the feeding tube was not large enough to feed the semisolid feed and it was proving to me equivalent to nasogastric tube feeding,

moreover the cost of gastrostomy was very high and the formulae milk the patients used to buy were costly as well. Expertise for the PEG was another problem.

Therefore, we innovated the technique, and placed gastrostomy tube through mini laparotomy and placed a 28fr Foley's catheter, which is big enough to feed the semisolid food.

Qureshi AZ et al [1] studied the risks associated with prolonged NGT include aspiration, ulceration, and infection in posterior cricoid region causing vocal cord dysfunction, pharyngeal discomfort, erosion of nares, epistaxis, sinusitis, gastroesophageal reflux, gastritis, psychological trauma, and bronchopulmonary complications. When a patient requires long-term enteral feeding (longer than 3-4 weeks) and there is a reasonable prospect of patient survival, consideration should be given to PEG tube placement.[1]The most frequent indication for PEG insertion is neurological disorders (58%).[3] In the United States, there are approximately 123,000 PEG tube insertions performed annually; however, this is not necessarily the case around the world particularly in underdeveloped healthcare systems.[4] Postulated factors contributing to this include limited resources, lack of expertise and training, and even lack of awareness to this alternative and this is exactly the message of our study. Due to poor resources and affordability issues PEG is not the feasible option in our setup and surgical gastrostomy proved to be the best alternative which is not only cost effective but also a better option for building up the nutritional status of the patients.

Pulkkinen J et al conducted a comprehensive review of the literature.[2] Patients with head and neck cancers (HNCs) are at increased risk of experiencing malnutrition, which is associated with poor outcomes. Advances in the treatment of HNCs have resulted in improved outcomes that are associated with severe toxic oral side effects, placing patients at an even greater risk of malnutrition. Prophylactic placement of percutaneous endoscopic gastrostomy (PEG) tubes before treatment may be beneficial in patients with HNC, especially those undergoing more intense treatment regimens. PEG tube placement, however, is not without risks. Systematic evidence assessing both the benefits and harm associated with prophylactic PEG tube placement in patients undergoing treatment for HNC is weak, and benefits and harm have not been established. Same is the case with our study.it shows that surgical gastrostomy not only practical but also result oriented in setups where PEG is not the option.

Li J et al [3] conducted a retrospective study of 3504 consecutive stroke patients admitted to two metropolitan hospitals during the period January 2005 to December 2013 and who also underwent PEG insertion for feeding due to persistent dysphagia. A total of 102 patients were included in the study. There were 22 deaths in 6 months after insertion of PEG tubes and 20 deaths of those occurred within 3 months post PEG. They proposed that age, ASA score and albumin level pre-PEG insertion to be included as factors to assist in the selection of patients who are likely to survive more than 3 months post PEG insertion.

Yarmus L et al, prospectively collected data of patients in a medical ICU undergoing PEG tube placement from 2003 to 2007 at a tertiary-care center were reviewed.[5] Data were collected on mortality, PEG tube removal rate, total number of days with PEG tube, and complication rates. Follow-up included hospital length of stay and phone contact after discharge. Procedural and long-term PEG-related complications were recorded. Seventy-two patients were studied. They concluded that the ability to place both PEG and tracheostomy tubes at the same time has the potential for decreased costs, anesthesia exposure, procedural times, ventilator times, and ICU days. This study carries the same message that the tracheostomy tube and the gastrostomy tube can be placed in the same setting.

JA Allen et al sought to compare the outcome and complications of gastrostomy tube placement by endoscopic (PEG) and multiple radiologic (RIG) methods in ALS patients.[12] A retrospective analysis was conducted. One hundred and eight gastrostomy tube attempts were made on 100 different patients. Their findings supported gastrostomy tube placement by radiographic methods in ALS patients. Gastrostomy tube placement by RIG was more often successful and less often associated with aspiration. Their findings added to the growing body of literature that argues for early gastrostomy tube placement.in our study we also placed the gastrostomy tube in a day or two in whom we anticipated that patient would need long term nutritional support.

Conclusion

Surgical Feeding Gastrostomy is an easy and practical way to build up the nutritional status of the patients. It is an improvised method of nutritional support according to our circumstances. This study can be extended to other surgical and medical patients who need nutritional support for longer period.

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