



Access to Gastrointestinal Tract for Enteral Feeding of the Children

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Abstract

Tube enteral feeding is the method of choice when an oral diet is insufficient or impossible for more than seven days. Percutaneous Endoscopic Gastrostomy (PEG) has become the method of choice for EN in all age groups. Unfortunately, neurological disorders are very often accompanied by serious distortions in body anatomy. In such cases, surgical gastrostomy, which is an invasive procedure, is often the only option for EN. However, less invasive measures would be preferable over surgical gastrostomy. In complicated cases laparoscopy-assisted PEG placement is a useful option for EN in patients with distorted anatomy and who are unable to undergo PEG placement.

Keywords: Gastrostomy; PEG; Children

Introduction

Tube enteral feeding is the method of choice when an oral diet is insufficient or impossible for more than seven days, even in patients without apparent malnutrition [1]. Since its introduction by Gauderer in 1980, Percutaneous Endoscopic Gastrostomy (PEG) has become the method of choice for EN in all age groups [2]. The primary goal of EN is to improve the patient's well-being by preventing or reversing malnutrition and avoiding its consequences. EN is particularly important in pediatric patients because they need to not only survive but also grow [2,3]. Neurological disorders place children at a very high risk of malnutrition; hence, this group of patients benefits very quickly from EN [3,4]. Unfortunately, neurological disorders are very often accompanied by serious distortions in body anatomy. Problems, such as severe kyphoscoliosis, interposed organs or other forms of distorted anatomy may prevent effective and safe PEG placement [2-4]. In such cases, surgical gastrostomy, which is an invasive procedure, is often the only option for EN. However, less invasive measures would be preferable over surgical gastrostomy [2-4].

In complicated cases laparoscopy-assisted PEG placement is a useful option for EN in patients with distorted anatomy and who are unable to undergo PEG placement [5]. The laparoscopy-assisted PEG insertion is successful in most cases [5,6]. The used technique is safe, easy and fast for skilled surgeon. Under laparoscopic observation, the stomach can be punctured in the correct location, avoiding the colon or the liver on its way into the gastric lumen [5,6]. There was no need to maneuver or relocate the interposed organs during the laparoscopy. According to previous research the mean length of the procedure was 16.5 min [5]. No postoperative complications were observed, and EN was commenced four to six hours after the PEG placement. The mean length of the hospital stay was 1.5 days. The follow-up at twelve months did not reveal any complications. The nutritional status of the patients improved significantly [5,6]. The subsequent EN helped patients recover from starvation and decreased their malnutrition-related complication ratio [5,6]. The laparoscopy-assisted PEG procedure is a valuable method for gastrostomy tube placement in patients in whom an upper endoscopy is possible but PEG cannot be performed safely [5-8].

Although the incidence of complications related to PEG is low, since first PEG introduction in 1980 many problems have been reported [1,9,10]. Some of them need urgent removal of the tube [10]. In some cases like children with pharyngeal stenosis or in patients after craniofacial trauma the urgent gastroscopy and PEG removal may be challenging [7]. Fast and save technique of PEG removal in children with craniofacial disorders was described previously [7]. "Cut, tie and thread-pull" technique is safe and quick and not technically challenging method in children with congenital or acquired pharyngeal stenosis [7]. It can reduce the mean time of the PEG tube removal and moreover can be performed by a single endoscopist. In this technique the PEG catheter is cut 1 cm above the skin, the thread is fasten in the caterer, the distal end of the thick, non-absorbable

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suture is inserted into the stomach along with the shortened PEG stump [7]. The thread is grasped with an endoscopic forceps inside the stomach. The thread and the endoscope is brought out through the mouth. The endoscopist can remove shortened PEG stump orally by pulling the thread [7]. In normal conditions the PEG flange may be retrieved endoscopically but this may become technically challenging in children with pharyngeal stenosis e.g. with Pierre-Robin Syndrome, with innate craniofacial anomalies, gothic palate or acquired pharyngeal stenosis e.g. after trauma [7,10]. External traction causes tissue disruption, the patients do not tolerate the procedure well, and retrieval of the PEG is often unsuccessful [7,9,10]. The grasp with endoscopic forceps is often not so sure and the cut PEG fragment can be stocked in the esophagus [7,9]. For children with congenital craniofacial anomalies for whom endoscopic procedures are extremely difficult the method described as "Cut, tie and thread-pull" technique, should be the method of choice [7].

Gastrostomy is recommended to parents and children as the most appropriate method of long-term nutritional support [1,2]. An object of interest is the daily functioning of both caregivers and their children with gastrostomy tube [11]. Using a semi structured questionnaire, previous descriptive study examined perceptions of feeding and adherence to feeding recommendations for caregivers of children with neurological disabilities and gastrostomy tube [11]. The questionnaire covered various aspects of child's gastrostomy care, ranging from changing buttons, method of feeding, tolerance of diet, and problems with the gastrostomy site and device to how gastrostomy feeding has affected their lives [11]. Parents and carers of 44 children completed a questionnaire. Children in the study (n=44) had had a gastric tube in place for at least 1 month, and children with cerebral palsy had been assessed at level V of the Gross Motor Function Classification System. Most caregivers reported improvement in the children following placement and significant improvements in their own social functioning [11]. Carers reported a significant reduction in feeding times, increased ease of drug administration, and reduced concern about their child's nutritional status. Most caregivers reported a beneficial effect on their children of the gastrostomy feeding tube placement—improved nutrition and decreased health complications [11].

Conclusion

Laparoscopy-assisted PEG should become the method of choice for children and adults with distorted anatomy. The majorities of caregivers are satisfied with the gastrostomy tube placement results and felt the improvement in the quality of their life.

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