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DPEJ placement in cases of PEG insertion failure

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Abstract

Background and study aims. PEG placement is routinely used for enteral feeding; in some cases PEG is not feasible or indicated due to technical difficulties, such as gastric herniation, organ interposition, or presence of gastroparesis. In these cases, surgical gastrostomy or jejunostomy are possible alternatives; more recently, direct percutaneous jejunostomy (DPEJ) has been proposed to avoid surgical intervention. The aim of the study was to evaluate the necessity, technical feasibility and outcome of DPEJ in a group of patients consecutively proposed for PEG placement.

Patients and methods. In each patient proposed for PEG placement, an upper gastrointestinal endoscopy was performed, and then a pull traction removal gastrostomy tube (18–20 F) was inserted. When PEG was not feasible or contraindicated, a variable stiffness pediatric videocolonscope was used to reach the jejunum: then DPEJ was performed with the same technique and materials as PEG. In both groups enteral feeding was started 24 h after the endoscopic procedure, using an enteral feeding pump and the same nutritional schedules.

Results. In a 1-year period 90 patients were proposed for PEG placement; PEG could not be performed for technical reasons in 8 (gastric herniation in 1; organ interposition in 7) and gastroparesis in 1. In one patient both PEG and DPEJ were not feasible for organ interposition. The duration of the endoscopic procedure was slightly longer in DPEJ (mean 20 min versus 15 min). No complications related to the endoscopic procedure were observed in both DPEJ and PEG patients. No nutritional complication were observed in the DPEJ group.

Conclusion. In our experience, PEG was not feasible or contraindicated in about 10% of patients proposed for. In these patients, DPEJ was placed: the procedure resulted to be feasible and safe with the use of a pediatric videocolonscope to easily reach the jejunum. The insertion of DPEJ did not change the nutritional management of enteral feeding. However, long-term effects or complications remain to be evaluated in larger studies.

Keywords: PEG; DPEJ; Enteral nutrition

1. Introduction

Percutaneous endoscopic gastrostomy (PEG) is the most used route for long-term enteral feeding [1–4]. Sometimes it is not feasible due to technical difficulties, such as gastric herniation and organ interposition, or not indicated due to gastric outlet obstruction, gastroparesis, and high risk of aspiration (Table 1) [5,6]. In the first situation, surgical gastrostomy or jejunostomy are possible alternatives; in the second one, the jejunal extension tube through a gastrostomy (PEG-J) [7] has been proposed. However, surgical jejunostomy is more expensive and carries higher morbidity and mortality than PEG [1]. Moreover, PEG-J is frequently complicated by obstruction and dislocation of jejunal extension [7], so it is less and less performed.

More recently, direct percutaneous jejunostomy (DPEJ) has been proposed to avoid surgical procedure or obviate to the frequent malfunction of PEG-J [8–11]. However, until now, only retrospective studies have been performed on the necessity and technical feasibility of DPEJ in heterogeneous series of patients, often with inclusion of subjects with total or partial gastrectomy [9,10]. The retrospective design and heterogeneity of these studies, together with the different

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Table 1
Indications for DPEJ

PEG not feasible	(1) Gastric herniation (2) Organ interposition (3) Absence of transillumination
PEG not indicated	(1) Gastric outlet obstruction (2) Gastroparesis (3) High risk of aspiration

endoscopic techniques, may justify the high variability of technical success (68–86%) and outcome of DPEJ reported by literature [8–12].

The aim of this study is to evaluate prospectively the necessity, indications, technical feasibility and outcome of DPEJ in a group of consecutive patients with intact stomach, proposed to our center for PEG placement in a period of 1 year.

2. Methods

All the patients consecutively referred from April 2003 to March 2004 to our Digestive Endoscopy Unit for PEG placement were enrolled in the study. Patients with previous gastric surgery (partial or total gastrectomy) were excluded.

In each patient an upper gastrointestinal endoscopy was performed. Then a pull traction removal gastrostomy tube (Kimberly Clark 18–20 F, Ballard Medical Products, Draper, Utah, USA) was inserted. When PEG was not feasible or not indicated, a variable stiffness pediatric videocolonscope (Olympus PCF-160 AL, Olympus Medical System Corp., Tokyo, Japan) was used to reach the jejunum: then DPEJ was performed with the same pull technique and materials as PEG.

Both in PEG and DPEJ patients enteral feeding was started 24 h after the endoscopic procedure, using an enteral feeding pump and the same nutritional schedules.

The presence of mechanical, infective or nutritional complications was assessed at 1 week, 1, 6, 12 and 24 months (or until death) from PEG/DPEJ placement.

The study was approved by our institutional ethical committee. An informed written consent was obtained by all patients (or their legal tutors).

3. Results

Between April 2003 and March 2004, 90 patients were proposed for PEG placement; in 9 of them PEG could not be inserted: for technical reasons in 8 (gastric herniation in 1; organ interposition in 7) and gastroparesis in 1 (Table 2). In 8/9 patients DPEJ could be placed without any difficulty; the endoscopic procedure was slightly longer in DPEJ than in PEG (mean time 20 min versus 15 min). In one patient neither PEG nor DPEJ could be placed due to absence of abdominal transillumination for organ interposition, and surgical jejunostomy was performed.

Table 2
Patients with DPEJ

Pt	Age	Disease
#1 G.F.	70	Post-anoxic encephalopathy
#2 G.G.	80	Cerebral ischemia
#3 C.A.	58	Cerebellar ataxia, ab ingestis pneumonitis
#4 O.A	71	Gastroparesis (paraneoplastic polineuropathy)
#5 C.F.	74	Post-anoxic encephalopathy
#6 F.F	54	Amyotrophic lateral sclerosis
#7 M.S.	77	Cerebral ischemia
#8 P.G.	66	Lung cancer with nodal metastases
#9 O.G.	61	Cerebral ischemia

No major complications related to the endoscopic procedure were observed in both DPEJ and PEG patients.

In both groups, enteral pump feeding was started within 24 h by the tube placement. No mechanical or nutritional complication was observed neither in the DPEJ nor the PEG group. In particular, diarrhoea was not observed in any DPEJ case.

An infection of the abdominal wall around the jejunostomy orifice was observed in a patient with DPEJ: it ensued in the second week after DPEJ insertion, and resolved within 1 week with antimicrobial treatment. A similar incidence of infective complication was observed in the PEG group (9.8%, 8/81 cases): all were minor peristomal infections, easily controlled with antibiotic therapy.

4. Discussion

Long-term enteral feeding is usually accomplished by PEG placement [1–4]. In expert hands, the endoscopic procedure is usually short, safe and well-tolerated also in critically ill patients. No important nutritional or gastroenterological complication ensues at start of enteral feeding, provided that pump feeding is used [1–4].

PEG cannot be feasible in cases of gastric herniation or organ interposition, or not indicated in cases of gastroparesis, gastric outlet obstruction, or high risk of aspiration [5,6]. In these cases, surgical jejunostomy can be performed, but DPEJ has been proposed as an alternative with the same features of feasibility and safety as PEG [8–10].

In this study the necessity, technical feasibility and outcome of DPEJ placement were prospectively evaluated in a group of 90 consecutive patients who were proposed for PEG placement. Only in cases in whom PEG was contraindicated or not feasible for technical reasons, DPEJ was immediately performed using a variable-stiffness pediatric colonscope to reach the jejunum. DPEJ was necessary in 9/90 patients: it was not feasible in 1, but easily placed in the remaining 8 patients. Since a feeding pump was routinely used, the protocol for enteral feeding was the same in both DPEJ and PEG patients. No significant nutritional complications were observed in the DPEJ group; particularly, diarrhoea was not a clinical problem neither in PEG nor in DPEJ patients.