

CASE REPORTS

Direct percutaneous endoscopic jejunostomy in pediatric age with a pexies triangulation system: Report of a case and literature review

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ABSTRACT

Direct percutaneous endoscopic jejunostomy (DPEJ) is an infrequent procedure as it is not always easy to obtain transillumination, being this the main reason for failure of this technique. In patients with previous surgery, this procedure is more complex and there are only 6 reported cases in pediatric population.

In our case, we provide the use of an endoscopic triangulation system with "T" pexies not used before in these cases. With this technique, we guarantee not to replace the introduction system afterwards, obtaining the placement of a balloon fixation system initially.

We also provide several improvements that helped us developing the procedure: Placement of the jejunostomy through a gastrostomy; use of water column to avoid penetration in hollow viscus; use of a guide wire, and a triangulation pexy system.

Key words: Direct percutaneous endoscopic jejunostomy. Pediatric patients.

INTRODUCTION

Protein-calorie malnutrition is a main cause of death in children with severe diseases. Enteral nutrition can improve the situation of these patients, but as a major limitation it can lead to aspirations and respiratory problems if the administration of nutrients is done with nasogastric or gastrostomy feeding tubes. Jejunal feeding devices can be placed through a gastrostomy, but these are unstable and likely to malfunction in up to 53% of the cases (1), and do not avoid completely the risk for aspiration. On the other hand, its placement can be technically difficult if the gastrostomy is focused towards gastric fornix as the catheter can present bending and kinking into the stomach. This is why direct percutaneous endoscopic jejunostomy (DPEJ) was developed (2), a young technique not exempt of diffi-

culties and complications (2% of major and 10% of minor complications) (3), which is a variation from the procedure described by Ponsky for percutaneous endoscopic gastrostomy (PEG).

DPEJ has shown to be safe and effective, and with this access, we can get a correct nutritional support through small bowel (4). The main indications of DPEJ are risk for aspiration, severe gastroesophageal reflux, gastroparesis, intestinal decompression or contraindication for placement of a PEG (5).

CASE REPORT

We present the case of a 4 years-old premature baby with multifactorial encephalopathy, spastic tetraparesis and severe psychomotor retardation. She suffered from respiratory disease associated with frequent aspirations. Antireflux surgery was performed, but she suffered iatrogenic gastric perforation, fundoplication had to be undone and she went back to aspirations. A gastrostomy with a jejunal feeding tube was placed then, but due to deficient home management of the device by her family the catheter presented displacements, malfunction and frequent obstructions (15 cases in 6 months). Clinical management turned difficult and replacement of the tube was technically difficult, so the possibility to place a DPEJ was observed.

Endoscopy was carried out in an operating room with anesthesiologist support. Antibiotic prophylaxis was administered and the abdominal wall was disinfected with iodine povidone solution. Through previous gastrostomy a pediatric endoscope (Olympus GIF-XP160 of 5.9 mm) was inserted up to jejunum (40 cm from gastrostomy orifice), trying not to modify the original position of intestinal loops (Fig. 1). When correct transillumination and

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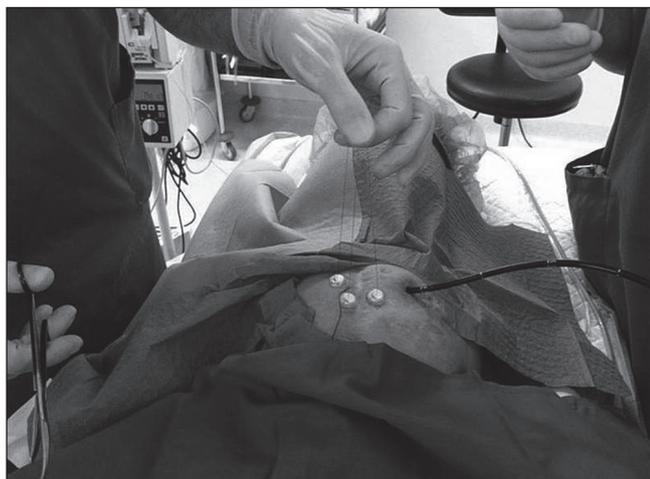


Fig. 1. Access through the gastrostomy orifice and placement of the pexies.

digital pressure were obtained we made a puncture with an Abbocath using a water column to prevent perforation of interposed loops. A guide wire was left in this position for a better control of the access and to get a soft fixation of the loop. After that three punctures were made around the wire with a triangulation by “T” pexies system (MICKEY J/TJ INTRODUCER KIT- Kimberly-Clark) (every puncture was about 1 cm far from the wire), we were able to fix the jejunal loop to the abdominal wall, so the jejunostomy was dilated with a pull system and a balloon feeding tube of 14 Fr was placed through it (Fig. 2). Previous gastrostomy was maintained for administration of medication and as a rescue system in case of failure or complications of the jejunostomy. After 24 hours secondary paralytic ileus was solved and feeding was initiated with no problems (Fig. 3).

After 10 months of follow-up, DPEJ is still working with mild peristomal liquid loss in the first weeks, which was solved placing a balloon gastrojejunal tube and administering nutrition 30 cm far from the jejunostomy. Nowa-

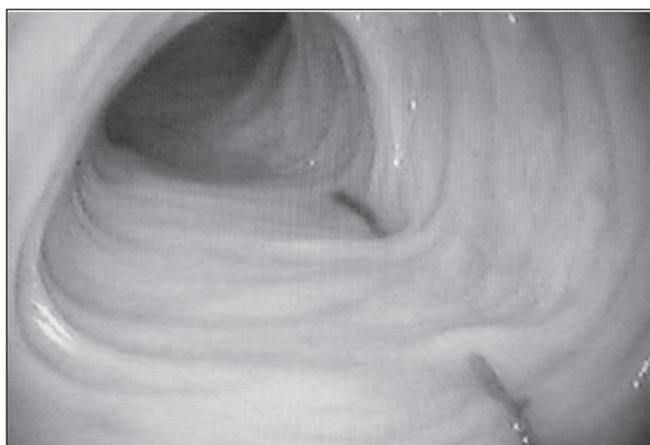


Fig. 2. “T” pexies in the jejunal wall.

days, the patient presents correct tolerance to feeding and has not suffered any aspiration complications.

DISCUSSION

Access to jejunal loops located far from Treitz angle is not always easy in children when we use an oral approach with a pediatric endoscope. These are thin and soft and cannot progress easily as they bend into the stomach and duodenum. There are several papers reporting experience in placing DPEJ in adults, and one of the main reasons for failure is the fact that the first jejunal loops are not next to abdominal wall.

In patients with previous surgery this procedure is even more complicated, and there are only 6 cases reported in pediatric population. Auvin et al. (5) made a DPEJ using a 12 Fr catheter in a 19 months-old child, and after that Virnig et al. (6) reported 5 cases (3 children and 2 boys 15 and 17 years old) in which they made DPEJ with a 20 Fr catheter and a pull system. But data about failure at placing DPEJ in children are unknown. In adults, this percentage is between 19% (7) and 28% (8). Rates of success are lower in obese patients (7) and in those with previous abdominal surgery (64% of success) (9). Different alternatives have

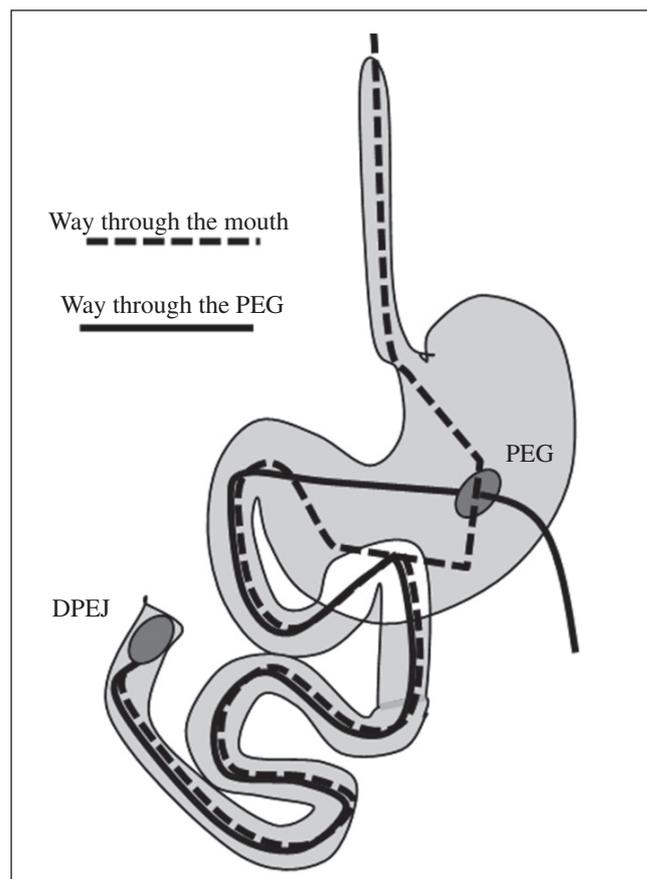


Fig. 3. Placement wall.

been described in order to improve these rates. In a retrospective study, thickening of the jejunal wall observed in computed tomography has been described as a factor related to low rates of technical success as this may hinder transillumination. In this case, the use of fluoroscopy may help even if transillumination is not obtained.

Great retrospective series have been reported (3,7-12) and DPEJ has been compared to endoscopic gastrojejunostomy, showing to be more reliable. However, there are not prospective series or clinical trials in literature.

Access through gastrostomy orifice (we have not found this associated technique in literature) may prevent from catheter bending in the stomach and helps its advance to distal loops, which are closer to abdominal wall. In our case, if we had used an oral access, the puncture would have been located 80 cm from the mouth, and gastric curvatures would have made the procedure difficult. This is why some cases of jejunostomies assisted by double-balloon enteroscope have been reported (13), although this endoscope may disturb the position of the loops and this can be the reason for subsequent malfunction of the jejunostomy. Besides, its use would be complicated by the age and weight of the patient.

Fixing system with "T" pexies and triangulation has shown to be very useful as allows direct placement of a balloon tube or a button jejunostomy in only one step. With this technique we do not need to substitute the tube after some months, which is an advantage in severely ill children who often have need for procedures assisted by anesthesiologist. The main problem of this technique is that we need four punctures instead of one, so we think it is extremely important to get a correct first puncture and placement of a guide wire which will help to control the position of the jejunal loop. This system has been used for placement of three gastrojejunal tubes (14), and has been described as assistant technique when placing a difficult gastrojejunostomy to assess the access from the stomach and make possible to place it in a stenotic anastomosis (15), although we have not found in literature the use of this system for a DPEJ.

In conclusion, direct endoscopic jejunostomy can be done in just one step if we use a triangulation system with

pexies, being able to input a balloon tube and avoiding replacements.

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