Single-balloon enteroscopy-assisted direct percutaneous endoscopic jejunostomy

Direct percutaneous endoscopic jejunostomy (DPEJ) has emerged as a viable alternative for percutaneous endoscopic gastrostomy with jejunal extension (PEG-J) in patients who cannot tolerate gastric feeding. Reportedly, DPEJ placement with regular endoscopes fails in up to one-third of cases. The aim of the current study was to assess the efficacy and safety of single-balloon enteroscopy (SBE)-assisted DPEJ. The DPEJ placement technique was comparable to conventional PEG placement. A total of 12 DPEJ procedures were performed in 11 patients (mean age 55 years [range 24–83 years]; seven males). SBE-assisted DPEJ was successful in 11 of the 12 procedures (92%). Post-procedural complications included gastroparesis and aspiration pneumonia in one case each. We conclude that SBE-assisted DPEJ placement seems a safe and successful approach for patients requiring jejunal enteral feeding.
dentation, a superficial jejunal loop was identified. After a suitable insertion site had been located, the access area was sterilized. The abdominal wall and peritoneum were anesthetized by insertion of a percutaneous needle and simultaneous injection of 1% lidocaine until the needle emerged into the jejunum. In order to reduce gut motility, hyoscine-N-butylbromide was administered intravenously in doses of 20mg after identification of an appropriate insertion site. The DPEJ placement technique was largely comparable to a conventional PEG placement (Fig. 1, Fig. 2 and Fig. 3; Video 1). In all cases a 15-Fr Freka (3.6 mm internal diameter, 35 cm length) PEG feeding tube (Fresenius Kabi AG, Germany) was used. Fluoroscopy was not used in any case. The primary endpoint of the study was the rate of successful placement of DPEJ. Secondary outcomes were the rate of complications, including recurrent aspiration after DPEJ placement.

Results

Between December 2009 and December 2010, 12 SBE-assisted DPEJ procedures were performed in 11 patients (mean age 55 years [range 24 – 83 years]; seven males). The indications for DPEJ procedures were recurrent aspiration pneumonia (n = 5; 42%), gastric dysmotility (n = 4; 33%), duodenal cancer (n = 2; 17%), and gastric cancer (n = 1; 8%). Four patients had previously been treated with a PEG or PEG-J. A total of 11 procedures (92%) were performed under conscious sedation using midazolam (mean dose 6mg) and fentanyl (mean dose 0.06 mg). Propofol sedation was used in one patient. The mean total procedure time was 47 minutes (range 20 – 120 minutes). The DPEJ placement was successful in 11 of the 12 procedures (92%; Table 1). In one patient with duodenal cancer, who had persistent inability to tolerate oral intake despite previous palliative gastrojejunostomy surgery, a DPEJ was first placed, unintentionally, in the afferent loop. When this did not lead to improved oral intake, a second procedure was required for DPEJ placement in the efferent loop, which was also not successful due to inadequate insertion of the enteroscope into the jejunum. This patient went on to have a percutaneous radiologic jejunostomy. One procedure-related complication was noted (8%): a patient with multiple sclerosis was admitted to the hospital with sudden onset of nausea and vomiting 1 day after DPEJ placement. Based on computed tomography and small-bowel contrast study, gastroparesis was diagnosed. The patient was treated conservatively with intravenous fluid resuscitation and a nasogastric tube to decompress the distended stomach. The jejunal feeding could be restarted quickly without recurrence of symptoms. One patient (8%) had a recurrence of aspiration pneumonia 4 weeks after the DPEJ placement. A contrast study showed adequate positioning of the tube and the feeding was restarted within a few days. No further recurrences were observed.

Discussion

In this prospective case study, SBE, with its ability to provide deeper small-bowel intubation, was shown to facilitate the identification of an ideal DPEJ insertion site for the placement of a direct percutaneous jejunal feeding tube. Recently, small case series have reported successful placement of DPEJ using DBE [11, 12]. The current study is the first to focus on the placement of DPEJ using the SBE technique. The results were similar to those achieved in the small DBE case series, in which successful placement was achieved in 90% of patients [11]. Technical success rates for placement of DPEJ with conventional push enteroscopy vary from 68% to 98% [4, 6,7,13]. Adequate transillumination is essential for successful DPEJ placement [7]. SBE enables deep intubation of the small bowel. This facilitates successful intubation of a suitable superficial jejunal segment resulting in adequate transillumination. The advantage of the SBE system for this indication compared with DBE is its simplified design. However, SBE may be less efficient for deep intubation of the small bowel compared with the DBE system [14]. We believe that this disadvantage is not an important factor in cases of SBE.
Competing interests: None.

References

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