

EDITORIAL

Direct percutaneous endoscopic jejunostomy – Should we move on to single- and double-balloon enteroscopy techniques?

Direct percutaneous endoscopic jejunostomy (DPEJ) is a useful technique to: access the jejunum in order to: a) provide enteral nutrition to individuals when the gastric route is absent or contraindicated; and b) to decompress the jejunum in patients with malignant small bowel obstruction (1-4). Traditionally, DPEJ is performed using a colonoscope or enteroscope, which is advanced as deep as possible into the jejunum. The insertion technique of the feeding tube is identical to the one used for a gastrostomy tube (Ponsky-Gauderer method) (1-4). Although DPEJ was described more than three decades ago, it remains a method reserved mainly for tertiary or referral endoscopy centers (4). The potential main reason for the limited utilization of the traditional DPEJ technique is its relatively low success rate. Indeed, the largest study evaluating traditional DPEJ shows a success rate of only 68% (5). A major breakthrough in the technique of DPEJ occurred with the advent of double- and single-balloon enteroscopy (5-9).

In this issue Bernardes et al., from Portugal, report on a large case series of patients undergoing single-balloon enteroscopy (SBE) for DPEJ without additional use of fluoroscopy at a single institution (10). The authors evaluated retrospectively all patients undergoing SBE for DPEJ placement in a tertiary hospital during a six-year period. A total of twenty-three patients were included (17 males, median age 71 years, range 37-93 years). The most frequent indications for DPEJ were gastro-esophageal cancer (n = 10) and neurological disease (n = 8). Eighty-seven percent of patients had a contraindication to percutaneous endoscopic gastrostomy (PEG), and PEG had been unsuccessful in the remaining patients. The technical success rate was 83% (19/23); transillumination was not possible in three patients, and an accidental exteriorization of the bumper resulting in jejunal perforation occurred in one patient. In patients with successful SBE-assisted DPEJ placement the clinical success was 100% (19/19), including all patients in whom previous placement of a PEG had failed. Median follow-up was five months (range 1-35 months). There were no other complications during follow-up. Six-month survival was 65.8%, and 1-year survival was 49.3%. The authors concluded that DPEJ can be carried out successfully using SBE without fluoroscopy with a low rate of significant adverse events. The authors also found that while leaving the overtube in place during bumper pulling may be useful for distal jejunal loops, it can be safely removed from proximal loops to minimize complications.

Why is this study important? First, this study adds to the published experience using advanced enteroscopy techniques for DPEJ. Second, the authors present technical insights on balloon-enteroscopy DPEJ. And finally, by analyzing failure rates and complications we move forward to establish better and safer approaches to perform DPEJ.

What does this study add? This is the second largest case series using SBE. Velázquez-Aviña et al. reported on 25 patients with a technical success rate of 96%. In Aktas et al. the success rate was 92% in 12 patients (7). In studies using double-balloon enteroscopy the success rate has ranged from 93% to 100% (7,9). In the largest study including 94 patients the success rate was 93% (9). As may be seen, all studies using balloon-assisted enteroscopy techniques show higher success rates than the seminal Mayo Clinic study using the traditional technique for DPEJ (68%) (1). Does this mean that balloon-assisted enteroscopy techniques are better? Of course not, as currently there is no prospective randomized study comparing both techniques. Furthermore, several studies have shown that the success rate for traditional DPEJ was 100% (11,12). The study by Del Piano et al, from Italy, included 10 patients, and the study by Strong et al., from the USA, included 59 patients, with one third of patients having undergone previous foregut surgery, including bariatric reconstructions (12, 13). Based on these positive results of both traditional and balloon enteroscopy-assisted techniques a prospective randomized study comparing both methods would be advisable. However, it might be difficult to perform such study as most experts who perform DPEJ appear to find the balloon overtube-assisted method safer and more effective. Indeed, after using a double-balloon enteroscopy technique only in cases of failed traditional DPEJ, the Mayo Clinic group in Rochester has now adopted DBE-DPEJ as their primary modality (10). This has been our approach since 2012, when we started to use balloon enteroscopy methods for DPEJ (6).

This brings us to the next question. Should we still perform traditional DPEJ? When there is no SBE or DBE available, DPEJ using traditional techniques should certainly remain an option. However, the endoscopist involved should be aware that a failure rate as high as 70% is to be expected, especially in patients with obesity. Furthermore, even in patients with normal anatomy the failure rate is high (32%) (1-5). Thus, why perform a push enteroscopy first, and then a BAE? Nevertheless, not all hospitals have balloon-assisted enteroscopy equipment, hence traditional DPEJ must still be mastered.

Is there only one technique for BAE? The clear answer is no. Indeed, DPEJ using BAE may be performed with both the SBE and DBE methods. However, we believe that using SBE is better since the absence of a balloon on the scope will permit removal and insertion through the overtube during the procedure. Advocates of DBE may claim that using two balloons allows for deeper insertion of the scope. However, when performing DPEJ deep insertion is rarely mandatory.

Now, we discuss the second and third reasons why the study by Bernardes et al. is important. The authors brought up several important technical aspects, and carefully documented the reasons for the few complications associated with this method of DPEJ. Holding the needle in place with a snare during trochar insertion is also a useful trick to ensure success. The authors did not use fluoroscopy. However, their study included no patients with abnormal upper GI tract anatomy (10). These patients represent a challenge for traditional DPEJ, and the use of fluoroscopy may increase success rate (8). Additionally, their failed cases might have been successful with the aid of fluoroscopy. Thus, whereas fluoroscopy may not be mandatory in cases of easy transillumination during DPEJ, its use may be mandatory in patients with abnormal upper GI tract anatomy, in those with previous abdominal surgery and/or adhesions, and in obese individuals. We strongly advocate the use of fluoroscopy in these specific circumstances for two main reasons: a) the direction of the enteroscope may be determined (to avoid insertion into the biliodigestive limb in patients with surgically altered upper GI anatomy; and b) even in the absence of transillumination the exact puncture site may be found, as the team can use fluoroscopy to determine the location of the small bowel loop closest to the abdominal wall, and also use a radiopaque object (such as a forceps or blunt-tip scissors) to mark the puncture site.

The authors had a jejunal perforation, which resulted from the use of an overtube at the time of bumper placement. During the pulling maneuver the PEG bumper became stuck at the tip of the overtube, and during traction to release it the bumper accidentally perforated the jejunal wall. In order to prevent this occurrence we use a scope within the overtube – while the assistant pulls the PEG tube out of the skin, the endoscopist gently pushes the scope within the overtube. Often, especially in patients with adhesions or altered upper GI anatomy, the overtube may develop a kink, and the scope is then very helpful to push the PEG bumper forward and distally to the appropriate jejunal location. Nevertheless, we agree with other authors that leaving the overtube in place is not always necessary, as long as the lumen is clear and non-stenotic, and the jejunal puncture site is proximal. In these cases, the traditional Ponsky-Gauderer technique without overtube is fully appropriate. The key message regarding the various DPEJ techniques is that all of them should be mastered, and then used on a patient-by-patient basis – easy cases will benefit from the least complex approach, whereas fluoroscopy and overtubes are appropriate for patients with adhesions, complex anatomy, or obesity (5-10).

In sum, this study adds to our current understanding of DPEJ. Balloon enteroscopy-assisted DPEJ is a highly successful and safe method to provide enteral access for patients in need of jejunal feeding or decompression. Balloon-assisted enteroscopy for DPEJ is especially successful in patients with previously altered upper GI anatomy. Based on published data, most BAE for DPEJ procedures may be accomplished using the standard Ponsky-Gauderer technique without the technical additions of leaving an overtube in place and fluoroscopy. However, as with any endoscopy technique, these helpful technical additions may increase success rates for patients with surgically altered upper GI anatomy and obese individuals. Hopefully, a prospective, randomized study will determine which method is most effective in the near future. In the meantime we should move on to using balloon-assisted enteroscopy to safely and effectively perform DPEJ.

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