CASE REPORT

An 87-year-old female was referred to our institution for evaluation of several pancreatic fluid collections that had developed in the context of an episode of severe acute pancreatitis. The patient’s pancreatitis was presumed to be due to choledocholithiasis and prior to our evaluation she had undergone an ERCP with sphincterotomy and duct clearance as well as a cholecystectomy. The patient could not tolerate PO intake and was being fed via a nasojejunal feeding tube. The patient had previously been evaluated by surgery and interventional radiology, who did not feel that the patient was a candidate for surgery or percutaneous drainage of this large pancreatic fluid collection, respectively.

Contrast enhanced CT scan revealed multiple pancreatic fluid collections, although attention was mostly centered on a bilobed but internally communicating 15x10cm collection causing significant extrinsic compression of the stomach (Figure 1). The patient was offered endoscopic transmural drainage and, after a discussion of risks and benefits, she accepted.

When evaluated by endoscopic ultrasound (EUS) the lesion was found to contain a large amount of solid debris and was thus felt to represent walled off pancreatic necrosis (WOPN), rather than a pseudocyst (Figure 2). EUS guided transmural access to the cyst was obtained with a 19gauge needle via a transgastric route. The cystgastrostomy was dilated to 6mm over a wire. A 15mm wide Axios stent (Xlumena, Mountainview CA) was advanced across the cystgastrostomy and deployed without difficulty (Figure 3). There was immediate drainage of approximately 1L of fluid consistent with cyst contents.

One week later, the patient underwent endoscopic pancreatic necrosectomy through the Axios stent with a standard EGD endoscope. Using a combination of nets, snares, and a rat tooth forceps, a large amount of necrotic pancreatic tissue was mechanically debrided with marked improvement in the appearance of the cyst cavity, although some debris remained (Figure 4). The necrotic cavity was lavaged with copious amounts of hydrogen peroxide mixed with sterile saline. Although the endoscopic portion of the procedure went well, the patient tolerated the procedure poorly from a respiratory perspective and thereafter declined further procedures given her age and overall situation. It was agreed that the Axios stent would simply be left in place to provide drainage of the pancreatic fluid collection.

A CT scan of her abdomen and pelvis obtained 5 weeks later showed essentially complete resolution of the large necrotic collection with the Axios stent still in good position (Figure 5). The patient still did not wish
may include open necrosectomy, which was considered the ideal treatment in the past as part of a “step down” approach to therapy of acute pancreatitis. An open necrosectomy is typically performed by creating a midline or subcostal bilateral incision and depending on the extent and locality of the necrosis, a surgeon may
access the pancreas through the lesser sac, gastrocolic omentum or the transverse mesocolon. Manual debridement is performed in one or more sessions. After the initial necrosectomy is complete, the abdominal incision is typically closed around a drain and repeat procedures are performed until the debridement is complete. Alternatively, the patient’s abdomen may be left open or a wound-vac may be placed to facilitate drainage and repeated trips to the operating room for debridement in the days ahead.

Another surgical option is a laparoscopic necrosectomy, which has grown in popularity due to its minimally invasive nature. A laparoscopic approach provides excellent access to the pancreas and allows for other maneuvers to be easily accomplished in the same setting i.e. cholecystectomy, feeding tube placement, etc. In one study, laparoscopic necrosectomy procedures showed promising results although 7.1% were converted to open necrosectomy, 28.6% of patients developed a pancreatic fistula, and there was a wound infection rate of 10.7%. While these numbers may sound high, it should be emphasized that these are aggressive procedures being performed in very ill patients.

Another minimally invasive surgical approach is the retroperitoneal approach. This is performed in a number of ways, one of which is the video assisted retroperitoneal debridement (VARD). In the VARD procedure, a laparoscopic camera is inserted through an incision centered on the 12th rib with insertion of laparoscopic devices as well. Fluid drainage along with debris removal can be accomplished followed by debridement of the necrotic cavity.

Due to the more invasive nature of the surgical techniques they are associated with longer hospital stays and more cost to the patient than other procedures. They are therefore typically used in association with a therapeutic “step up” program that usually begins with a less invasive endoscopic or percutaneous IR procedure.

IR placement of one or more percutaneous drainage catheters is commonly used in patients who may be too ill for endoscopy or surgery, an immature fluid collection in need of drainage, or with an acutely infected collection. A percutaneous drain can be useful for bridging unstable patients to more definitive procedures performed at a later date. One study showed a 100% success rate in hemodynamically stable patients (n=20) using percutaneous drains to treat necrotizing pancreatitis, success being defined as resolution of lesions at follow up IR procedures and via CT. Percutaneous drainage carries with it a risk of pancreatico-cutaneous fistulae, especially in patients with disconnected duct syndrome, where it can be as high as 45%. As such, evaluating
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If the fluid collection is felt to be too large, have too much solid component, and/or does not communicate with the duct then transmural drainage can be achieved in many patients via a cystenteroscopy (most commonly a cystgastrostomy, less commonly a cystduodenostomy) created endoscopically and kept open with one or more plastic or metal stents. The cystenterostomy also provides a portal for repeated endoscopic debridement as necessary.

In a systematic review of endoscopic treatment of pancreatic fluid collections through transmural drainage, patients treated with metal stents had a success rate of 81.9% on average for various types of pancreatic fluid collections out of 124 patients treated with metal stents. The authors reported an 83.3% success rate for pseudocysts and 77.9% in patients with walled off necrosis (success being defined as a reduction in size > 50% or complete resolution). These same authors reported an adverse event rate of 23.3% including infection, bleeding, stent migration, occlusion etc (again emphasizing that endoscopic treatments are not low risk invasive but are nonetheless high-risk interventions). If the fluid collection does have communication with the main pancreatic duct, transpapillary drainage is often attempted using a plastic stent placed directly into the collection or bridging the communication with the duct.9 If the fluid collection is felt to be too large, have too much solid component, and/or does not communicate with the duct then transmural drainage can be achieved in many patients via a cystenteroscopy (most commonly a cystgastrostomy, less commonly a cystduodenostomy) created endoscopically and kept open with one or more plastic or metal stents. The cystenterostomy also provides a portal for repeated endoscopic debridement as necessary.

There are now commercially available, dedicated transluminal stents with a wide enough bore (15 mm) for an endoscopic necrosectomy to be performed through the stent lumen itself. We use these stents frequently in our practice. These stents are designed for EUS-guided placement and are now coming into clinical use. A study of one of these dedicated stent (n=22) showed a 100% clinical success rate and 100% technical success rate, with 10% of patients encountering complications, which included stent migration and hemorrhage.19 The main advantage of these dedicated stents is their wide lumen which both facilitates passive drainage to the GI tract of cyst contents and the fact that they can accommodate an endoscope so that the cavity can be entered as needed for endoscopic necrosectomy without having to remove the stent itself (as is often the case with plastic stents).

Overall, endoscopic treatment appears to be a good choice in the treatment of pancreatic fluid collections. One study of 116 patients (5 acute fluid collection, 8 necrosis, 30 acute pseudocyst, 64 chronic pseudocyst and 9 pancreatic abcess) treated via endoscopic drainage methods showed an 87.9% clinical success rate with resolution of collections and symptoms, and a 93.1% technical success rate of fluid collection resolution with or without resolution of symptoms. Collections recurred in 15.5% of patients and complications occurred in 11.2%. The most common complications were bleeding and pneumoperitoneum.20

Overall, methods for treating pancreatic fluid collections that develop following pancreatitis are numerous and allow for a customizable approach to treatment. There are many variables to consider with each patient’s management, including the provider’s comfort level and experience with some of these procedures. Careful consideration of all factors will be important to the patients’ outcomes. ■

References

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