Infected Walled-Off Pancreatic Necrosis following EUS-Guided Drainage Successfully Treated Using Multiple Stents in Different Sites Technique

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Key Words

Walled-off pancreatic necrosis · Infection · EUS-guided drainage · Multiple stenting

Abstract

Walled-off pancreatic necrosis (WOPN) is one of the most life-threatening complications of acute severe pancreatitis. Regarding its high mortality and morbidity without appropriate treatment, the drainage procedure is still the mainstay of the treatment for this condition. There are multiple drainage options for this event. To date, endoscopic drainage alone has not been adequate for this condition, while surgical drainage has been reported to have a high morbidity. Endoscopic drainage with pancreatic necrosectomy is the most effective and safe method, while endoscopic drainage with aggressive lavage is another acceptable treatment option. The procedural details have been described elsewhere in many studies. In this report, we describe an alternative technique of drainage by endoscopy alone, without aggressive lavage procedure, that yielded an acceptable outcome with an easier procedure.

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Introduction

Walled-off pancreatic necrosis (WOPN) is an uncommon complication of acute severe pancreatitis that often leads to clinical deterioration of the patient and is associated with a very high mortality [1]. The differentiation between WOPN and pancreatic pseudocyst is

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based on the clinical course and radiographic findings, which show solid or necrotic material in the collection that is more distinct by magnetic resonance imaging (MRI) than by computed tomography (CT). The indications for drainage of WOPN are infection, obstruction of adjacent organs, rapidly increasing size or worsening pain. This condition has traditionally been managed surgically, with interventions by open and laparoscopic techniques. Both open surgical and laparoscopic drainage have reported success rates as high as 85–90% with complication rates of 19–92% [2].

Recently, there have been many reports regarding the high success rate of endoscopic drainage and endoscopic necrosectomy of WOPN. The results were also impressive in terms of lower complication rates compared to surgical intervention [3]. A study by Ang et al. [4] concluded that combined modality therapy (percutaneous and endoscopic drainage) provided a more effective and safer management when compared to standard percutaneous drainage alone. There have also been some studies indicating that WOPN might require multiple large bore catheters with aggressive irrigation and regular follow-up CT scanning [5]. However, the former idea of leaving the stent in place permanently in case of a disconnected pancreatic duct might have to be re-considered because of the risk of complications related to stent migration [6]. This case report features another option for WOPN drainage using multiple sites and larger bore catheters without irrigation, which might be possible in certain patients whose necrotic tissue is not too difficult to remove.

Case Report

We experienced the case of a 40-year-old female who was referred and diagnosed with a WOPN sized 13 × 9 × 7.4 cm that developed 2 weeks after an episode of acute severe pancreatitis. She was initially admitted due to acute severe epigastric pain. Her blood workup showed leukocytosis $2.73 \times 10^3/\mu\text{l}$ (reference range 4.0–11.0 × 10³/μl) with 91% neutrophils (reference range 40–74%) and serum amylase 1,309 U/l (reference range 0–220 U/l); liver chemistry showed total bilirubin 1.9 mg/dl (reference range 0.3–1.2 mg/dl), direct bilirubin 0.5 mg/dl (reference range 0.0–0.5 mg/dl), AST 126 U/l (reference range 0–40 U/l), ALT 343 U/l (reference range 0–40 U/l) and alkaline phosphatase 104 U/l (reference range 32–92 U/l). She underwent endoscopic retrograde cholangiopancreatography which showed only common bile duct sludge. She did not need intensive care but developed high-grade fever with abdominal pain 14 days after admission. A CT scan showed pancreatic necrosis with fluid collection at the pancreatic body. She had high-grade fever even after intravenous antibiotics for another 7 days. She underwent EUS-guided drainage with a 10 Fr × 7 cm double pigtail stent, and prophylactic antibiotics were prescribed for 7 days.

However, she was re-admitted 1 week later because of severe abdominal pain and sepsis. A CT scan of the upper abdomen showed enlargement of the pancreatic collection to 15 × 7 × 14.5 cm with increased enhancement of the rim, septation and some air inside (fig. 1). She was scheduled for repeat EUS-guided drainage of the infected WOPN. The procedure was performed with the patient in the left lateral decubitus position using a curvilinear echoscope (GF UC-140P, Olympus, Tokyo, Japan). Endoview showed a partially clogged stent (fig. 2) and echoview showed a large collection with turbid content and some air inside (fig. 3). We punctured the abscess using a 19-gauge needle (EchoTip® Ultra, Cook Ireland, Limerick, Ireland) at a different site under EUS guidance. The aspirated fluid was noted grossly to be purulent and was sent for culture. After contrast injection, 8.5 and 10 Fr tapered tip Teflon catheters were used for dilatation, and a 10 Fr × 7 cm double pigtail stent was subsequently

inserted. Since the collection was multiseptated with thick and turbid pus, we decided to place two additional stents into the abscess for better drainage via a different puncture site using the same technique (fig. 4). The patient received an extended course of intravenous antibiotics and was discharged after 33 days of hospitalization without complications. A follow-up MRI 6 weeks later showed only a small pancreatic fluid collection (fig. 5).

Discussion

Infected WOPN following EUS-guided drainage is an unusual complication that can occur even after antibiotic prophylaxis. The pitfall in this particular case was insertion of too small a stent, which resulted in inadequate drainage and promoted infection. This complication can be treated by an endoscopic approach using insertion of multiple stents instead of proceeding directly to surgery. Varadarajulu et al. [6] described techniques of transmural drainage of WOPN using EUS guidance and multiple catheter insertion through the same puncture site, including insertion of a nasocystic tube for irrigation afterwards. Here, we have presented the alternative technique of placing 10 Fr stents via different puncture sites and without aggressive irrigation, rather than putting multiple stents into the same puncture site followed by aggressive irrigation, which was previously reported, but which is more difficult. Regarding the study of Papachristou et al. [7] WOPN >15 cm was one of the factors associated with failure of endoscopic therapy, thus surgery or combination with percutaneous drainage were recommended. Interestingly, this technique might be another treatment option for large WOPN such as in the present case. We propose that in selected cases, the technique presented here would be easier to perform and could reduce the difficulty of irrigation when compared to the techniques described elsewhere. Furthermore, the technique of using multiple large bore/multi-site stents might provide better drainage than the conventional endoscopic technique. However, in order to avoid a suboptimal endoscopic approach to WOPN, this method must be reserved for patients with less necrotic tissue and debris, and imaging studies and the patient's clinical well-being must be closely followed.

Author Contributions

V. Prachayakul developed the concept; V. Prachayakul, P. Aswakul and P. Phisalprapa contributed to the acquisition of data; V. Prachayakul and P. Aswakul wrote the paper and revised it for important intellectual content.

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Fig. 1. CT scan showing the stent in the enlarged cyst.

Fig. 2. A partially clogged stent.

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Fig. 3. Echoview showing turbid fluid with some air noted.

Fig. 4. Endoscopic view of stents. Purulent drainage is also seen.

Fig. 5. Follow-up MRI showing only small residual collection.