

Case Report

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Treatment of crash-induced disconnected pancreatic ductal syndrome together with migration of pancreatic ductal stent by endoscopic pancreatic stent replacement: A case report

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Background

Disconnected Pancreatic Duct Syndrome (DPDS) is a severe syndrome caused by the disconnection in the pancreatic duct, so that secretion of viable upstream pancreatic parenchyma cannot be drained to the duodenum. It usually occurs on the patients enduring acute necrotizing pancreatitis. Moreover, it can rarely also be concomitant with mechanical pancreatic injury, post-pancreatic surgery, chronic pancreatic benign or malignant disease [1]. Here, we report the treatment of a crash-induced disconnected pancreatic ductal syndrome patient with a history of chronic pancreatitis, pancreatic duct stones caused obstruction, and pancreatic ductal stent drainage [2].

Case presentation

A 45-year-old man was hospitalized in our department of gastroenterology with a chief complaint of dull pain in his middle abdominal and back after experiencing a car crash that steering wheel hit his upper abdomen. The patient got acute pancreatitis four years ago and recurred twice. The first time was two years ago and the second time was six months ago. Conservative treatment was carried out after the above several attacks, and the patients all improved. After the last attack, the patient was diagnosed with 'chronic pancreatitis' and got an

ultrasound-B examination. The result showed multiple stones in the pancreatic head and stenosis of the main pancreatic duct. Then, the patient endured duodenal papillary pre-cutting and ERCP (Endoscopic Retrograde Cholangiopancreatography) + ENBD (Endoscopic Nasobiliary Drainage) were performed after 1 week. To drain the pancreatic fluid into the duodenum, ERPD (endoscopic drainage of pancreatic duct) was performed 10 days later, and a single pigtail plastic stent (5Fr 7 cm) was successfully placed during the procedure. After that, the patients were discharged without any symptoms. One month ago, the patient suffered a car crash, and the steering wheel hit his upper abdomen at that time. Then, he felt recurrent upper abdominal dull pain, and the pain radiated to the back. The symptoms gradually worsened, so he came to our gastroenterology department for treatment. Blood test showed high cholyglycine (7.12 mg/L, normal: <2.7 mg/L), high total bile acid (17.5 μmol/L, normal: <10 μmol/L), low apolipoprotein A1 (0.99, normal: >1.2 g/L). The result of enhanced Computed Tomography (CT) showed: 1. Pancreatic parenchyma is atrophic, and there are several small nodular dense shadows. 2. The density of the neck of the pancreas decreased slightly and then decreased after enhancement. 3. The distal end of the pancreatic duct stent is located out of the pancreatic parenchyma. The result

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of MRCP (Magnetic Resonance Cholangiopancreatography) showed the shape of the pancreas is irregular, with atrophy of the pancreatic body and dilatation of the pancreatic duct. Ultrasound-B examination indicates: 1. Echogenicity of the head and neck of the pancreas is thickened. 2. The drainage stent echo can be seen in the pancreatic neck body. (Disruption of pancreatic duct and displacement of pancreatic stent are suspected). 3. Suspected multiple calculi exist in the pancreatic neck. According to the multiple diagnostic results, the patient was diagnosed with chronic pancreatitis, calculus pancreas, disconnected pancreatic duct syndrome on pancreatic head (Grade III) and pancreatic stent displacement. Before long, ERCP was performed under general anesthesia to replace the stent and adjust its position to connect the pancreatic head so that well drainage of pancreatic head secretin could be exerted. Firstly, after the passage of the esophagus and stomach cavity, the main nipple was found in the descending segment of the duodenum. Then, EST (endoscopic sphincterotomy) was performed by sphincterotome (Boston scientific, USA). After EST, a pancreatic stent could be seen on duodenal nipple opening. Use the snare (COOK, USA) to trap the end of the stent and remove it. After the sphincterotome was inserted through Guide wire (Xunweikang, China), the pancreatic duct was developed with iodixanol (5 ml). X-ray showed pancreatic duct developed in pancreatic neck with filling defect and no pancreatic duct development was detected in pancreatic tail. The guide wire is used to push a single pigtail biliary plastic stent (5Fr 3 cm). The stent passed through the stenosis, and subsequently pancreatic secretin was seen to overflow from the stent cavity. No acute biliary perforation, obstruction or infection had developed after the procedure. The patient got one-day postoperative fasting, fluid infusion and endured regular use of antibiotics and PPI. The patient recovered and discharged uneventfully after 3 days.

Although DPDS is commonly in patients with acute necrotizing pancreatitis, the trauma on upper abdominal can also lead to DPDS, which can easily be ignored. Some studies revealed that the occurrence of pancreatic injury occupies only 5% of patients with blunt trauma on abdomen, mainly because the pancreas is deeply located in the retroperitoneum. When the pancreas is injured by blunt trauma, the pancreatic ductal disruption is frequent [5,6].

Delayed diagnosis and treatment on patients with pancreatic injuries and DPDS can lead to pancreatic secretin leakage into the abdominal cavity due to ductal disruption, resulting in severe acute pancreatitis and peritonitis. Typical clinical features of DPDS are upper abdominal pain, leukocytosis, and elevated serum amylase level, which are caused by DPDS-induced acute pancreatitis. These clinical symptoms can be absent during the initial several days. The severe complications, including pseudocyst, fistula, abscess formation, false aneurysm, and sepsis, would come after late diagnosis or misdiagnosis, result in high rates of morbidity and mortality [7]. In the study from Lin et al [7,10]. Grade III injuries treated within 12h had a complication rate of 58% compared to 80% for those operated on more than 24h after injury [10].

The AAST (American Association for the Surgery of Trauma classification of pancreatic injury) grading scheme for pancreatic injury is the most commonly used guideline (Table 1). CT is the primary imaging modality used for diagnosis, and the specific imaging features of acute pancreatic injury including disruption of the pancreatic ducts, pancreatic hematoma, extraperitoneal or intraperitoneal fluid, attenuation of fat around the pancreas, and associated left upper quadrant trauma [11].

Previous studies showed there is a wide range of diagnostic sensitivity of CT for pancreatic injury between 28% and 85% [5,12]. MRCP is another important diagnostic tool for pancreatic injury and DPDS, used to provide useful information mainly about the anatomy of pancreatic duct [5,13,18]. However, MRCP did not get a positive conclusion on pancreatic injury in this case. It may indicate the diagnosis of DPDS with MRCP has false negative possibility, and multiple imaging methods needs to be used to give comprehensive diagnosis of DPDS. Moreover, ERCP is another sensitive and shortcut tool for diagnosis of pancreatic ductal injury [19,20]. It is used to diagnose the condition of the pancreatic duct, grade of trauma, and choose ideal treatment (surgical or conservative) for the patient. What is worth mentioning is that ERCP is also an effective minimal-invasive procedure used to treat pancreatic injury [11]. However, for pancreatic injured patients with I or II AAST grade, conservative treatment with or without ERCP could be an optimal therapeutic choice. Beres AL et al. Reported III or IV grade patients who received conservative treatment had been observed to require longer hospitalized days ($p < 0.01$), fasting days ($p < 0.003$), and complications rate ($p < 0.007$), compared with grade III or IV patients with early surgery [21]. In our study, rather than surgery, we performed ERCP and placed a single pigtail biliary plastic stent for the patient. The ERCP successfully showed DPDS, and the stent had reconnected the pancreatic duct [22]. After ERCP, the patient gets improved and discharged in three days. It indicated that ERCP has the potential capacity for the minimal treatment of pancreatic injury patients with grade III or IV. It is of course notable that this patient only had mild symptoms, so

Table 1: American association for the surgery of trauma classification of pancreatic injury.

Grade	Injury	Description
I	Hematoma	Minor contusion without duct injury
	Laceration	Superficial laceration without duct injury
II	Hematoma	Major contusion without duct injury or tissue loss
	Laceration	Major laceration without duct injury or tissue loss
III	Laceration	Distal transection or parenchymal injury with duct injury
IV	Laceration	Proximal transection or parenchymal injury involving ampulla
V	Laceration	Massive disruption of pancreatic head

Discussion

Chronic pancreatitis is a disease of pancreatic inflammation with pancreatic irreversible destruction, commonly associated with pancreatic duct stones, which will cause obstruction and acute attack of chronic pancreatitis. Endoscopic therapy, including ERCP and ESWL (Extracorporeal Shock Wave Lithotripsy) has proven to be two major minimal invasive procedure for chronic pancreatitis [3]. In this case, successful drainage of pancreatic secretin through single pigtail biliary plastic stent in pancreatic duct could be an ideal treatment of the chronic pancreatitis with pancreatic stone and a symptom of obstruction [4].

further research needs to be done on exploring the therapeutic capacity of ERCP on the treatment of severe pancreatic injury and DPDS.

References

1. Tann M, Maglinte D, Howard T, Sherman S, Fogel E, Madura J, et al. Disconnected pancreatic duct syndrome: imaging findings and therapeutic implications in 26 surgically corrected patients. *Journal of computer assisted tomography*. 2003; 27(4): 577-82.
2. Varadarajulu S, Rana S, Bhasin D. Endoscopic therapy for pancreatic duct leaks and disruptions. *Gastrointestinal endoscopy clinics of North America*. 2013; 23(4): 863-92.
3. Beyer G, Habtezion A, Werner J, Lerch M, Mayerle. Chronic pancreatitis. *Lancet*. 2020; 396(10249): 499-512.
4. Singh V, Yadav D, Garg P. Diagnosis and Management of Chronic Pancreatitis: A Review. *JAMA*. 2019; 322(24): 2422-34.