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## Editorial

# Is “Observation” the Single Method of Treatment for Post- Pancreatoduodenectomy Complications Due to the Strictured Anastomosis? - @

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The stricture of pancreatoenteric anastomotic site is one of the problematic late complications after pancreatoduodenectomy (PD) [1]. Almost all patients with this disorder are asymptomatic, but roughly 2% of these patients suffer from acute recurrent pancreatitis (ARP) [2,3], which requires repeated hospitalization and negatively impacts patients' quality of life (QOL). Acute pancreatitis is induced by pancreatic juice flow obstruction due to the strictured anastomosis. Another relatively common complication of post-pancreatoduodenectomy is pancreatic fistula (PF), which occurs early after pancreatoduodenectomy in 10-20% of the patients [2,3]. This disorder also affects the QOL of patients due to continuous percutaneous drainage of pancreatic juice, and is sometimes responsible for mortality [4]. Stricture of pancreato-digestive tract anastomosis is also experienced with PF [5,6]. Surgical procedures to remove the strictured anastomosis [1] have been performed for relief of those complications. However, surgeons sometimes hesitate an additional operation due to a susceptible postoperative adhesion or a physical burden to the patients. Just inhibiting per oral intake with intravenous hyperalimentation, percutaneously external drainage for peripancreatic fluid collection have been selected to treat these complications. Usually, it takes much time to resolve them, and compels patients to stay in a hospital for long period.

Recently, endoscopic treatment has gathered attention to treat these complications [7-12]. Placing a stent across the strictured anastomosis with or without balloon dilation using endoscopic procedures can contribute to relief of these complications [5]. To place a stent across the strictured anastomosis, ERCP is the first to be selected, because stent placement under ERCP is feasible if a guidewire could pass the strictured anastomosis. However, identification of the anastomosis is responsible for accomplishment of ERCP, and the possibility depends on the method of reconstruction between pancreatogastrostomy and pancreatojejunostomy. In pancreatogastrostomy, identifying the anastomosis at the lower gastric body is relatively easy using a lateral-viewing endoscope [12]. On the other hand, in many cases with pancreatojejunostomy, the anastomosis is hard to be identified because in general to reach the anastomotic site through the anastomosed jejunum an enteroscope with a forward-viewing is selected [5], and it provides us a horizontal view of the jejunal wall with circumferential folds hiding the anastomosis with a very small diameter. For these reasons, ERCP can be selected as the first in pancreatogastrostomy, but is hard to be performed in pancreatojejunostomy.

Although the anastomosis is identified, the stricture is usually too tight and hard to be passed through by a guidewire in spite of using one with a thin diameter. To treat a strictured pancreatogastrostomy with ERCP, cutting the center of the strictured anastomosis with a needle knife is needed to introduce a catheter for making pancreatography and to place a pancreatic stent using a lateral-viewing endoscope from the gastric cavity [13], however hemorrhage and perforation should be apprehensive. For ERCP in pancreatojejunostomy, a lateral-viewing endoscope has been also chosen in previous reports [14-16]. This choice might be responsible for consideration to identify the anastomosis and cannulate a main pancreatic duct via the anastomosis as the same as an ordinary ERCP through the major papilla, while introducing a lateral-viewing endoscope into an afferent loop may cause perforation as reported about ERCP in Billroth II reconstruction [17], and a lateral-viewing endoscope can

provide us a view of the intestinal wall in a limited direction, that is to say, to identify the anastomosis of pancreatojejunostomy needs a good fortune.

If ERCP is failed, EUS-guided rendezvous method could be selected as the second intervention to place a stent across the strictured anastomosis [5,7,8,11]. To treat the strictured pancreatojejunostomy are frequently applied to this method due to impossibility to identify the anastomosis, which is responsible for failed ERCP. The dilated main pancreatic duct is punctured from the gastric cavity and a guidewire is introduced through the puncturing needle into the dilated main pancreatic duct and advanced into the anastomosed jejunum via the stenotic anastomosis. Placing the guidewire, the EUS endoscope is removed and exchanged to an enteroscope. After introducing the enteroscope into the anastomosed jejunum to the anastomotic site, the tip of the guidewire placed in the anastomosed jejunum via the stenotic anastomosis is caught by a forceps, and pulled through the endoscopy working channel. The stenotic anastomosis is dilated by catheter with or without a balloon dilation, and a pancreatic stent is placed across the strictured anastomosis over the guidewire [7,11].

Stent placement with ERCP or EUS-rendezvous method can relieve stricture of the pancreato-digestive tract anastomosis, and relieve the complications. Actually, these methods need expertized techniques for ERCP, operating a needle knife, and EUS-guided puncture. However, EUS-guided rendezvous method limited for treatment of ARP. To accomplish this method, a guidewire passing through the strictured anastomosis is necessary. In ARP, this condition is expected, while in almost all cases of PF the anastomosis occludes, that obstructs a guidewire passing [6,18].

To treat PF, creating a new anastomosis between the pancreatic duct and the digestive tract is necessary. EUS-guided pancreatogastrostomy was reported to treat the complications due to the strictured pancreatojejunostomy [19]. Pancreatogastrostomy is made with stent placement between the pancreatic duct and the gastric cavity. This method is feasible but should be avoided, because various complications have been reported and could be assumed, such as hemorrhage, abscess, pancreatic fistula, gastric perforation, stent migration into the abdominal cavity, and so on [20]. Alternative methods to make a new anastomosis have been reported [6,18]. Introducing EUS endoscope for puncture into the anastomosed jejunum and puncturing the main pancreatic duct through the anastomosed jejunum near the anastomosis to place a stent between the anastomosed jejunum and the main pancreatic duct is the one of them [18]. This method is practical but needs a technical skill to introduce the EUS endoscope for puncture into the anastomosed jejunum giving a careful consideration to perforation. Another method is percutaneous one [6]. This method is to puncture the anastomosed jejunum through the main pancreatic duct percutaneously under abdominal ultrasonography, place a catheter along the route and make a new anastomosis. A high-level technical skill for percutaneous puncture is necessary, and the patient should be thin enough to recognize clearly the anastomosed jejunum and the main pancreatic duct.

Post-pancreatoduodenectomy complications could be treated using interventional endoscopic methods and some percutaneous methods. For treating ARP, endoscopic methods have been established. However, to treat PF needs various devices because of the

occluded anastomosis. Observation with waiting for relief is not just a way for treatment of complications after pancreaticoduodenectomy.

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