

# Cancer of the papilla of Vater in which a needle knife precut papillotomy was effective for the pre-operative diagnosis and biliary drainage – report of a case

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## Abstract

The histopathological diagnosis for periampullary tumours is difficult because the accuracy of papillary forceps biopsy is unsatisfactory. Precut papillotomy has recently been performed if endoscopic biliary cannulation is necessary but difficult. Precut papillotomy after placing a pancreatic stent decreases the risk of acute pancreatitis compared to without pancreatic stent. We describe an 80-year-old female with obstructive jaundice caused by cancer of the papilla of Vater. We obtained pre-operative histopathological diagnosis and biliary drainage by needle knife precut papillotomy using a pancreatic stent. Precut papillotomy with pancreatic stent was safe and effective for biliary drainage and pre-operative histopathological evidence.

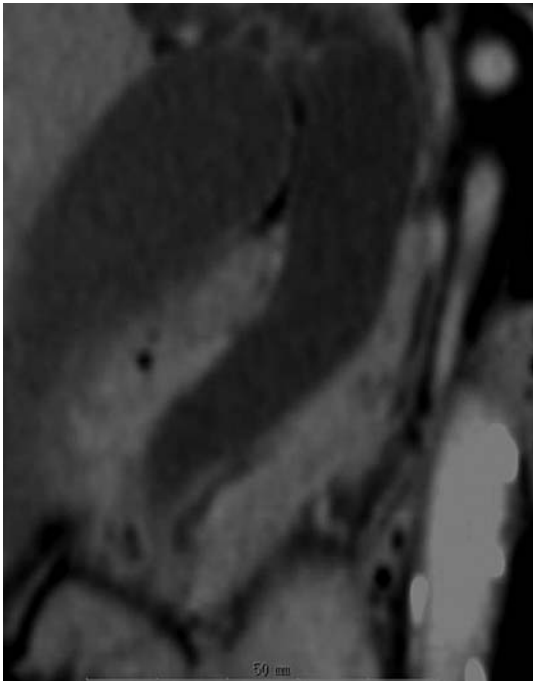
**Key words:** precut papillotomy, needle knife, pancreatic stent.

## Introduction

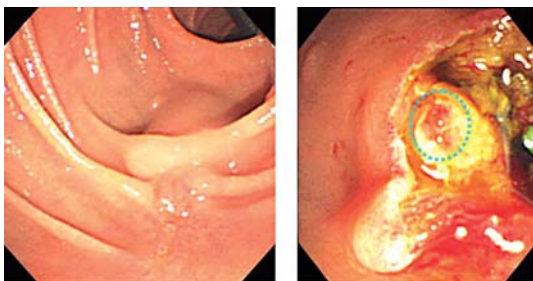
Periampullary tumours include malignant and benign disease. The only curative treatment for malignant periampullary tumours is surgical resection, but it is highly invasive. It is extremely useful for the determination of therapeutic strategies to obtain pre-operative histopathological evidence. The first histopathological diagnostic method was to perform a biopsy through duodenoscopy, but the accuracy of papillary forceps biopsy is unsatisfactory [1, 2]. Biopsy after sphincterotomy improves this accuracy [1, 3].

Endoscopic biliary drainage has recently become a common method for biliary drainage. However, the success rate of selective bile duct cannulation ranges from 90 to 95% [4]. The success rate of biliary cannulation increases after precut papillotomy [5]. In the past, it was believed that only expert endoscopists should perform precut papillotomies because of the high complication rate. However, the complication rate is comparable with that of a standard sphincterotomy [5, 6], and early-stage precut papillotomies are now often performed.

Pancreatic stents are now considered effective for the prevention of acute pancreatitis after endoscopic retrograde cholangiopancreatography (ERCP). Pancreatic stents should be used particularly for patients who have a high



**Figure 1.** An enlarged gallbladder, a dilated common bile duct, and a mildly dilated main pancreatic duct were observed in CT



**Figure 3.** After performing a needle knife precut papillotomy, a red neoplastic lesion was exposed

risk of acute pancreatitis [7]. Furthermore, it has been reported that performing a precut papillotomy after placing a pancreatic stent for such patients decreases the risk of acute pancreatitis compared to when a precut papillotomy is performed without placing a pancreatic stent [8].

We report a case of cancer of the papilla of Vater in which a precut papillotomy using a pancreatic stent was effective to obtain pre-operative histopathological diagnosis and biliary drainage.

### Case report

An 80-year-old female with jaundice was admitted to our hospital. Blood data indicated an increased value in AST 239 IU/l, ALT 179 IU/l, ALP 1147 IU/l, T-Bil 5.7 mg/dl, and CA19-9 77.3 U/ml. Computed tomography imaging demonstrated an enlarged gallbladder, common bile duct dilatation, and mild dilatation of the main pancreatic duct (Figure 1). The



**Figure 2.** EUS identified low echoic mass 6 mm in size was identified in the papillary area

papilla of Vater and duodenal mucosa were normal by duodenoscopy. Endoscopic ultrasonography identified a low echoic mass measuring 6 mm in size in the duodenum papilla (Figure 2).

Taking into consideration the obstructing jaundice caused by the periampullary tumour, we performed ERCP for the purposes of biliary drainage and diagnosis. Though we tried to perform biliary cannulation, it proved difficult. Therefore, we performed a needle knife precut papillotomy after placing a pancreatic stent. After performing the needle knife precut papillotomy, a reddish neoplastic lesion was exposed (Figure 3). Through a biopsy of the exposed neoplastic lesion, we histopathologically diagnosed the patient with adenocarcinoma. The patient was clinically diagnosed as having a cancer of the papilla of Vater and underwent pylorus-preserving pancreaticoduodenectomy (PpPD). Histopathologically, a moderate adenocarcinoma originating from the duodenum papillary area was advancing into the pancreas through the pancreatic duct (Figure 4).

### Discussion

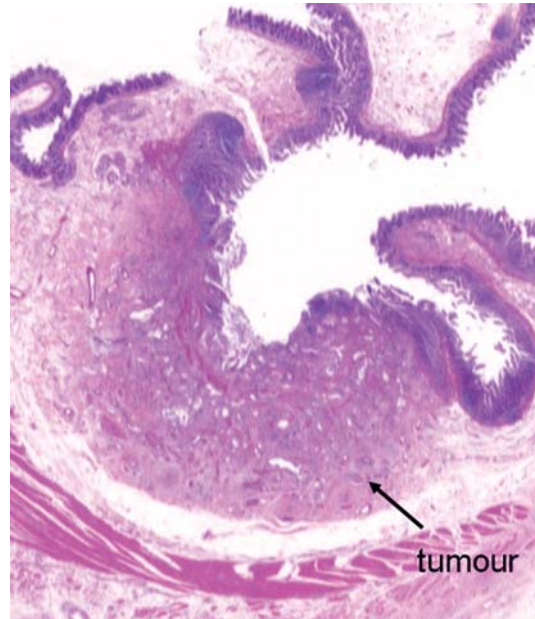
Periampullary tumours include malignant and benign disease. Pancreaticoduodenectomy (PD) or PpPD is generally performed as treatment for malignant periampullary tumours. But both of them are highly invasive surgical treatments. Pre-operative histopathological diagnosis for differentiating between benign and malignant tumours is very important. For histopathological diagnosis, a biopsy through duodenoscopy should be performed first. There are various reports regarding biopsies performed using an endoscope, but the accuracy of a papillary forceps biopsy is unsatisfactory [1, 2]. Reasons include technical sampling errors or, in cases of periampullary tumours, the possibility of only dysplasia or adenoma being detected on the mucosal surface while a carcinoma may exist in the deeper regions [9].

Biopsy performed after sphincterotomy has been reported to improve the accuracy of the biopsy [1, 3]. In a prospective study, Menzel et al. [3] reported on the accuracy of biopsies performed before and after

a sphincterotomy for cases in which a periampullary tumour was suspected. The overall accuracy rate increased from 63 to 70%, and in the subset of carcinomas sensitivity increased from 21 to 37%. When a periampullary tumour is suspected, a post-sphincterotomy biopsy should be performed from the deeper regions at the same time as a biopsy from the surface. Our case did not exhibit any changes in the mucosal surface of the duodenum papilla. Although we were unable to perform a standard sphincterotomy, we performed a precut papillotomy instead because biliary cannulation was difficult. The precut papillotomy exposed the tumour in the deeper region and we were able to obtain enough samples for histopathological diagnosis in our case.

Endoscopic transpapillary drainage is now more commonly performed than percutaneous transhepatic drainage because of its low invasiveness. However, the success rate of selective biliary cannulation is reported at 90 to 95% even when performed by experts [4]. Precut papillotomy is performed when biliary cannulation is difficult. Recently, reports concerning success rates of biliary cannulations with performance of precut papillotomies have increased [5]. It has been said in the past that precut papillotomies should be performed only by an expert endoscopist because of its high rate of complications such as acute pancreatitis and perforation. However, recent reports suggest that the frequency of acute pancreatitis is 0 to 2%, which is comparable with a standard sphincterotomy [5, 6], and that precut papillotomies should be performed in the early stages because repeated unsuccessful attempts at cannulation prior to performing a precut papillotomy cause edema and trauma of the papilla, resulting in an increase in the frequency of acute pancreatitis [10]. We performed a needle knife papillotomy in the early stages without attempting to conduct long-term biliary duct cannulation. In this case, we were able to prevent an attack of acute pancreatitis with this method.

Recent reports suggest that pancreatic stents are effective for preventing acute pancreatitis after ERCP. In a meta-analysis reported by Singh et al. [7] in a review of the rate of acute pancreatitis after ERCP in cases with or without prophylactic pancreatic stents in patients having high acute pancreatitis after ERCP such as sphincter of Oddi dysfunction, difficult cannulation, precut sphincterotomy, and endoscopic balloon dilatation, the rate of acute pancreatitis was significantly low among patients for whom pancreatic stents were used (5.8%), while the result for patients with no pancreatic stents was 15.2%. There are also reports that performing a precut papillotomy after placing a pancreatic stent, particularly in patients with sphincter of Oddi dysfunction, results in lowering the risk of acute pancreatitis compared to when performing a precut papillotomy without placing a pancreatic stent [8].



**Figure 4.** Histopathologically, adenocarcinoma in the duodenum papillary was observed

Biliary cannulation was difficult in this case; therefore, we first placed a pancreatic stent before performing a needle knife precut papillotomy. Similar to the results mentioned above, the needle knife precut papillotomy performed with a pancreatic stent also lowered the risk of acute pancreatitis. We did not experience complications in this way. Furthermore, it is technically possible to perform an incision on the superior border of a pancreatic stent by using it as a Merkmal. We considered that the precut papillotomy with pancreatic stent allows for easier identification of an incision location and it is safer to perform. In addition, the precut papillotomy allowed for a histopathological diagnosis, and it was thus believed to be a very effective procedure for determining therapeutic strategies. We did not experience complications in this patient and this was our first case of needle knife precut papillotomy for cancer of the papilla of Vater.

Needle knife precut papillotomy is a highly effective procedure for conducting biliary drainage in cases in which performing biliary cannulation is difficult, as well as for pre-operative histopathological diagnosis for periampullary tumours, and we believe that it can be performed more safely if it is performed after placing a pancreatic stent.

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