

**Case Report**

## Successful wire-guided minor papillotomy using front-view endoscopy in a case of agenesis of the duct of Wirsung with a Billroth II gastrectomy

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### Abstract

Agenesis of the duct of Wirsung is rarely encountered when pancreatography completely fails. We successfully treated a patient with pancreatic pain due to this unusual pancreas divisum by wire-assisted minor papillotomy using cap-attached front-view endoscopy. A 77-year-old man with a history of pancreatitis was admitted to our hospital due to epigastralgia. He had a partial gastrectomy with gastrojejunostomy (Billroth II). We performed ERCP with cap-attached front-view endoscopy to determine the cause of the abdominal pain. ERC revealed a mildly dilated common bile duct. However, ventral pancreatography was not obtained via the papilla of Vater. We attempted pancreatography via the minor papilla at the second ERCP. The minor papilla was difficult to find and approach because of its small size and obscure orifice. We inserted a thin metal tip cannula into the minor papilla and performed dorsal pancreatography. With a diagnosis of pancreas divisum, we performed wire-assisted minor precut papillotomy with a needle knife. A 5-Fr. single pig-tail plastic stent was successfully placed. There were no procedure-related complications and post-ERCP pancreatitis. The patient's epigastralgia was relieved, and the hyperamylasemia improved. Subsequently, though the epigastralgia relapsed, the serum amylase level remained almost normal.

(Key words: Wirsung duct agenesis, pancreas divisum, endoscopic minor papillotomy, Billroth II reconstruction)

### Introduction

Pancreas divisum is a common congenital anomaly of the pancreas, with an incidence up to 10%<sup>1</sup>. Almost all of these cases are asymptomatic, but a small number experience repeated pancreatitis or pancreatic pain due to impaired drainage of the dorsal pancreatic duct secretion<sup>2</sup>. Symptomatic pancreas divisum should be an indication for endoscopic minor papilla sphincterotomy or stenting<sup>3,4</sup>.

We rarely encounter agenesis of the duct of Wirsung, which is an exceptional form of pancreas divisum with a vestigial ventral element when pancreatography completely fails. In such cases, accessory pancreatic duct cannulation should always be attempted, because otherwise this anomaly is goes undiagnosed.

We successfully treated a symptomatic case of agenesis of the duct of Wirsung in a patient with a Billroth II reconstruction by wire-assisted minor papillotomy with cap-attached front-view endoscopy.

### Case Report

A 77-year-old man with a history of pancreatitis 8 years earlier was admitted to our hospital due to epigastralgia. He had a partial gastrectomy with gastrojejunostomy (Billroth II) due to gastric cancer 11 years earlier. Laboratory data on admission revealed mild hyperamylasemia. In order to diagnose the cause of the epigastralgia, ERCP was performed because MRCP suggested pancreas divisum without a ventral duct (Figure 1). A front-view endoscopy with a cap was easily inserted into the afferent loop and reached the duodenal stump within a relatively short time. ERC revealed a mildly dilated common bile duct without a stone. However, even ventral pancreatography could not be obtained via the papilla of Vater. Though we attempted pancreatography via the minor papilla at the second ERCP, the minor papilla was difficult to find and approach because of its small size and obscure orifice (Figure 2). We inserted a thin metal tip cannula into the minor papilla and obtained a dorsal pancreatography (Figure 3). With a diagnosis of pancreas divisum, in order to perform minor papillotomy and stent insertion, a 0.018-inch guidewire was inserted via the minor papilla, and the metal tip cannula was removed. We attempted to insert a tapered-tip cannula through the guide-wire but failed. We performed wire-assisted minor precut papillotomy with a needle knife and observed pancreatic juice being excreted through the dilated orifice (Figure 4 a 4 b). A 5 Fr. single pig-tail plastic stent was successfully placed through the guidewire (Figure 5). There were no procedure-related complications and post-ERCP pancreatitis did not occur. The patient's epigastralgia was relieved, and hyperamylasemia improved. Subsequently, though epigastralgia relapsed, the serum amylase level remained almost normal.



Figure 1: MRCP shows a mildly dilated common bile duct. The ventral duct of Wirsung is absent.

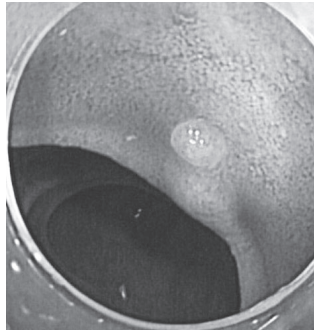


Figure 2: Endoscopic view shows a small minor papilla with an obscure orifice.

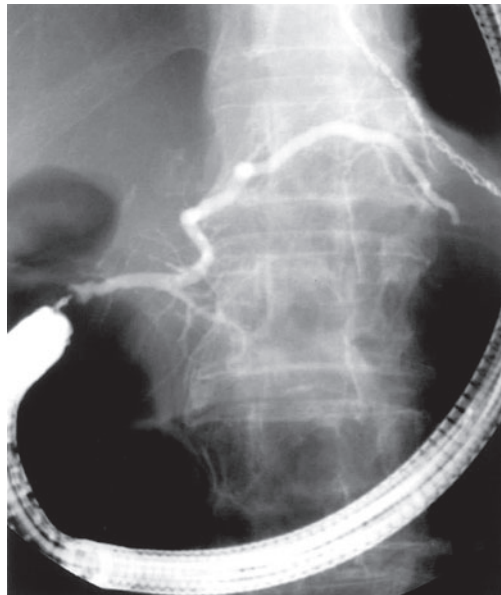


Figure 3: ERP shows a dorsal pancreatography via the minor papilla.

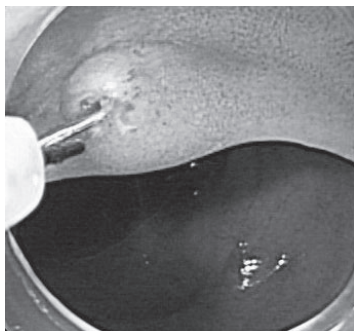


Figure 4a: Endoscopic wire-assisted precut papillotomy with a needle knife.

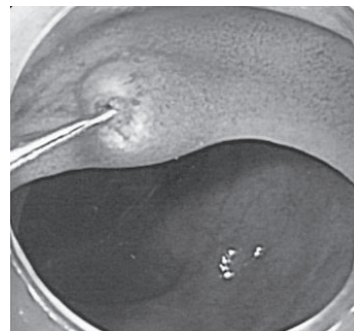


Figure 4b: Endoscopic view shows a minor papilla after wire-assisted precut papillotomy with a needle knife.



Figure 5: Endoscopic view shows a minor papilla with a 5-Fr. single pig-tail plastic stent.

### Discussion

It is difficult to perform minor papillotomy for pancreas divisum in a patient with Billroth II gastrectomy using a conventional side-viewing endoscopy because of difficulty in stabilizing the endoscopy tip and cannula at the appropriate distance from the minor papilla<sup>5</sup>. Minor papilla cannulation is often very difficult even with only slight movement due to respiration or cardiac pulsations, particularly in a small minor papilla with an obscure orifice. ERCP using front-viewing endoscopy without a cap in a patient with a Billroth II gastrectomy has been reported to be as effective as side-viewing duodenoscopy<sup>6</sup>. Cap-assisted front-viewing endoscopy makes the ERCP-associated procedure easier and safer in Billroth II reconstruction patients. This method should be considered to be as effective for treatment of the minor papilla in patient with a Billroth II gastrectomy. Cannulation of the minor papilla in this case was performed by laying the edge of the cap to the anal side of the minor papilla to view the minor papilla from the front. If the minor papilla is stably viewable from the front by endoscopy, cannulation is relatively easy by inserting an ERCP cannula or a guidewire vertically.

There have been several reports on minor papillotomy and stent placement for pancreatic divisum<sup>3, 4, 7, 8</sup>. Several methods are used for minor papillotomy; the needle knife method<sup>9</sup>, the standard pull-type papillotomy knife method<sup>8, 9</sup>, the wire-assisted precut method<sup>10, 11</sup>, and over the pancreatic stent method<sup>3, 8</sup>. The wire-assisted precut method is effective for a small and tight orifice when the tapered-tip cannula cannot be passed into the dorsal duct. The guidewire helps the needle to be stably placed at the orifice and indicates the preferred cutting direction. This procedure is safer in patients with a Billroth II reconstruction when using a cap-attached endoscopy to stabilize the endoscopy tip and cannula. We performed wire-assisted sphincterotomy by inserting the needle knife beside the wire and cutting away from the wire toward the oral side top of the minor papilla. Although the cutting length within the protrusion of the oral side of the minor papilla is considered safe, a large opening after papillotomy can-not be obtained for a small minor papilla. A pancreatic stent is desirable after minor papillotomy for maintenance of pancreatic duct patency and prevention of post-ERCP pancreatitis, especially for a small minor papilla.

Cotton<sup>2</sup> reported some pancreas divisum cases without ventral pancreatography via the major papilla and suggested that unrecognized anomalies lacking the ventral pancreatic duct may be present in failed cases of pancreatography. The report described a Santorini's duct that resembled normal Wirsung drainage in such cases. Dorsal pancreatography of our case also resembled a normal main pancreatic duct with a sigmoid curve in the head-body junction of the pancreas. However, a straight-type dorsal pancreatic

duct type has also been reported by Kamisawa et al. This type of pancreas divisum has a long inferior branch<sup>12</sup>. There have been reports of this type of pancreas divisum being confirmed histopathologically<sup>13,14</sup>. Akiyama et al. reported relapsing pancreatitis due to this anomaly, which was successfully treated by sphincteroplasty<sup>15</sup>. Accessory duct cannulation should be attempted if pancreatography fails via the major papilla in a suspicious case of dorsal pancreatic pain or pancreatitis. In case of failed cannulation of the minor papilla, MRCP may be useful for detection of this anomaly<sup>16</sup>.

We successfully performed minor papillotomy using cap-attached front-view endoscopy in a Wirsung duct agenesis patient with a Billroth II reconstruction. This method is effective and safe with a very small minor papilla and an obscure orifice.

## References

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## 副乳頭切開を施行した膵管非癒合 (腹側膵管欠損型) の 1 例

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### 要 約

症例：77歳 男性. 11年前に胃癌のため遠位側胃切除（ビルロートⅡ法再建），8年前急性膵炎の既往あり，高アミラーゼ血症を伴う腹痛発作を繰り返すため精査目的に当センターに入院した。透明キャップを装着した直視鏡にて ERCP を試みたが，主乳頭からは胆管のみ造影され，膵管は全く造影されなかった。MRCPにて膵管非癒合が疑われたため，ERCP再検，副乳頭造影にて背側膵管の造影が得られたが，腹側膵管は造影されず，膵管形態から腹側膵管

欠損型の膵管非癒合と考えられた。膵管にガイドワイヤー留置後，先細カテーテルの挿入を試みたが不可能なため，ワイヤーガイド下に針状ナイフで副乳頭を切開し，膵管ステントを留置して終了した。高アミラーゼ血症は以後認められず，腹痛も一時改善した。腹側膵管欠損症は主乳頭からは膵管造影が得られないため，副膵管造影をしないと診断できない。本症を疑った場合は積極的に副乳頭からアプローチすべきである。