

## Vascular Anatomy of the Pancreaticoduodenal Region

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**Purpose:** Duodenum-preserving pancreatic head resection (DPPHR) is a suitable surgical procedure in the treatment of benign pancreatic head tumor, chronic pancreatitis and low-grade malignancy of pancreatic head. The main advantage of this procedure is the preservation of the duodenum, which plays a key role in digestive functions. To create a practical guideline for vascular preservation during DPPHR, we examined the anatomy of pancreaticoduodenal arteries (PDA) by specimen angiography.

**Methods:** From March 2000 to September 2001, 9 specimens were obtained from patients undergoing pancreaticoduodenectomy. As soon as the specimens were obtained, 4 PDA were cannulated and specimen angiography was performed.

**Results:** Arcade formation between the superior and inferior PDA was found in all of the cases. The anterior inferior PDA and posterior inferior PDA exhibited common trunk formation. Many communicating arteries between both arcades were found. The papillary branch, originating from the posterior superior PDA, was found in 4 cases.

**Conclusion:** To preserve the blood supply to the duodenum, complete preservation of both arteries may not be necessary. However, the preservation of the posterior superior PDA may be needed to maintain the blood supply of the papillary and distal bile ducts. (*J Korean Surg Soc* 2002; 63:155-159)

**Key Words:** Duodenum-preserving pancreatic head resection, Pancreaticoduodenal artery

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(duodenum preserving resection of the head of the pancreas) Beger(1)가

(1-5)

(arcade)

Beger

Imaizumi (2)

Kocher

Miyakaya (3)

Takada (4)

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: 2002 6 11 , : 2002 6 18  
2001

2000 3 2001 11  
(pancreaticoduodenectomy)  
가 9  
가

가 가  
(common trunk)

2

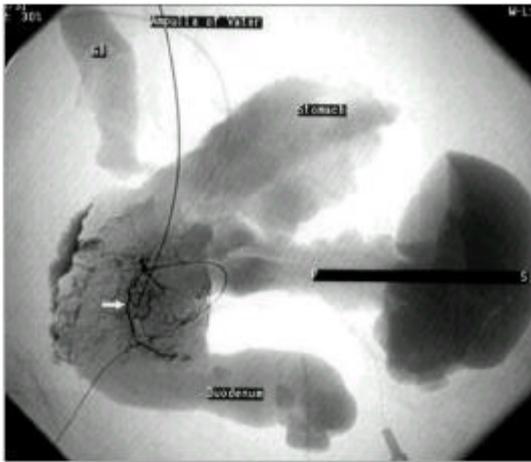


Fig. 1. Angiogram of the specimen demonstrates the anterior superior pancreaticoduodenal artery (arrow). A catheter has been placed selectively in the anterior superior pancreaticoduodenal artery. Contrast medium has been injected and film taken. The anterior inferior pancreaticoduodenal artery and posterior pancreaticoduodenal artery are also opacified with contrast medium.

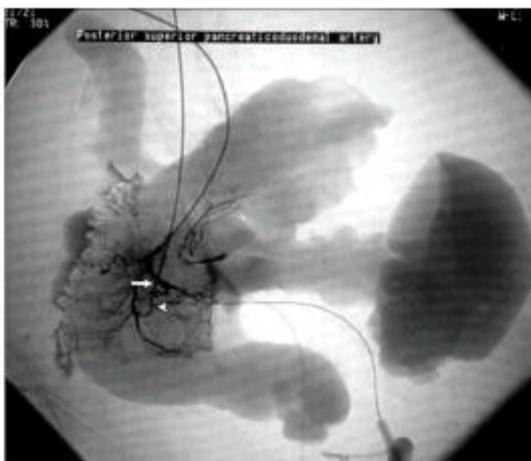


Fig. 2. The posterior superior pancreaticoduodenal artery (arrow) and papillary branch (arrow head). The papillary branch from posterior superior pancreaticoduodenal artery supplies distal bile duct and papilla of Vater.

1) (Fig. 1, 3, Table 1)

9

9 7

2

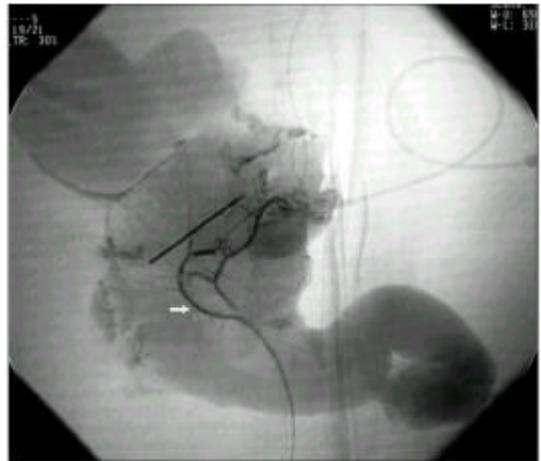


Fig. 3. The anterior inferior pancreaticoduodenal artery (arrow). It connects with the anterior superior pancreaticoduodenal artery and forms the anterior pancreaticoduodenal arcade.



Fig. 4. The posterior inferior pancreaticoduodenal artery (arrow). Other arteries are also opacified with contrast medium. Numerous anastomosis are present between both arcades.

Table 1. Anatomical characteristics of the pancreaticoduodenal arteries

Case No.	Age /sex	ASPDA	Origin of PDA			Common trunk formation		Papillary branch (from PSPDA)
			AIPDA	PSPDA	PIPDA	AIPDA&PIPDA	IPDA&UJA	
1	62/F	GDA	SMA	GDA	SMA	+	+	+
2	68/F	?	SMA	GDA	SMA	-	-	-
3	52/M	?	SMA	GDA	SMA	+	+	+
4	67/F	GDA	SMA	GDA	SMA	-	-	-
5	70/F	GDA	SMA	GDA	SMA	-	-	-
6	59/M	GDA	SMA	GDA	SMA	-	-	+
7	61/M	GDA	SMA	GDA	SMA	-	-	-
8	71/F	GDA	SMA	GDA	SMA	-	-	-
9	56/M	GDA	SMA	GDA	SMA	-	-	+

PDA = pancreaticoduodenal artery; ASPDA = anterior superior pancreaticoduodenal artery; AIPDA = anterior inferior pancreaticoduodenal artery; PSPDA = posterior superior pancreaticoduodenal artery; PIPDA = posterior inferior pancreaticoduodenal artery; GDA = gastroduodenal artery; SMA = superior mesenteric artery; IPDA = inferior pancreaticoduodenal artery

가 (Fig. 2, Table 1)가  
가  
7  
2  
7 2  
가 (IPMT)  
(1-5)  
Beger (1)  
(6)  
2) (Fig. 2, 4, Table 1) Imaizumi (2)  
(Kocher maneuver)  
9 Yasuda (7)  
Takada (4)  
(8)  
7 2  
가  
(posterior pancreatic membrane)  
3) (papillary branch)  
4 papilla of Vater 1

		injection study (submucosal plexus)	Kimura	2 (12)	가
(9,10)			가 Kimura		
		Imaizumi (2)			7 2
		96%			
58 97%				4	
(11)		9	Kimura (12)		가 papilla of Vater 4
4 (44.4%)		papilla of vater	가		
Kimura (12)		papilla of Vater			
가		Murakami (13)			
가		communicating artery		가	
가		가			가 가
					가
			가		
		Kimura			
		가	(12)		
					가
(intramural anastomosis)					
		97.5%	93	96.6%	
(14)					
					7

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