

Surgical Treatment for Intraductal Papillary Mucinous Tumor of the Pancreas

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Purpose: The surgical strategy for patients with a pancreatic intraductal papillary mucinous tumor (IPMT) is still controversial. In this study the clinicopathologic findings in a series of patients were used to rationalize surgical choice and reassess the need for a total pancreatectomy.

Methods: Between Oct. 1994 and Nov. 2001, 25 patients with IPMT underwent surgery. We retrospectively examined the clinicopathologic features and surgical treatment. The factors evaluated included: symptoms, tumor site, operation type, histological findings, resection margin, follow-up and survival.

Results: Pancreaticoduodenectomy was the most frequent surgical treatment (10 patients: 40%) followed by distal pancreatectomy (6), pylorus-preserving-pancreatico-duodenectomy (5) and total pancreatectomy (4). Histological assessment revealed the tumors to be an adenoma in 11 patients (44%), a borderline tumor in 8 patients (32%) and a carcinoma in 6 patients (24%). There were no operative or hospital deaths. All of the cases with hyperplasia, adenoma and noninvasive carcinoma survived. Only two of the patients with invasive carcinoma died. Mild to moderate dysplasia was present at the resection margin in two patients (8%), and carcinoma in one. A total pancreatectomy was performed in four patients. Invasive carcinoma patient survival was significantly associated with the presence of peripancreatic lymph node involvement.

Conclusion: Our study and review of the literature indicates that preoperative indicators of malignancy in IPMT are still lacking. These results suggest that resection should be the

treatment for IPMT. Sometimes IPMT is best treated by a total pancreatectomy, although lesser subtotal resections should definitely be considered. When selecting a surgical procedure for treating these tumors, it is useful to confirm the tumors' extent by intra-operative imaging modalities. In the cases with invasion, a radical resection is required. (*J Korean Surg Soc* 2002;62:491-495)

Key Words: Pancreas, Intraductal papillary mucinous tumor (IPMT), Total pancreatectomy

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1982 Ohashi
 가 , , , ,
 가 1996 WHO가
 .(I)
 , ,
 가
 60 70 5%
 가
 가

가 (2-4) , 가
 .(5)
 1)
 1994 10 2001 11
 IPMT 25
 (: =20 : 5)
 2)
 CA19-9

Table 1. Age, sex location and classification of IPMT in pancreas

Sex (M : F)	20 (80%) : 5 (20%)
Age range	38 - 78 years
Mean age	60.7 ± 10.8 years
Location of tumor	
Head & uncinat process	14
Body & tail	8
Total pancreas	3

Table 2. Clinicopathologic features of IPMT of pancreas

	IPMA*	P-value	IPBB [†] / IPMC [‡]
Sex (M : F)	9 : 2	0.840	11 : 3
Age (years)	61.8	0.462	60.4
Symptom (presence : absence)	6 : 5	0.056	13 : 1
Body weight change (presence : absence)	1 : 10	0.341	4 : 10
DM (presence:absence)	1 : 10	0.180	5 : 9
CA19-9 (normal range : increase)	9 : 2	0.661	10 : 4
Type (main : branch : combined)	2 : 8 : 1	0.012	7 : 2 : 5
Duct dilatation (presence : absence)	2 : 9	0.00003	13 : 1

* = intraductal papillary mucinous adenoma; [†] = intraductal papillary mucinous borderline tumor; [‡] = intraductal papillary mucinous carcinoma.

Kuroda
 (main duct type),
 (combined type)
 (branch duct type)
 SPSS/
 Chi-
 square
 Fisher's exact test
 , P
 0.05
 가

25
 60.7 ± 10.8
 20 : 5
 가 80%
 가 14
 가 8
 (Table 1).
 가 3
 가

Kuroda
 (P=0.012)
 (P < 0.00003)
 가 P

Table 3. Histological finding of resected specimens of IPMT of pancreas

	Total	Main duct type	Branch duct type	Combined duct type
Benign	11	2	8	1
Borderline	8	3	1	4
Malignant	6	4	1	1
Invasion depth				
In situ	2	1	1	
Pancreas parenchyme	2	2		
Peripancreatic tissue	2	1	1	
Lymph node metastasis	2	1	1	

Table 4. Types of operation for IPMT of pancreas

	IPMC/IPMB	IPMA
Types of operation		
Total pancreatectomy	4	0
Whipple's procedure	3	7
PPPD	3	2
Distal pancreatectomy	4	2

Table 5. Resection margin positive patient

Pathology	Margin	Operation method	Follow-up period (month)	Recurrence	Alive
*IPMC-NI	Severe atypia	Whipple's procedure	68	No	Yes
IPMA	Mild hyperplasia	Distal pancreatectomy	17	No	Yes
IPMB	Borderline cell	Distal pancreatectomy	9	No	Yes

* = intraductal papillary mucinous carcinoma-non-invasive.

Table 6. Total pancreatectomy

Age/Sex	Pathology	Pancreatitis	Type size (cm)	Tumor
39/F	*IPMC-CI	Yes	Main	8 × 1
64/F	IPMB	Yes	Main	2 × 1.2
62/M	IPMB	Yes	Combined	6 × 4.3
68/M	IPMB	No	Combined	10 × 2

* = intraductal papillary mucinous carcinoma-carcinoma invasive.

Table 7. Outcome after surgical resection of IPMT

	IPMA (N=11)	IPMB/IPMC (N=14)
Mean follow-up (month)	28.0	17.5
Recurrence (case number)	0	3
Death (cases number)	0	2

(6)

가 , , , , , WHO 가 . (mucinous ductal ectasia, intraductal papillary neoplasm, mucin-hypersecreting intraductal neoplasm, and intraductal papillary adenocarcinoma) 가

(7) 1994 10 2001 11 305 25 IPMT가 . McDonald (8) 281,000 1

19%가 IPMT (9) IPMT 7 mm

, Obara (10) 9 IPMT ERP (endoscopic retrograde pancreatography)

6 50 (30) 6 가

IPMT Terris (11) IPMT 13

2 carcinoma in situ . Kobori (12) 16 1 4

8 P 가 (Table 2).

6 24% , 가 (Table 3). 4 2 가 4 , Whipple 가 10 , 5

6 , (Table 4). 가 3 , , 1 2 , Whipple 1

(Table 5). 4 1

3 . Kuroda 2 , 2 , 3 10 × 2 cm (Table 6).

(Table 7).

2 가 carcinoma 1 가
 가 . Zamora (13) 26
 , ,
 . Yamaguchi (14)
 가
 8
 10 mm 50 mm
 10 mm ,
 ,
 가 80%
 . (15,16) IPMT
 60 70 , 25
 61 ,
 17 . IPMT
 Whipple
 , IPMT
 Kojima (2) IPMT가
 , Obara (4) IPMT가
 diffuse atypical papillary hyperplasia
 가
 . (17) 3
 가 3 2
 . 4
 3
 , 1 2.0 x 1.5 cm
 가
 가 IPMT
 IPMT Sho (5) 8
 가 6 ,
 2 , . Cuillierier (18)
 35
 20
 , 15 7 2
 가 7

가
 3 2 ,
 5 2 가 .
 가 가 2
 ,
 가 3
 .
 Yamao (19)
 IPMT
 가 Endoscopic Ultrasonogra-
 phy , Kaneko
 (20) 가
 Intraoperative
 Annular Array Ultrasonography가
 mural nodule 3 mm 75%
 3 mm가 가 100%
 .
 Paye (21)
 92% 가
 low-grade IPMT



IPMT
 , 가
 , 가
 가
 가
 가
 가

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