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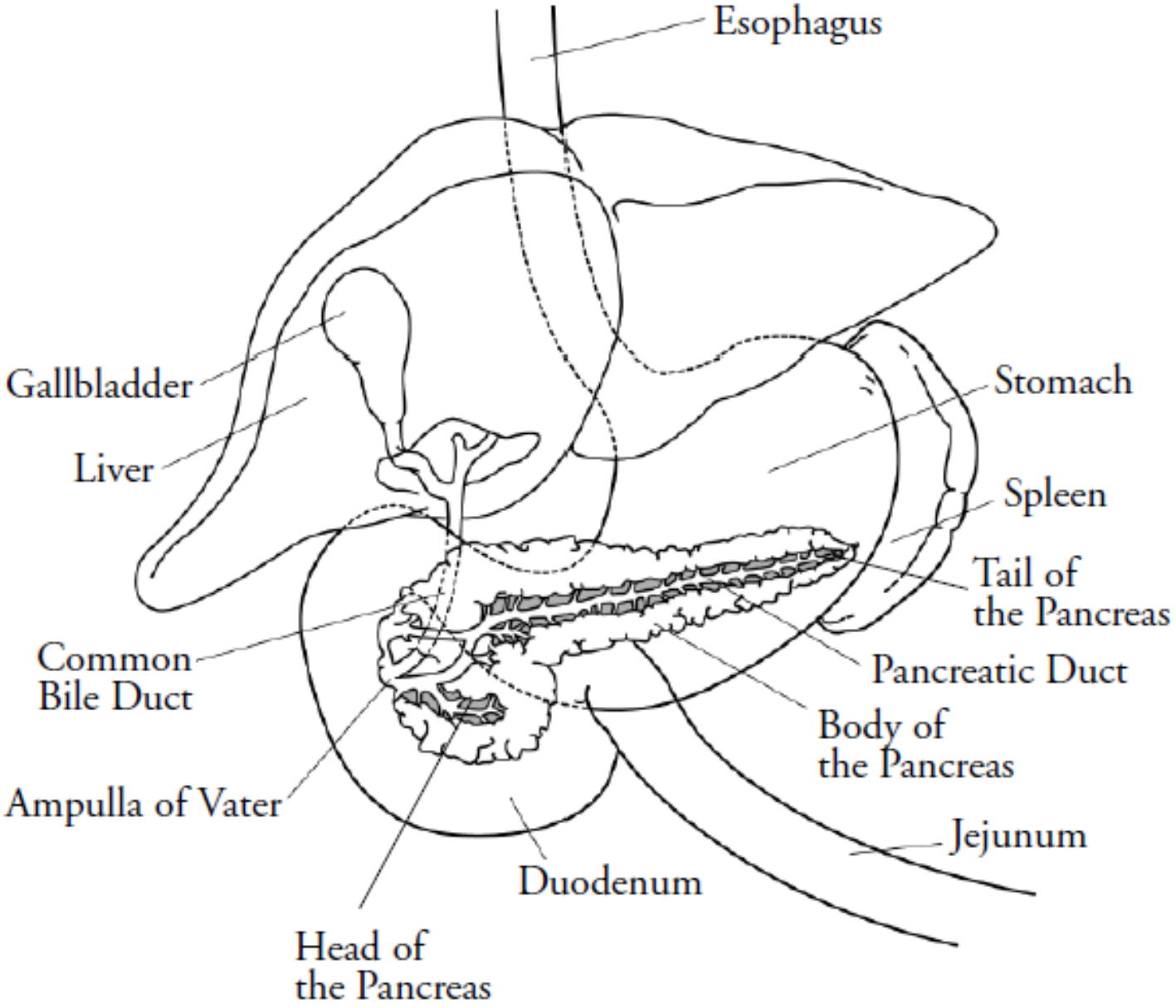


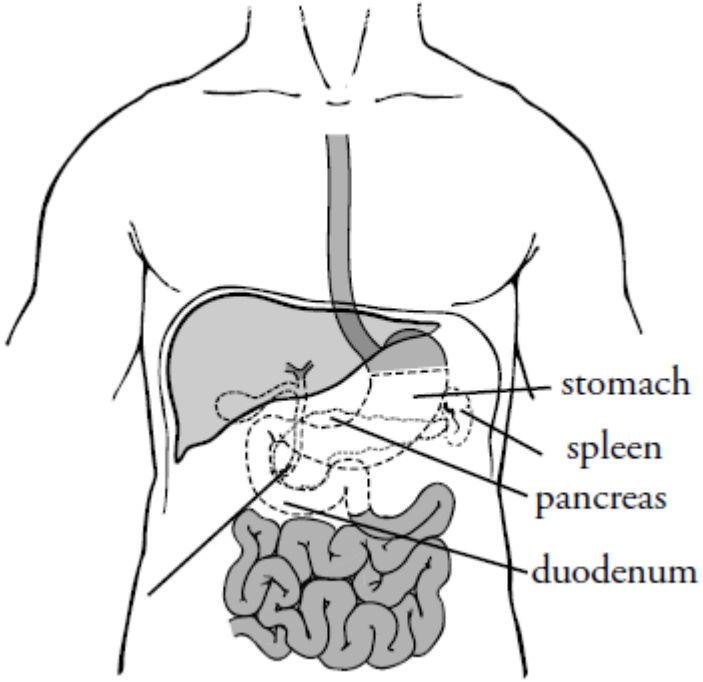
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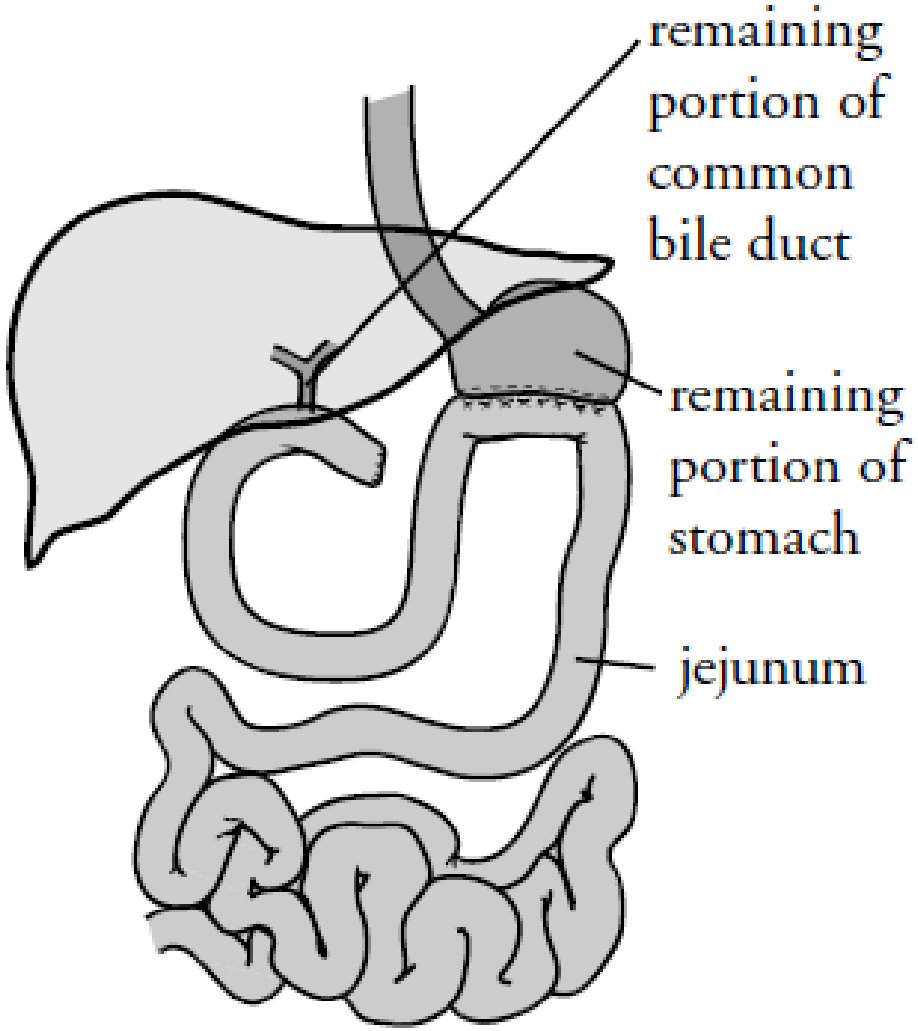
"TOTAL PANCREATECTOMY FOR THE TREATMENT OF PANCREATIC NEOPLASM, WHEN IS INDICATED?"

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Esophagus
Gallbladder
Liver
Stomach
Spleen
Tail of
the Pancreas
Common
Bile Duct
Pancreatic Duct
Body of
the Pancreas
Ampulla of Vater
Jejunum
Duodenum
Head of
the Pancreas


stomach
spleen
pancreas
duodenum


remaining portion of common bile duct
remaining portion of stomach
jejunum

Total Pancreatectomy

Key Points

- Poor outcomes in pancreatic cancer;
- Has long been associated with high morbity and mortality;
- Associated with difficulties in diabetes management.



Total Pancreatectomy

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Quality of life in patients after total pancreatectomy is comparable with quality of life in patients who undergo a partial pancreatic resection

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Total Pancreatectomy

Table 3 – Diabetes-related complications.

	TP ($n = 17$)	PD ($n = 8$)	P value
Glycemic control			0.006
Diet (n, %)	0 (0)	1 (12.5)	
Oral hypoglycemic (n, %)	0 (0)	3 (37.5)	
Insulin (n, %)	17 (100)	4 (50)	
Insulin units (mean, SD)	29.8 (18.6)	41.1 (10.3)	0.270
Hypoglycemia (y/n; n [%])	16 (94.12)	2 (25)	<0.001
Frequency (times/wk; median, IQR)	2 (2)	1 (0)	0.535
Hospitalization (y/n; n [%])	4 (25)	0 (0)	0.176



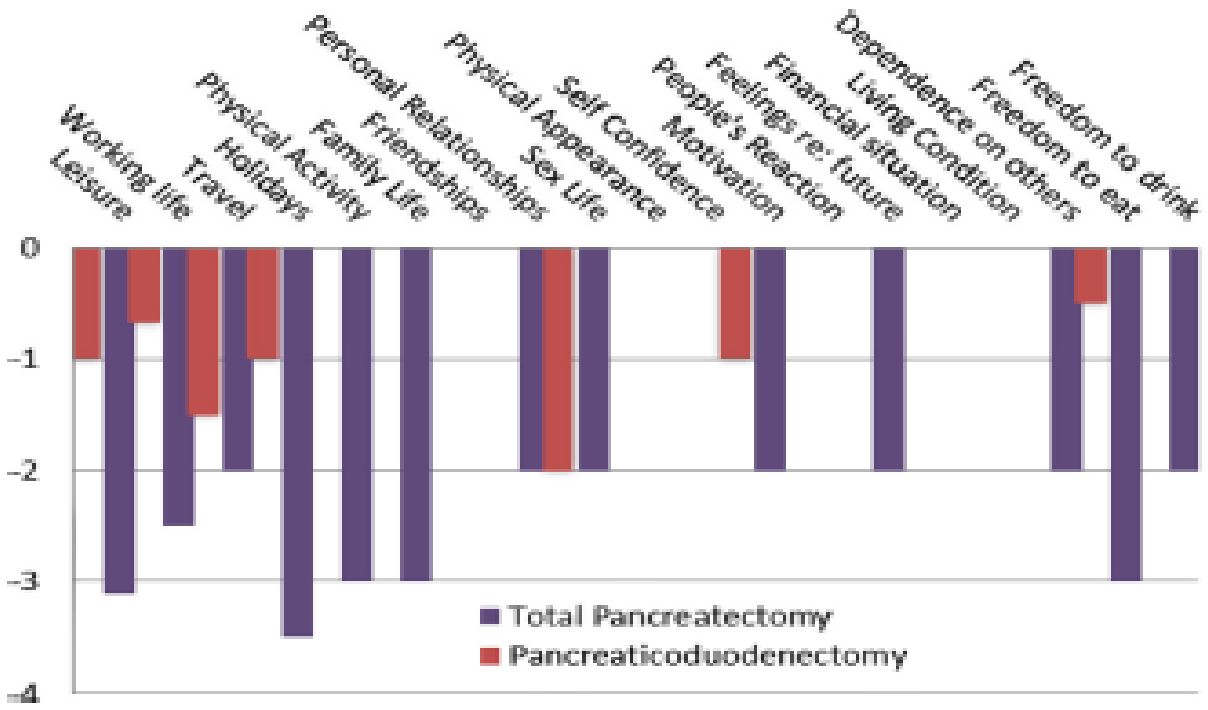


Fig. 2 – Average weighted ADD-QOL scores. Differences between groups were assessed using Student t-test for normally distributed values and Kruskal–Wallis equality of populations rank test for non-normally distributed values. Patients who underwent TP are represented in purple and those who underwent PD in red. Average weighted scores were statistically significantly different only in leisure and physical activity domains; difference in scores did not reach statistical significance in any of the remaining domains. (Color version of figure is available online.)

Total Pancreatectomy

Int Surg 2014;99:62–70
DOI: 10.9738/INTSURG-D-13-00112.1

Peripancreatic Soft Tissue Involvement: Independent Outcome Predictor in Patients With Resected Pancreatic Adenocarcinoma

Alireza Hamidian Jahromi[1], Gazi B. Zibari[2], Elnaz Jafarimehr[1], Quyen Chu[1], Gregory P. Wellman[3], Runhua Shi[4], Lester W. Johnson[5], Hosein Shokouh-Amiri[2]

Table 3 Univariate analysis of overall survival by patient and tumor characteristics

Characteristics	Factors	Median overall survival (months)	*P*-value *
Gender	Male	16.98	0.310
	Female	13.38	
Age	<60 years	12.96	0.325
	≥60 years	13.93	
Race	Caucasian	14.13	0.637
	Non–Caucasian	10.45	
Transfusion	Transfusion (−)	36.59	0.003 *
	Transfusion (+)	12.03	
Complication	Complication (−)	14.72	0.046 *
	Complication (+)	10.98	
Severity score of complication	CD score (0)	14.72	0.002 *
	CD score (I–IIIA)	17.61	
	CD score (IIIB–V)	3.74	
Preoperative Ca-19-9	<200	18.53	0.495
	≥200	14.13	
Type of surgery	Pyloric sparing Whipple	13.93	0.756
	Whipple	13.38	
	Total pancreatectomy	14.13	
	Distal pancreatectomy	17.87	
Tumor size	Tumor size < 3 cm	18.69	0.016 *
	Tumor size > 3 cm	11.93	
Margin	Margin (−)	16.98	0.006 *
	Margin (+)	8.46	
Lymph node involvement	Lymph Node (−)	18.68	0.105
	Lymph Node (+)	12.95	
PST involvement §	PST (−)	53.80	<0.001 *
	PST (+)	11.93	
Stage	Stage I–IIA	21.67	0.037 *
	Stage IIB–IV	12.72	
Grade	Grade I–II	18.53	0.001 *
	Grade III–IV	10.69	
Group	Group 1 (R1)	8.46	<0.001 *
	Group 2 (R0/PST+)	12.03	
	Group 3 (R0/PST−)	69.61	
Overall	—	13.93	–
–			

§ PST, peri-pancreatic soft tissue; CD, Clavien-Dindo; *, statistical significance.

HEPATOBILIARY



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Total pancreatectomy for the treatment of pancreatic neoplasms

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Table 2 Operative and pathology of patients undergoing pancreatectomy (TP) compared with pancreaticoduodenectomy (PD)

	TP (n = 15)	PD (n = 150)	P-value
Malignancy	13 (87%)	125 (83%)	1.0
Pylorus preserving	0	63 (42%)	<0.001*
Portal vein resection	5 (33%)	9 (6%)	0.004*
Estimated blood loss (mL)	600 (200–2000)	350 (100–2500)	0.056
Blood transfusions intra-operative	11 (73%)	28 (19%)	<0.001*
Intra-operative fluids (L)	7 (1.7–18.6)	5.0 (1.0–12.3)	0.004*
Fluid balance (L)	5.8 (1.0–15.3)	4.5 (2.4–12.0)	0.038*
Operative time (h)	10.5 (7.4–17.2)	7.0 (3.0–15.8)	<0.001*

*$P \leq 0.05$ chi-square/Fisher's exact test/Mann–Whitney U-test.



Table 3 Complications of total pancreatectomy (TP) compared with pancreaticoduodenectomy

	TP (n = 15)	PD (n = 150)	Difference (P-value)
Patients with complications	13 (87%)	86 (57%)	0.029*
Clavien grade I	4 (31%)	5 (6%)	
grade II	5 (39%)	41 (48%)	
grade III	3 (23%)	25 (29%)	0.053
grade IV	0 (0%)	11 (13%)	
grade V (death)	1 (8%)	3 (4%)	
Delayed gastric emptying	2 (13%)	25 (17%)	1.0
Pancreatic leak	N/A	13 (9%)	N/A
Biliary leak	0 (0%)	6 (4%)	1.0
Wound infections	1 (7%)	19 (13%)	0.069
Post-operative bleeding	3 (2%)	1 (13%)	0.066
Acute renal failure	3 (20%)	11 (7%)	0.120
Pneumonia	2 (13%)	26 (17%)	1.0
Pulmonary oedema	1 (7%)	9 (6%)	1.0
Urinary tract infection	0 (%)	4 (3%)	1.0
Myocardial infarction	2 (13%)	12 (7%)	0.619
Cardiac arrhythmia	2 (20%)	19 (13%)	0.426
Septicaemia	2 (13%)	33 (22%)	0.740
Delirium	1 (7%)	6 (4%)	0.494
Hypoglycaemia	4 (27%)	0 (0%)	<0.001*
Reoperation	0 (0%)	11 (7%)	0.601
Post-operative length of stay (days)	17 (6–140)	19 (2–38)	0.943
Readmission	2 (13%)	19 (13%)	1.0

*$P \leq 0.05$ chi-square/Fisher's exact test/Mann–Whitney U-test.



Total Pancreatectomy

Bahra e Neuhaus, em Nature Rewiews / Gastroenterology & Hepatology, volume 7, 2010.

"Is There Still a role for total Pancreatectomy?"

- 19,9% (WP) e 18,5% (TP).
- No pancreatic leak.
- No risk for multicentre disease in pancreas.



Total Pancreatectomy

- Microscope disease can be found in the section margin or in peripancreatic (fat) tissue.
- R1 resection – worst prognoses.
- Margin < or = 1mm – R1.
- R0 – R1 (79 a 44%).
- N related to prognoses.



Total Pancreatectomy

Indications of TP:

- Margin compromising.
- Fragility of pancreatic tissue.
- Cystic Tumours.
- IPMNs



Total Pancreatectomy

Bhayani and cols., J.Gastrointest. Surg.(2014) 18:549-554.

"Perioperative Outcomes of Pancreaticoduodenectomy to Total Pancreatectomy for Neoplasia"



Total Pancreatectomy

- **TP no risck to pancreatic leak.**
- **TP more morbity with endocrino and exocrino insuficience.**
- **High mortality – 6,1% (TP) x 3,1% (WP) (p=0,02).**



Total Pancreatectomy

- **High morbility 38% (TP) x 30% (WP) (p=0,02).**
- **Transfusion 16% (TP) x 10% (WP) (p=0,01).**
- **Infection and sepse are equal.**
- **Pos op morbility is associated a HIPOGLICEMIA.**



Total Pancreatectomy

- When associated pancreatectomy with other visceral resection we have the double mortality.
- Do TP is quite similar to do pancreatectomy with other visceral resection.
- In TP we have a decrease of inflamatory response compare WP.



TABLE 1. Classification of Surgical Complication[16] Adopted for Pancreatic Surgery

Grade	Definition
I	Any deviation from the normal postoperative course without pharmacologic treatment or surgical, endoscopic, and radiological interventions. Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside.
II	Requiring pharmacologic treatment with drugs other than ones allowed for grade I complications. Blood transfusion and total parenteral nutrition* are also included.
III	Requiring surgical, endoscopic, or radiologic intervention
IIIa	Intervention not under general anesthesia
IIIb	Intervention under general anesthesia
IV	Life-threatening complication (including CNS complications)† requiring IC/ICU management
IVa	Single-organ dysfunction (including dialysis)
IVb	Multiorgan dysfunction
V	Death of a patient
Suffix "d"	If the patient suffers from a complication at the time of the discharge, the suffix "d" (for disability) is added to the respective grade of complication (including resection of the pancreatic remnant). This label indicates the need for a follow-up to fully evaluate the complication.

*Note regarding DGE: The insertion of a central line for TPN or nasojejunal tube by endoscopy is a grade IIIa. However, if a central line is still in place or a feeding tube has been inserted at the time of surgery, then a TPN or enteral nutrition is a grade II complication.

†Brain hemorrhage, ischemic stroke, subarachnoidal bleeding, but excluding transient ischemic attacks.

CNS indicates central nervous system; IC, intermediate care; ICU, intensive care unit.

Total Pancreatectomy

Key points:

- Continuous infusion of insulin begun in per op.
- Regular use of NPH and regular insulin .
- Hypoglycemia isn't usual.
- No regular use of pancreatic enzymes.



Total Pancreatectomy

Indications:

- Microscopy margin invasion or margin equal or inferior a 1mm.
- Multicentre tumors or IPMN.
- Pancreas fragility.
- Pos op complications associated to remain pancreatic tissue.



Total Pancreatectomy

Surgical considerations:

- Spleen is important to move the tail and the body of the pancreas.
- In TP the excision of the pancreas begun in the tail to the head.
- Remove al peripancreatic tissue – lateral margin.
- Section the spleen vein 1 a 0,5 cm before portal junction.
- Remove the entire uncinato process.



