Invited Commentary

Digestive Surgery

Dig Surg 2001;18:147–148

Essentials in Surgery for Chronic Pancreatitis

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Exocrine and endocrine pancreatic insufficiency and recurrent episodes of abdominal pain comprise the characteristic clinical features of chronic pancreatitis. Severe pain is the leading cause for hospitalization, inability to work, early retirement, and addiction to analgesics in devastating conditions of chronic pancreatitis [1]. Like other therapeutic modalities, surgery addresses pain as the incapacitating symptom, while causative treatment options are still lacking. The indications for surgical intervention are intractable pain, complications related to adjacent organs, endoscopically not permanently controlled pancreatic pseudocysts in conjunction with ductal pathology, and conservatively intractable internal pancreatic fistulas [1–3]. Occasionally the inability to exclude pancreatic cancer despite broad diagnostic workup also requires surgery [4]. The ideal surgical approach should address all these problems.

Pain is the crucial symptom in severe chronic pancreatitis. Reflecting experimental evidence and clinical experience, ductal and parenchymatous hypertension and neural alterations in combination with extensive fibrosis have been developed as basic hypotheses on the pathogenesis of pain in chronic pancreatitis [5–10]. Referring to these different ideas of pain origin, drainage and resection have emerged as the main principles of surgery in chronic pancreatitis. Exclusively draining and resective operations [2, 3, 11–14] have failed to meet all the aims of an ideal surgical treatment for chronic pancreatitis (table 1).

Table 1. Aims of surgical treatment for chronic pancreatitis

1	Pain relief
2	Control of pancreatitis-associated complications of adjacent organs
3	Preservation of exocrine and endocrine pancreatic function
4	Social and occupational rehabilitation
5	Improvement of the quality of life
6	Exclusion of pancreatic malignancy

More recently, a variety of different procedures has been either been proposed [15, 16] or recalled [17, 18], relying on both drainage and resection with emphasis of one or the other. Classical partial pancreatoduodenectomy (PD) according to Whipple, pylorus-preserving pancreatoduodenectomy (PPPD) according to Traverso-Longmire, duodenum-preserving resection of the head of the pancreas (DPRHP) according to Beger, and longitudinal pancreatojejunostomy combined with local pancreatic head excision (LPHE-LPJ) according to Frey were performed to provide pain relief, to control complications arising from adjacent organs, and to identify intraoperatively pancreatic cancer which had been missed despite broad diagnostic workup [4, 9, 10, 19]. But from that kind of experience, superiority of any of these procedures cannot be concluded. In order to provide information on which procedure should be favored, prospective randomized trials are necessary which incorporate the criteria, i.e., pain intensity, analgesic regimen, exocrine and endocrine pancreatic function, professional rehabilitation, and quality of life assessment, proposed by Frey et al. [20] for studies dealing with therapeutic interventions in chronic pancreatitis.

Prospective randomized studies have been reported by Klempa et al. [21] on the comparison of PD with DPRHP, by Büchler et al. [22] on PPPD versus DPRHP, and by our group on LPHE-LPJ versus DPRHP [23] and versus PPPD [24]. From the results of their study, Klempa et al. [21] concluded that DPRHP provided quicker recuperation and better preservation of exocrine and endocrine function while being equally effective in terms of pain alleviation. Also Büchler et al. [22] favored DPRHP over PPPD because of improved exocrine and endocrine function and higher efficacy in pain relief. Except for a higher morbidity rate in patients who had undergone DPRHP and failure of LPHE-LPJ to normalize nonocclusive segmental portal hypertension, we did not find any significant difference between DPRHP and LPHE-LPJ in our studies [23, 25]. From these data, the gastroduodenal passage and common bile duct continuity sparing techniques described by Beger and Frey may be considered favorable alternatives in surgery for severe chronic pancreatitis. The results of a prospective randomized study comparing PPPD with LPHE-LPJ performed by our group [24] support this conclusion. LPHE-LPJ provided equally effective pain relief, while being more preservative in terms of pancreatic function. Furthermore, LPHE-LPJ accommodated more effectively improvement of quality of life and professional rehabilitation in the study group of patients suffering from severe chronic pancreatitis.

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The question remains why these more or less resective procedures tend to provide better results with regard to permanent pain relief than simple drainage [26]. In a remarkable study reported recently by Warshaw's group [27], in 10 out of 15 patients with 'failure of symptomatic relief after pancreatojejunal decompression', the pathologic key to recurrent pancreatitis was localized in the pancreatic head. Despite patent anastomoses, the progressive fibrotic inflammation in the pancreatic head had continued and thus acted as the pacemaker of the disease. In the majority of the patients presenting for surgical intervention, an inflammatory process in the head of the pancreas initiates at least one of the following problems: proximal wirsungian and/or santorinian ductal stenosis, distal common bile duct compression with recurrent clinical and subclinical episodes of cholangitis, segmental duodenal obstruction, and encasement of retropancreatic intestinal vessels. In chronic pancreatitis, the crucial triangle lies between the distal common bile duct, the wirsungian duct, and the superior mesenteric-portal vein. This region is addressed by classical resection of PD, by PPPD, and by DPRHP. This triangle is also aimed at by the step of local pancreatic head excision during the Frey procedure. The need for rather limited or more extensive local excision of critical pancreatic head fibrosis may be customized to the individual situation of the patient, as also described by our group [23, 24].

The Bern group now proposes a new operative modification as a synthesis of the DPRHP according to Beger and the LPHE-LPJ according to Frey. This modification features the subtotal pancreatic head resection without transection of the pancreas above the portal vein and without drainage of pancreatic corpus and tail. The new operation addresses the pancreatic head as the pacemaker for chronic pancreatitis, concentrating on the essentials of surgical intervention, i.e., the critical triangle between the distal common bile duct, the wirsungian duct, and the superior mesenteric-portal vein with complete decompression at the prepapillary region and decompression of pancreatitis-associated distal common bile duct stenosis and duodenal obstruction. The proposed surgical concept has its focus on a clear-cut pancreatic head resection, where it is necessary, omitting potentially superfluous surgery in corpus and tail.

On the premise that randomized studies with long-term outcomes are at least comparable to those convincing results achieved with LPHE-LPJ and DPRHP, this modified operation may potentially offer the advantages of drainage, i.e., preservation of pancreatic function and limited operative trauma, without the burdens of radical resections, i.e., significant operative and long-term morbidity.

References

1 Lankisch PG, Happe-Loehr A, Otto J, Creutzfeldt W: Natural course in chronic pancreatitis. Digestion 1993;54:148–155.
2 Frey CF, Suzuki M, Isaji S: Treatment of chronic pancreatitis complicated by obstruction of the common bile duct or duodenum. World J Surg 1990;14:59–69.
3 Warshaw AL: Pain in chronic pancreatitis – patients, patience, and the impatient surgeon. Gastroenterology 1984;86:987–989.
4 Saeger HD, Schwall G, Trede M: Standard Whipple in chronic pancreatitis; in Beger HG, Büchler M, Malfertheiner P (eds): Standards in Pancreatic Surgery. Berlin, Springer, 1993, pp 385–391.
5 Ebbehoj N, Svendsen LB, Madsen P: Pancreatic tissue pressure in chronic obstructive pancreatitis. Scand J Gastroenterol 1984;19:1066–1068.
6 Keith RG, Keshavjee SH, Kerenyi NR: Neuropathology of chronic pancreatitis in humans. Can J Surg 1985;28:207–211.
7 Bockmann DE, Büchler MW, Malfertheiner P, Beger HG: Analysis of nerves in chronic pancreatitis. Gastroenterology 1988;94:1459–1469.
8 Karanjia ND, Widdison AL, Leung F, Alvarez C, Lutrin FJ, Reber HA: Compartment syndrome in experimental chronic obstructive pancreatitis: Effect of decompressing the main pancreatic duct. Br J Surg 1994;81:259–264.
9 Frey CF, Amikura K: Local resection of the head of the pancreas combined with longitudinal pancreaticojejunostomy in the management of patients with chronic pancreatitis. Ann Surg 1994;220:492–507.
10 Büchler MW, Friess H, Bittner R, Roscher R, Krautzberger W, Müller MW, Malfertheiner P, Beger HG: Duodenum-preserving pancreatic head resection: Long-term results. J Gastrointest Surg 1997;1:13–19.
11 Greenlee HB, Prinz RA, Aranha GV: Long-term results of side-to-side pancreaticojejunostomy. World J Surg 1990;14:70–76.
12 Frey CF, Child CG, Fry W: Pancreatectomy for chronic pancreatitis. Ann Surg 1976;184:403–413.
13 Braasch JW, Vito L, Nugent FW: Total pancreatectomy for end-stage chronic pancreatitis. Ann Surg 1978;188:317–323.
14 Dresler CM, Fortner JG, McDermott K, Bajorunas DR: Metabolic consequences of (regional) total pancreatectomy. Ann Surg 1991;214:131–140.
15 Beger HG, Krautzberger W, Bittner R, Büchler MW, Limmer J: Duodenum preserving resection of the head of the pancreas in patients with severe chronic pancreatitis. Surgery 1985;97:467–473.
16 Frey CF, Smith GJ: Description and rationale of a new operation for chronic pancreatitis. Pancreas 1987;2:701–707.
17 Whipple AO: Radical surgery for certain cases of pancreatic fibrosis associated with calcareous deposits. Ann Surg 1946;124:991–1006.
18 Traverso LW, Longmire WP: Preservation of the pylorus in pancreaticoduodenectomy. Surg Gynecol Obstet 1978;146:959–962.
19 Stapleton GN, Williamson RCN: Proximal pancreatoduodenectomy for chronic pancreatitis. Br J Surg 1996;83:1433–1440.
20 Frey CF, Pitt HA, Prinz RA: A plea for uniform reporting of patient outcome in chronic pancreatitis. Arch Surg 1996;131:233–234.
21 Klempa I, Spatny M, Menzel J, Baca I, Nustede R, Stoeckmann F, Arnold W: Pankreasfunktion und Lebensqualität nach Pankreaskopfresektion bei der chronischen Pankreatitis. Chirurg 1995;66:350–359.
22 Büchler MW, Friess H, Müller MW, Wheatley AM, Beger HG: Randomized trial of duodenum preserving pancreatic head resection versus pylorus preserving Whipple in chronic pancreatitis. Am J Surg 1995;169:65–70.
23 Izbicki JR, Bloechle C, Knoefel WT, Kuechler T, Binmoeller KF, Broelsch CE: Duodenum-preserving resection of the head of the pancreas in chronic pancreatitis: A prospective, randomized trial. Ann Surg 1995;221:350–358.
24 Izbicki JR, Bloechle C, Broering DC, Knoefel WT, Kuechler T, Broelsch CE: Extended drainage versus resection in surgery for chronic pancreatitis: A prospective randomized trial comparing the longitudinal pancreaticojejunostomy combined with local pancreatic head excision with the pylorus-preserving pancreatoduodenectomy. Ann Surg 1998;228:771–779.
25 Bloechle C, Busch C, Tesch C, Nicolas C, Binmoeller KF, Soehendra N, Izbicki JR: Prospective randomized study of drainage and resection on non-occlusive segmental portal hypertension in chronic pancreatitis. Br J Surg 1997;84:477–482.
26 Adams DB, Ford MC, Anderson MC: Outcome after lateral pancreaticojejunostomy for chronic pancreatitis. Ann Surg 1994;219:481–489.
27 Markowitz JS, Rattner DW, Warshaw AL: Failure of symptomatic relief after pancreaticojejunal decompression for chronic pancreatitis. Arch Surg 1994;129:374–380.