

The Surgical Treatment of Chronic Pancreatitis: A Clinical Series of 17 Cases

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Rezumat

Tratamentul chirurgical al pancreatitei cronice: o serie de 17 cazuri clinice

Introducere: Deși în ultimii ani în tratamentul pancreatitei cronice au fost introduse terapii invazive non-chirurgicale, tratamentul chirurgical clasic are încă un rol important. Scopul studiului este de a evalua remisia durerii și calitatea vieții după tratamentul chirurgical.

Material și metodă: Prezentăm 17 cazuri de pancreatită cronică operate într-o perioadă de cinci ani (2007-2011). Indicația de tratament chirurgical a fost pusă pe eșecul terapiei medicale în controlul durerii (14 obs.) și pe suspiciunea de neoplasm de cap de pancreas (3 cazuri). Explorările imagistice care au susținut indicația terapeutică și au permis alegerea tipului de procedeu tehnic au fost CT-CE și ERCP (efectuate în toate cazurile). Intervențiile chirurgicale practicate au fost pancreatico-jejunostomia în 11 cazuri și DPC în 6 cazuri.

Rezultate: Am obținut un control bun al remisiei durerii la 10 pacienți (6-PJ și 4-DPC). Rezultat parțial bun s-a constatat la 4 observații (2-PJ și 2-DPC). La 3 cazuri simptomatologia a persistat.

Concluzii: Nu există un consens asupra tratamentului chirurgical al PC. Tratamentul chirurgical judicios motivat, indicat și individualizat este urmat de rezultate bune. Este posibil ca în viitor, rezecțiile limitate să le înlocuiască pe cele clasice.

Cuvinte cheie: pancreatita cronică, tratament chirurgical

Abstract

Introduction: Despite the fact that in the last few years, new invasive non-surgical therapies were introduced, surgical treatment of chronic pancreatitis still plays an important part. The aim of the study is to evaluate pain remission and quality of life after surgical approach.

Material and method: We present 17 cases of chronic pancreatitis that were operated between 2007-2011. Surgical treatment was decided for after the failure of pain control therapy (14 cases) and by the suspicion of cancer in the head of the pancreas (3 cases). Imaging data for all the cases, CT-CE and ERCP, guided us in choosing the right therapy. Surgical techniques performed were pancreatico-jejunostomy (PJ) in eleven cases and duodeno-pancreatectomy (DP) in six cases.

Results: Good pain control was achieved in 10 patients: 6-PJ and 4-DP. Moderate results were observed in 4 cases: 2-PJ and 2-DP. In 3 patients symptoms remained the same.

Conclusion: There is no consensus over the surgical treatment in chronic pancreatitis. Surgical approach, strongly motivated and personalised for each patient is followed by good results. It is possible that in the future, limited resections become the therapy of choice, replacing classic ones.

Key words: chronic pancreatitis, surgical treatment

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Introduction

Chronic pancreatitis (CP) has been defined as an inflammatory condition of the pancreas which determines persistent and progressive morphologic and functional alterations of the organ. Due to the inconveniency of treating the persistent pain and the complications that arise in the evolution of the disease, patients with CP are frequently hospitalized with a low work capability, leading to an early work retirement. That is why CP represents an economic and social problem.

In the last few years there have been developments in understanding the physiopathological mechanisms of pain. Ductal hypertension, frequently incriminated as an ethiological factor, cannot explain the onset of pain in all cases (1). Parenchymal hypertension, on the other hand, induces an intraglandular compartment syndrome (2) worsened by pancreatic stimulation. The head of the pancreas is considered to be the peacemaker of the pain in CP (3). Uncontrolled neoproliferation of ischemic sensitive neurons triggers the pain.

Despite progresses made in the understanding of various therapeutic options, there is still no consensus regarding the treatment of CP (4,5). Due to the fact that less can be done to alter the course and evolution of the condition, efforts have been focused on improving the quality of life of the patients (6).

Any therapeutic procedure for CP must be assessed through three main parameters: the durability of pain relief, quality of life improvement and the risk of complications incurred by the procedure.

The classic therapeutic options for CP are: medical, conservative treatment, surgery and specific therapy for pain relief (thoracoscopic splanchnicectomy).

Although in the last years various non-surgical, invasive therapies have been introduced, surgical treatment still remains an important option.

The aim of our study was to evaluate pain relief and the quality of life following surgical approach. Patients presenting with CP were included in the study prospectively and analysed retrospectively.

Material and Methods

We present a lot of 17 patients diagnosed with CP and operated in the First Surgery Clinic of the University Emergency Hospital – Bucharest, Romania, over a five year span, during 2007-2011. We point out that we have included in the study only the patients that underwent surgical interventions on the pancreas. We do not analyse the cases in which surgery was performed for treating complications of CP (e.g.: biliary +/- duodenal stenosis, pancreatic pseudocysts or ascites), but did not undergo pancreatic interventions.

The majority of the patients were males (15 cases). The average age was 51 years old.

Clinical reasons that determined the admittance of the patients were: intense and persistent upper abdominal pain (14 cases), significant weight loss (8 cases), jaundice (3 cases), upper GI stenosis (2 cases), diabetes mellitus (2 cases).

The mean time of symptomatic onset and manifestation

before admittance in our clinic was of 28 months, whilst the patients have had several other admittances in various medical services like gastroenterology, internal medicine, nutrition or surgery. They had undertaken repeated and various biological tests and imagistic exploration before receiving the final diagnosis of CP. We stress out once again the large timespan (28 months on average) of symptomatic manifestations preoperatively of all the patients, including the three observations with jaundice as the main clinical sign presented at admittance. We consider the long history of disease and severe symptomatology to be important clues for sustaining the diagnosis of CP and the indication for surgery, when the medical treatment fails.

Prior to the admittance in our clinic, the patients had followed a medical treatment: ceasing alcohol consumption, dietary restrictions, analgesics, enzyme therapy etc. that failed to relieve the symptoms.

Concerning the imagistic procedures undertaken, we consider two of them essential for CP diagnosis completion and for determining the surgical indication for treatment and the particular procedure to be applied: computerized tomography with contrast enhance (CT-CE) (Fig. 1) and endoscopic retrograde cholangiopancreatography (ERCP) (Fig. 2). Both were performed on all the 17 patients of the lot.

We consider that CT-CE and ERCP are mandatory to be performed for the correct surgical management of CP, because they render the necessary morphological criteria for choosing the right operative technique.

The surgical indication for treatment was clinically imposed by:

- pain, persistent and reluctant to medical therapy - 14 cases;
- jaundice and the suspicion of pancreatic head neoplasm – 3 cases.

According to the findings rendered by CTCE and ERCP we performed:

- lateral pancreaticojejunostomy (PJ) in 11 cases, when the main pancreatic duct was ≥ 8 mm (Fig. 3);
- cephalic pancreaticoduodenectomy (PD) in 6 cases presenting cephalic tumoral mass and non-dilated main pancreatic duct; in all these cases the pancreatic stump was anastomosed with the jejunum (Fig. 4).

Results

The proximate postoperative evolution was good in all 17 cases. PJ proved to be a simple and effective intervention, all the 11 cases progressing adequately with no immediate complications. The only technical problem occurred was, in some cases, the striving in identifying the main pancreatic duct.

Regarding the 6 patients with PD, we encountered the following problems:

- PD was performed after the remission of jaundice in the three cases with this condition. In 2 cases, in which total bilirubinemy (TB) was higher than 8-10 mg/dl we proceeded with an initial stenting of the common bile duct (CBD). In the third patient with jaundice, since BT was 20 mg/dl, we firstly performed



Figure 1. CT – CE: dilated Wirsung with pancreatic calcifications



Figure 2. ERCP: dilated Wirsung duct. Lithiasic Wirsung duct

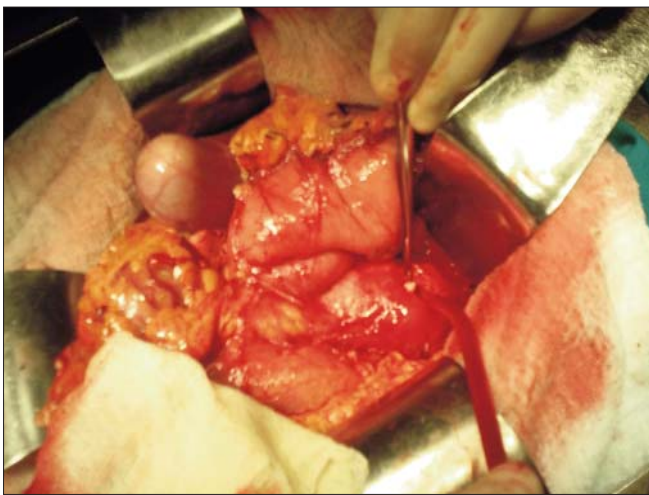


Figure 3. Intraoperative aspect: dilated Wirsung

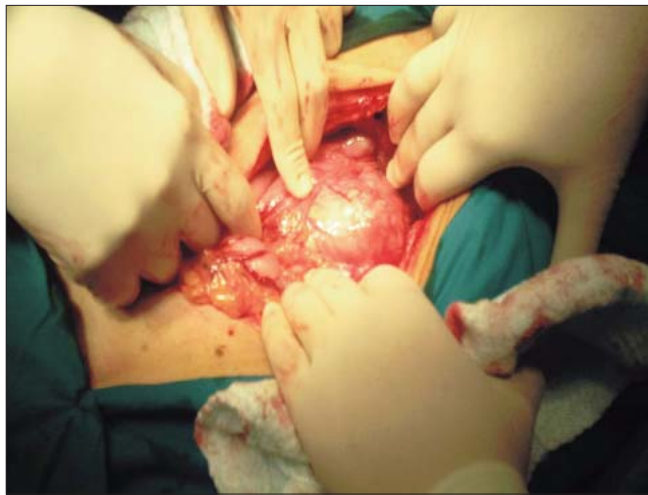


Figure 4. Inflammatory cephalic mass

a cholecysto-gastrostomy prior to PD.

- Intraoperative diagnosis was a challenge: the freeze biopsy could not confirm or infirm either CP or pancreatic cancer – especially in cases with jaundice. In all 6 cases the biopsy, either from node or puncture of the cephalic mass was not conclusive, but by all means did not confirm neoplasm.
- In the patient with 20 mg/dl BT, the diagnosis of pancreatic head cancer was sustained by the high levels of bilirubin and also by the intraoperative appearance. Because the patient was 67 years old we decided for an operation with oncological intention. We were surprised to have a final pathology diagnosis of CP.
- The dissection posteriorly to the venous complex (superior mesenteric vein/portal vein) was quite difficult in 2 cases. We had a portal vein lesion solved by suture.
- The anastomosis of the pancreatic stump was finalized

by wirsungo-jejunostomy in 4 cases and pancreatico-jejunostomy in 2 cases. We found the pancreatic stump fit for a jejunal anastomosis: firm/fibrous texture and consistency, relatively dilated Wirsung duct (in 4 cases 4-5 mm, and in 2 cases around 3 mm).

All the patients were discharged from the hospital between the 14-20th day after the operation.

If we discuss the late postoperative evolution, we have the following considerations:

- we had a good control of pain remission in 14 patients, which was complete and persistent in 10 patients (6 cases PJ and 4 cases PD), and partially effective in 4 patients (2 cases PJ and 2 cases PD). In 3 patients, all with PJ, the pain persisted.
- Persistent weight deficit was noticed in 4 cases (2 cases – PJ, 2 cases PD);
- Newly onset diabetes was found in 4 cases (3 cases – PD, 1 case PJ).

Discussion

a. General data

CP cannot be healed. The aim of the surgical treatment is to obtain symptomatic remission, especially of pain, to enhance quality of life and to treat complications (7).

There are morphological criteria which can predict a good therapeutic outcome of surgery:

- fibrosis has to be segmental, proximal or distal;
- ductal dilation, if present, must be diffuse (length \geq 10 cm, diameter \geq 7 mm);
- the presence of associated obstruction (biliary, duodenal, compressive cyst);
- these criteria are determined by ERCP and CT-CE.

b. Indications of surgical treatment

The main indication for surgical treatment is the failure of medical and endoscopic therapy, clinically proved by intensive pain obstinacy. Another indication for surgery is the necessity to solve the CP complications of the surrounding viscera. (8) Sometimes, the impossibility of excluding the cancer diagnosis could represent an indication of surgery. (9)

The contraindications of surgical treatment for CP are, generally, the presence of severe comorbidities and the lack of morphological criteria that impose a surgical attitude.

1. Objectives of surgical treatment are:

- pain relief or at least partial diminishment;
- to aim the target organ or the complications associated to CP;
- to decline the suspicion of pancreatic cancer;
- to preserve the most of the functional pancreatic tissue;
- surgical intervention should be safe, with low morbidity and mortality figures.

2. Selection of the appropriate surgical technique is made upon the results of imagistic investigations, essentially ERCP and CT-CE.

ERCP is most important for the positive diagnosis of CP, rendering accurate information about both pancreatic and biliary dilation. It is essential in making a surgical decision if drainage or excision is the final goal or if an additional procedure (biliary or cyst drainage) might be necessary at the moment of surgical intervention.

ERCP is mandatory in CP patients planned for surgery, especially for evaluating the ductal anatomy. Failure in evaluating the ductal system by ERCP could occur in 5-10 % of cases, but the accuracy of the procedure is maximal for more than 90 % of the evaluated patients. (10).

CT – CE renders a detailed image of the pancreas with a false-negative rate under 5 % (11). Particularly, CT-CE offers the morphological criteria indispensable for the indication of surgical treatment in CP. It is complementary to ERCP in CP diagnosis.

Other important procedures of exploration for the diagnosis and treatment of CP are abdominal ultrasound (12), magnetic resonance cholangiopancreatography (MRCP) (13),

endoscopic ultrasound (EUS) (14) and positron emission tomography (PET-CT).

3. The surgical procedures for CP are: drainage procedures, resection procedures and a combination of the two.

Drainage procedures (15,16,17) impose as a compulsory condition that the main pancreatic duct should be sufficiently dilated (\geq 8 mm). Technically speaking, the duct should be opened on a distance of 10-15 cm, as much as possible, towards the head of the pancreas. Drainage procedures are succeeded by low rates of postoperative pancreatic endocrine and exocrine insufficiency. They are rather simple procedures with low morbidity and mortality. The main drawback is that pain remission remains complete in only 50-80 % of the patients.

Resection procedures comprise proximal resections - pancreaticoduodenectomy (PD), distal resections and rarely total pancreatectomy.

Proximal resections are indicated mainly in two circumstances – in CP with sclerosis and “small duct”, and for the exclusion of malignity. In surgical centres with many operations performed, proximal resection procedures associate low mortality rates (<5%) (18,19). This fact led to the acceptance of the indication of such techniques for CP, although initially recommended only for malignant conditions. Morbidity rates, nevertheless, are still high, around 40-50 %. Resection procedures have two major advantages. Firstly, because they appeal to most of the factors connected to the mechanisms of pain in CP, the results in pain dissolution are good and very good, 80 % of the patients lacking pain after 5 years postoperatively (20). Secondly, they exclude malignity.

Proximal resection procedures have also important drawbacks like the pancreatic exocrine and endocrine deficiency (30 % of patients), the resections of viscera not involved in the pathological process, the loss of gastrointestinal continuity and difficult technique. In order to increase the nutritional status, pylorus preservation pancreaticoduodenectomy has been suggested (21). It brings a significant nutritional benefit, but has as disadvantage a higher postoperative rate of slow gastric evacuation.

Distal resections (distal pancreatectomy) are followed by high rates of pain recurrence (22) and postoperative diabetes. The results seem to be better in patients with caudal pseudocysts (22). Technically speaking, if possible, distal resection with spleen preservation is preferred (23).

Total pancreatectomy is a rarely performed surgical intervention (6), with low results in pain remission (24). Post-operative diabetes is severe. Generally, this intervention is contraindicated as a primary operation.

Combination procedures include limited resections, associated to drainage.

Duodenal – preserving resection of the head - the BEGER operation (4,25,26) is addressed to the tumoral mass of the pancreatic head and to the compartment syndrome of the gland. It consists of sectioning of the pancreas above the portomesenteric axis and subtotal resection of the pancreatic head. Reconstruction is performed with one Roux-en-Y loop with an end-to-end pancreaticojejunostomy and another side-to-side anastomosis between the resection cavity in the

pancreatic head and the same jejunal loop. It is indicated either in the so called "small duct disease" or for the one with large duct. The BEGER operation has as advantages good results in pain control, comparable with PD (27), good functional results, decent nutritional status, and is also able to solve the complications of surrounding organs like biliary stenosis. It could however be sometimes technically difficult, especially in dissecting the superior mesenteric-portal axis.

The local resection of the pancreatic head and lateral pancreaticojejunostomy – operation FREY - (28,29,30) comprises the limited resection of the head and the decompression of ductal hypertension in the remnant gland by performing a longitudinal pancreatico-jejunosotomy. It does not imply the dissection of the mesentericoportal venous complex. Technically, it requires an adequate exposure of the pancreatic head, especially anteriorly. This intervention is still a debate issue concerning the way it solves the obstruction of the CBD. It ensures a good evolution in the long run of pain control.

In the last years, two other procedures of limited resection have been suggested:

- HAMBURG procedure consists of a deep duodenum-preserving resection of the pancreatic head and an additional longitudinal, V-shape excision of the ventral aspect of the body and tail of the pancreas (31).
- BERNE procedure includes a subtotal resection of the pancreatic head. Only one pancreatic anastomosis without transection above the portal vein is necessary (32).

If we compare BEGER and FREY operations, they both render similar results on the long term. FREY operation brings up an important technical benefit compared to BEGER's because it does not require vascular dissection. Morbidity in FREY's operation is lower than in BEGER's. (33). If compared to classic operations, both types of limited resections end up with better functional results and a lower incidence (15%) of pancreatic endocrine and exocrine insufficiency (34,35). It is quite possible in the future that procedures of limited resection associated to drainage will replace PJ and PD.

c. The relation between CP and malignancy

CP appears like a tumoral cephalic mass in 18-50% of cases (36). A constant increase in associating CP to pancreatic cancer especially in familial CP is documented. It is assessed that 43% of the proximal resections performed for CP are aiming to exclude malignancy – "wide biopsy". In such situations, neoplasia is found in 6-16 % of cases (27).

Regarding limited resection procedures, the capability of excluding the malignancy should be augmented. Accordingly, endoscopic ultrasound examination (EUS) and PET-CT performed before the operation seem to contribute significantly to malignancy exclusion (37). During the operation, the intraoperative ultrasound and transduodenal fine needle aspiration cytology (FNAC) can contribute to the correct diagnosis. In uncertain, hesitant situations, if the patient health allows it and it is technically possible, a proximal resection is recommended to be performed.

Conclusions

CP is a continuous inflammatory process. The benefit of every therapeutic procedure should be evaluated on the long term.

There is still no consensus, presently, upon the surgical treatment of CP. The choice between PD and limited resections (FREY/BERGER) is based nowadays only upon individual option. There are still certainties (malignancy should be excluded), perspectives (limited resections should probably replace PD due to lower morbidity and mortality rates), and hopes (once better understanding the pain mechanism, a better surgical choice for CP should appear).

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