

Review Article

Chronic pancreatitis

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Abstract

The abstract is available at the Clinical pancreatic disorder I: Acute pancreatitis. *North Am J Med Sci* 2011; 3: 316-319.**doi:** 10.4297/najms.2011.3316**Keywords:** Whipple procedure, pancreaticoduodenectomy, Frey procedure, clinical outcomes, autotransplantation, Quality of life.**Correspondence to:** Åke Andrén-Sandberg, Department of Surgery, Karolinska University Hospital, Stockholm, Sweden. Email: ake.andren-sandberg@karolinska.se

The Whipple procedure

Pancreaticoduodenectomy (PD) is the most frequent performed procedure in symptomatic chronic pancreatitis. PD offers a good pain reduction and may thereby impair the quality of life. Never the less after PD there might be a higher rate of exocrine and endocrine dysfunctions. In this retrospective and unicentric study we analyzed long-term quality of life (QOL) and relief of symptoms in a homogenous consecutive cohort of patients undergoing PD for chronic pancreatitis. From 1994 to 2008 it was performed a total of 168 PDs (PPPD n=96, Whipple n=72) in cases with symptomatic chronic pancreatitis. Quality of life was analyzed by EORTC QLQ-C30 questionnaire and supplemented questions. As control group served general population data based on large random samples. Complete follow up was achieved in 67 cases (median follow-up 69 months). Long-term survival of the patients was significantly lower than expected rates based on Federal Republic of Germany life table analysis. There was improved postoperative pain control (no pain 35 %, less pain 51 %) and increase in weight gain (42 %). Overall QOL scores were slightly inferior to those of the control group. A common problem after PD was onset of diabetes mellitus; however, exocrine function of the pancreas was stable. The analysis supports performance of PD in patients with symptomatic chronic pancreatitis to improve QOL. Regarding pain control excellent long term results were shown. However new onset of endocrine and exocrine insufficiencies has to be considered [1].

The Frey procedure

One study describes the clinical outcomes of a single-institution experience with the Frey procedure for the surgical treatment of chronic pancreatitis. A retrospective chart review of patients who underwent the Frey procedure for chronic pancreatitis over a 27 month period was conducted. Progress notes, pathology reports, and follow-up visits were reviewed. Pancreatic enzymes, opioid analgesic use, and diabetic medications were documented. The Clavien grading system was utilized to classify complications. The mean operative blood loss was 623 mL. Three patients required ICU care with an average ICU length of stay (LOS) of 2 days. Overall median hospital LOS was 10 days (range 4-19). There was no mortality. Nine of 14 patients suffered at least 1 postoperative complication. There were 4 grade I and 10 grade II complications. The grade IIIa (n=1) and IIIb (n=2) complications included a pleural effusion requiring thoracentesis, reoperation for bleeding, and reoperation for pancreatic fistula, respectively. There were no grade IV or V complications. Ninety-three percent of the patients attended at least 1 follow-up visit with the average follow-up of 185 days. Five of the 13 patients were no longer taking any opioid analgesics at their follow up visit. It was concluded that the Frey procedure is a safe and efficacious procedure that provides relief of the symptoms of chronic pancreatitis. There were few major complications associated with the introduction of this technique. Most patients experience a significant reduction

in their need for opioid analgesics after the Frey [2].

The local resection of the pancreatic head with longitudinal pancreaticojejunostomy (LR-LPJ), or Frey procedure, has been shown to be as effective as Pancreaticoduodenectomy (Whipple) or duodenum-preserving pancreatic head resection (Beger procedure) for the relief of pain due to chronic pancreatitis (CP). Controversy persists over the selection of patients for these surgical options, and the impact of the extent of underlying fibrosis on the postoperative outcome is poorly understood. It was analyzed 33 patients who underwent the Frey procedure for documented CP accompanied by persistent pain from 2006 to 2010 (mean follow-up 22 months). All had duct dilatation due to one or more strictures, pseudo cysts, or intraductal stones, and all had documented chronic inflammation on gross or microscopic analysis of the excavated tissue removed from the pancreatic head. It was evaluated symptomatic outcomes in patients with severe or extensive fibrosis (SEF) and those with minimal or mild fibrosis (MIF). Thirty-two of 33 patients had complete follow-up data on symptom resolution or persistence, medication need, and disability. Of the 22 SEF patients, 20 (91 %) had complete or near-complete resolution of symptoms and disability. Of the 10 MIF patients, 6 (60 %) had complete or near-complete resolution of symptoms and disability. Continued opioid use was common (15/22 and 8/10) in both groups. It was concluded that complete or near-complete symptom resolution after the Frey procedure is more likely in the setting of severe or extensive fibrosis due to CP. Despite ductal dilatation, the presence of mild or minimal fibrosis may decrease the likelihood of symptom resolution after the LR-LPJ procedure [3].

Total pancreatectomy with islet autotransplantation

Chronic pancreatitis (CP) is a condition associated with irreversible morphological and functional abnormalities. Total pancreatectomy (TP) is the last option available to relieve intractable abdominal pain. Islet cell autotransplantation (AIT) aims to preserve the beta cell function. Health related Quality of Life (QOL) is significantly worse in patients who have CP. The primary goal in TP-IAT is to improve QOL by alleviating pain and discontinue narcotics while preventing or minimizing surgical diabetes. QOL outcomes following any surgery for CP are lacking. A review the results of TP-AIT by assessing QOL and beta cell function was done by a retrospective review of a prospective database for TP-IAT from 2007 through 2010. A standardized pre and post-operative assessment of mood was measured using the Depression Anxiety Stress Scale (DASS) and disability due to pain was measured using the Pain Disability Index (PDI), a 7 item scale that measures how much pain interferes with functioning. A visual analogue pain scale was used to assess global pain. Diabetes was assessed by measuring Hb 1Ac pre and post surgery, and C peptide

postoperative. There were 20 patients who underwent TP-AITD. The median age was 42 years old (17-73) and 8 (40 %) were women. CP etiology was: idiopathic in 10 (50 %), familiar in 5, alcohol in 4, autoimmune and gallstones in 1 each. Prior pancreatic resection was performed in 2 (10 %) patients. The median islet cell equivalents infused was 299,508. There was no mortality. Complications were present in 8 (40 %): bleeding in 4 (20 %) due to anticoagulation 2 of these required a reoperation; gastroparesia in 3 (15 %). Median LOS was 12 days. The mean pre HbA1c was 6.0 and post Hb A1c was 7.7. The median postoperative C-peptide levels were 0.78. Dose of Novolog were 12 U (4-25) per day, Lantus 10 U (5-20) per day, Humalog 8U (2-30). The patients graded their abdominal pain pre- and postoperative are as follows: none to mild in (0 % vs. 76 %), moderate in (45 % vs. 14 %) and severe in (55 % vs. 10 %). The DASS was completed pre- and postoperatively. Depression was categorized as follows: mild in (14 % vs. 10 %), moderate in (14 % vs. 4 %), severe (19 % vs. 0 %), extremely-severe (14 % vs. 10 %). Anxiety was categorized as mild in (10 % vs. 4 %), moderate in (19 % vs. 4 %), severe in (4 % vs. 4 %), extremely-severe (19 % vs. 10 %). These preliminary results show that TP-AIT significantly improves pain, depression, anxiety and QOL measures in appropriately selected patients with CP [4].

Quality of life

Pancreatectomy with islet cell autotransplant (IAT) can alleviate pain in patients with chronic pancreatitis while decreasing post-operative diabetes related morbidity. The goal of this study is to evaluate outcomes and quality of life (QoL) in patients with alcoholic pancreatitis (AP) and non-alcoholic pancreatitis (NAP) after pancreatectomy with IAT. Clinical data were collected on patients undergoing pancreatectomy with IAT from 2005 to 2010. QoL (SF-36) and a pain (McGill Pain Questionnaire) surveys were administered preoperatively, at follow up, and by mail. Statistics were calculated and mixed effects models were created to evaluate QoL data. Sixty-nine pancreatic resections with IAT (median follow up 22 months) were stratified by etiology (38 % AP, 62 % NAP). There was no mortality and mean age (44 years), operative time (6 hrs), median length of stay (8 days), narcotic freedom (68 %), and baseline QoL (SF-36) were similar between groups. QoL (SF-36) was improved for those with NAP in 5 of 8 domains while significant change was only seen in one domain (bodily pain) for those with AP. Pain scores were equivalent at baseline (McGill Pain Questionnaire), and after resection improved only significantly so for those with NAP. There was no difference in QoL for those undergoing total pancreatectomy (65 %) and Pancreaticoduodenectomy (35 %). It was concluded that pancreatic resection with IAT improves QoL and pain for those with nonalcoholic pancreatitis. For patients with intractable pain associated with alcoholic chronic pancreatitis, careful patient selection and counseling is advised prior to pancreatic resection [5].

Experimental

Trypsinogen activation is considered to be the central event in the current paradigm of pancreatitis. This is based on consistent demonstration of trypsinogen activation early during acute pancreatitis in animal models. Association of mutations leading to pathologic trypsinogen activation with hereditary pancreatitis, a form of chronic pancreatitis (CP), suggests that trypsinogen activation might be involved in the pathogenesis of CP. However, beyond this correlational evidence, no study to date has ever explored the involvement of trypsinogen activation in CP. Here, it was aimed to evaluate the role of intra-acinar trypsinogen activation in the pathogenesis of CP in a mouse model. It was found that chronic pancreatitis in the presence (WT) and absence of trypsinogen activation (CB^{-/-}) is similar suggesting that intra-acinar trypsinogen activation is not required for the pathogenesis of chronic pancreatitis. This is an important finding and a major paradigm-shift in the current understanding of the pathogenesis of chronic pancreatitis. Furthermore, independent of trypsinogen activation, chronic ongoing inflammation is seen in chronic pancreatitis and may be responsible for its pathogenesis [6].

References

1. Distler M, Rückert F, Kersting S, et al. Quality of life after pancreaticoduodenectomy in patients with symptomatic chronic pancreatitis. American Pancreas Club, 45th Annual Meeting, May 6-7, 2011.
2. Keim RL, Christians KK, Harris RC, Wilson S, Gamblin TC, Pappas S. The Frey procedure for chronic pancreatitis: a single-institution experience. American Pancreas Club, 45th Annual Meeting, May 6-7, 2011.
3. Makary MA, Singh V, Cui Y, et al. Clinical outcome after the Frey procedure: the paradox of symptom resolution and the severity of chronic pancreatitis. American Pancreas Club, 45th Annual Meeting, May 6-7, 2011.
4. Aguilar Saavedra JR, Lentz G, Scheman J, Stevens T, Walsh RM. Assessment of quality of life following total pancreatectomy and islet cells autotransplant for chronic pancreatitis. American Pancreas Club, 45th Annual Meeting, May 6-7, 2011.
5. MacNeal S, Christein JD. Is pancreatic resection and islet cell autotransplantation warranted in those with alcoholic chronic pancreatitis. American Pancreas Club, 45th Annual Meeting, May 6-7, 2011.
6. Sah RP, Dawra R, Bekolay A, Saluja AK. Chronic pancreatitis is independent of intra-acinar trypsinogen activation. American Pancreas Club, 45th Annual Meeting, May 6-7, 2011.