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ORIGINAL ARTICLE

Effect of Early Surgery on Pain in Patients with Chronic Pancreatitis

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ABSTRACT

Introduction: Chronic pancreatitis (CP) is a progressive fibro-inflammatory disease of the pancreas with an increasing annual incidence characterized by intractable pain and poor quality of life. The timing of surgery for painful chronic pancreatitis (CP) may affect outcomes.

Methods: After IEC Clearance Consecutive CP patients diagnosed by disease history and radiological findings who underwent surgery at KIMS Hospital between March 2021 and May 2023. They were followed up for 18 months. The primary endpoint was pain relief, assessed at the end of follow-up using the Izbicki pain score.

Results: 40 patients of pancreatitis who underwent surgery were studied retrospectively for the association of disease duration with outcome of pain relief. The patients were divided into early (< 3 years) and late groups (>3 years) based on the duration of abdominal pain.In these 80% of them had pain of <3 years duration, and the remaining 20% had pain of >3 years duration. Among these 77.5% were alcoholic and 12.5% had diabetes. On CECT evaluation, 35% had dilated pancreatic duct (> 10 mm) and the remaining 65% had duct size of <10 mm. Among these 82.5% underwent Frey's procedure, LPJ was done in the remaining (17.5%). After surgery 90% had relief of postoperative pain and majority (62.5%) had long duration of stay (>2 weeks).

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There was a significant difference in Gender, Procedure done, Diabetes mellitus, Alcoholism, CECT duct size, and post-operative pain between early and late groups. There was no significant difference in Age, Steatorrhea, and duration of stay between early and late groups.

Conclusion: Earlier surgery improves outcomes from painful chronic pancreatitis.

KEYWORDS

• CP - Chronoc pancreatitis • LPJ - Longitudinal pancreaticojejunostomy • CECT - Contrast enhanced CT

INTRODUCTION

Chronic pancreatitis (CP) is a benign, irreversible inflammatory process leading to structural changes in the form of inflammatory mass formation. It is due to the replacement of the endocrine and exocrine part of pancreas by a fibrotic and inflammatory tissue. But in case of acute pancreatitis, the gland is normal once the attack subsides. Besides the mass formation in CP, there is a ductal dilatation, stricture formation, calcification and stone formation. The most common clinical presentation of CP is pain, majority in 80% to 90% of patients. The pain is thought to be caused by three mechanisms, first is the inflammation of pancreas, second is due to the pancreatic duct strictures there will be a increased intrapancreatic pressure or pressure within the duct causing tissue ischemia, third there will be late complications like pseudocysts, bile duct/duodenal strictures and peptic ulcers. The guidelines published by HaPanEU in 2017, propagates a multi-step approach for treatment of CP. The available solid data for this approach is lacking. Theinitial management of pain consists of opioids, if not resolving can go for endoscopic interventions, which consists of stone removal and stenting of ductal strictures. Usually surgical intervention is postponed till the pain is unmanageable or other interventions fails. There are two schools of thought, A randomized clinical trial (RCT) showed surgery was more effective for midterm and long-term pain relief in CP and for the patients who are dependent on opiods. Based on the results from observational studies, reports showed that earlier surgery could mitigate disease progression and also it achieves better pain control in addition to preserving the pancreatic function. In the recent era, multiple studies opined that early surgery is better in providing improved quality of life with relief of pain, as compared to the step wise approach. As stated above in the observational studies, delaying invasive treatment showed a negative impact, with increased duration of opioid use, increase in endoscopic interventions. The timing of surgery for painful chronic pancreatitis (CP) may affect outcomes.

METHODS

An institutional Ethics committee approval was obtained for this study. All Consecutive CP patients diagnosed by disease history and radiological findings who underwent surgery at KIMS Hospital between March 2021 And May 2023 were enrolled for the study. They were followed up for 18 months. All patients had basic demographic data, presentation history, examination findings and diagnosis The primary endpoint was pain relief, assessed at the end of follow-up using the Izbicki pain score. The Izbicki score ranges from 0 to 100, with higher scores indicating more severe pain; 0=no pain and 100=severe pain. It is based on four questions; frequency of pain, intensity of pain, use of analgesics and disease related inability to work. A total of 40 patients were included for the study.

Statistical methods: The information collected regarding all the selected cases was recorded in a Master Chart. Data analysis was done using MS-Excel, SPSS 21.0. Using this software the percentage, range, mean, standard deviation and p values were calculated. A p-value <0.05 is shown to have significant relationship.

RESULTS

A total of 40 patients were included for the study. They were studied retrospectively for the association of disease duration with outcome of pain relief. The patients were divided into two groups, early (<3 years) and late groups

(>3 years) based on the duration of abdominal pain. In these 55% of the study population were male, while 45% were females. The mean age was 29.62 years and there was a male preponderance (M:F= 1.85:1). In these 80% of them had pain of <3 years duration,and the remaining 20% had pain of >3 years duration. Among these 77.5% were alcoholic and 12.5% had diabetes.

On CECT evaluation, 35% had dilated pancreatic duct (> 10 mm) and the remaining 65% had duct size of < 10 mm. Among these 82. 5% underwent Frey's procedure, LPJ was done in the remaining (17.5%). After surgery 90% had relief of post-operative pain and majority (62.5%) had long duration of stay (>2 weeks). These finding are summarized in *Table 1*.

Table 1: Basic demographic data, imaging findings and procedure details

Variable		Frequency	Percentage
Gender	Male	26	65.0
	Female	14	35.0
Duration of stay	≤2 weeks	15	37.5
	>2 weeks	25	62.5
Duration of complaint (pain abdomen)	<3 years	32	80.0
	≥3 years	08	20.0
DM	Yes	05	12.5
	No	35	87.5
Alcoholic	Yes	31	77.5
	No	09	22.5
Steatorrhea	Yes	03	7.5
	No	27	67.5
CECT duct size	<10 mm	26	65.0
	≥10 mm	14	35.0
Procedure	Frey's procedure	33	82.5
	LPJ	07	17.5
Post-op pain	Yes	04	10.0
	No	36	90.0

When comparing the early and late groups, 75% were males in the early group and 25% of the males were in the late group, in the same way 25% of females in early group and 75% of the females in the late group.

The mean age in early group was 26.93±9.78 years and in the late group was 32.60±10.66 years. On comparison the p value was 0.28(statistically insignificant).

In these 40 subjects 28 patients in early group underwent Frey's procedure and 05 patients in late group underwent Frey's procedure. When comparing the LPJ, 4 in early group and 3 in late group underwent LPJ. The P - value was 0.04.

When comparing the diabetic status, 6.25% in early group and 37.5% in late group are found to be diabetic. Out of these 84.37% in early group and 50% in late group are found to be alcoholic. The p value is 0.03.

In case of presentation 6.25% of the subjects in early group presented with steatorrhoea. Out of these only one patient complained of significant pain in the early group and 37.5% of patient s in late group had post operative pain. It shows there is a significant difference in the postoperative pain relief between the early and late group (p=0.003).

The findings are summarized *Table 2.*

Table 2: Comparison of both groups

Variable		Complaint duration <3 years (n=32) N (%)	Complaint duration ≥3 years (n=08) N (%)	P value
Gender	Male	24 (75.0)	02 (25.0)	0.008*
	Female	08 (25.0)	06 (75.0)	
Age (mean ± SD) in years		26.93±9.78	32.60±10.66	0.28
Procedure	Frey's procedure	28 (87.5)	05 (62.5)	0.04*
	LPJ	04 (12.5)	03 (37.5)	
DM	Yes	02 (6.25)	03 (37.5)	0.01*
	No	30 (93.75)	05 (62.5)	
Alcoholic	Yes	27 (84.37)	04 (50.0)	0.03*
	No	05 (15.62)	04 (50.0)	
Steatorrhea	Yes	02 (6.25)	01 (12.5)	0.54
	No	30 (93.75)	07 (87.5)	
CECT duct size	<10 mm	24 (75.0)	02 (25.0)	0.008*
	≥10 mm	08 (25.0)	06 (75.0)	
Duration of stay	≤2 weeks	14 (43.7)	01 (12.5)	0.10
	>2 weeks	18 (56.25)	07 (87.5)	
Post-op pain	Yes	01 (3.12)	03 (37.5)	0.003*
	No	31 (96.8)	05 (62.5)	

*pvalue<0.05 is significant

DISCUSSION

There are different pharmacological and non pharmacological therapies advocated for pain relief in CP. Many surgical interventions were also advocated for CP like decompression and drainage procedures and resection procedures. The drainage procedures are suggested in patients with a dilated main pancreatic duct (>6–7 mm) and the mostly performed surgery is longitudinal pancreaticojejunostomy. In the other hand the resection procedures are advocated for patients with a small duct disease (diameter of main pancreatic duct <6 mm).

In our study 82.5% underwent Frey's procedure, LPJ was done in the remaining (18.5%). Most of the patients who underwent Frey's procedure had a duct size of < 10 mm. It was comparable to a study done by John P Duffy *et al*' who showed Superior results when the pancreatic head is resected, either completely (pancreaticoduodenectomy) or partially (Beger or Frey procedure).

Based on the recent meta analysis by yang *et al.*, showed early surgery showed good achievement in pain relief and can prevent the development of pancreatic insufficiency. He did meta-analysis of the three similar studies with comparative raw data regarding the pain relief showed that early surgery was associated with an increased likelihood of complete postoperative pain relief (RR = 1.67, 95% CI 1.09-2.56, p = 0.02). It was comparable to our study which showed 96.8% of patients had pain relief in early group and 62.5% of patient s in late group had post operative pain relief (p=0.003).

The other randomized control trial (ESCAPE Randomized Clinical Trial) done by Issa *et al.*, included 88 subjects in which 44 were randomized to the early surgery group who underwent surgery within 6 weeks, and the other 44 patients underwent endoscopy-first

approach group who underwent medical treatment, endoscopy including lithotripsy if needed. The mean age was 52 years; 21 (24%) women), 85 (97%), they were followed up for 18 months, patients within the early surgery group had a lower Izbicki pain score than patients in the other group (37 vs 49; between-group difference, -12 points [95% CI, -22 to -2]; P =. 02). These results were comparable to our study. 23 of 40 patients (58%) in the early surgery vs 16 of 41 (39%)in the endoscopy-first approach group showed complete or partial pain relief (P =.10). The number of interventions was much lower in the early group (median, 1 vs 3; P <. 001).

The primary limitation of this study is that its a retrospective study, it is not a randomized controlled trial. The second limitation is the small number of patients. The third limitation is short duration of follow up, up to 1 year. Although our follow-up is limited to 1 year, the majority of patients had pan relief in these duration. This was comparable to the folloup up of 18 months ESCAPE randomized Clinical Trial. The fourth limitation is study may be limited by selection bias.

CONCLUSIONS

To conclude from our study that earlier surgery improves outcomes from painful chronic pancreatitis. Based on the recent literature and the RCT, early surgery is the best treatment for better pain relief in chronic pancreatitis. The results from ESCAPE trial showed that early surgery is better than conservative treatment and endoscopy. Future research should be focused on many other aspects of pain and how it is influenced by our interventions, in order to improve the patient care.

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