

# Outcome after Lateral Pancreaticojejunostomy for Chronic Calcific Pancreatitis: A Short Term Prospective Study

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### Key Words:

Chronic pancreatitis, longitudinal pancreaticojejunostomy, visual analogue scale

### Abstract:

*Chronic pancreatitis is a fairly common condition with pain being the major symptom and longitudinal pancreaticojejunostomy (LPJ) is performed for symptomatic relief. The aim of the study is to assess the outcome of LPJ for chronic calcific pancreatitis and to evaluate the factors influencing relief of symptoms. A prospective observational study enrolling 28 patients was conducted in the department of surgery of Shaheed Suhrawardy Medical College Hospital from January 2018 to December 2018. This study involved identification of various risk factors related to chronic pancreatitis, pancreaticojejunostomy, early post-operative outcome and postoperative assessment of pain relief at 1 and 6 months from surgery. Pain was assessed using Visual analogue scale (VAS). In chronic pancreatitis, there is a significant relief of pain in post-LPJ; the degree of relief was less in the alcoholics than non-alcoholics ( $p=0.09$ ) and in smokers. There was also reduction in analgesic requirement and frequency of acute attacks of pain. In chronic pancreatitis, there is a significant relief of pain in post-LPJ, although the degree of relief is less in the alcoholics and smokers.*

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### Introduction:

Chronic pancreatitis (CP) is a progressive, recurring inflammatory disorder characterized by irreversible destruction of pancreatic parenchyma and may be associated with disabling chronic pain and permanent loss of exocrine and endocrine function.<sup>1</sup> It is characterized by persistent and progressive fibrosis of the pancreas,

resulting in the loss of both endocrine and exocrine tissues.<sup>2</sup> Pancreaticolithiasis is the most common cause of chronic pancreatitis.<sup>2</sup> It is associated with pancreatic ductal dilation and intractable pain which has been managed successfully with lateral pancreaticojejunostomy (LPJ).<sup>3</sup> Incidence of CP is increased in four fold in past 30 years and ranges 3-10 per 100,000 around the world.<sup>4</sup>

Pain is the most frequent symptom in CP. Pancreatic pain is usually constant, severe and dull aching in mid-epigastrium often radiates to back, occurs in 80%-90% individuals.<sup>5</sup> The quality of life is worsened by pain and disease-related complications. Pain is due to stones or stricture in MPD, resulting in increased intraductal and interstitial pressures.

Pancreaticolithiasis etiology remains unclear, but malnutrition, antioxidant deficiency and genetic predisposition are important predisposing factors. Pancreatic juice is saturated with calcium, kept in solution by HCO<sub>3</sub>, citrate and pancreatic stone protein (PSP). Alcohol and chronic pancreatitis decreases PSP secretion, causing crystallization and deposition of calcium carbonate. (CaCO<sub>3</sub>) to form stones.<sup>6</sup> Besides, MPD stricture causes stagnation of pancreatic juice and propagates stone formation. Radio opaque shadow in plain X-ray locates pancreatic stones. USG of abdomen is also done to evaluate stones, MPD diameter and parenchymal

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changes. MRCP is also an excellent noninvasive tool for diagnosis of pancreaticolithiasis.

Patients with chronic pancreatitis frequently have comorbid medical conditions and other complications associated with chronic pancreatitis which may influence the benefits achieved by LPJ. Steatorrhea and diabetes mellitus is well known comorbid condition associated with CP.

The present study was conducted in the department of surgery of Shaheed Suhrawardy Medical College Hospital from January 2018 to December 2018 to observe the early outcome of LPJ for chronic calcific pancreatitis.

### Materials and Methods

A prospective observational study was carried out in the Department of General Surgery in Shaheed Suhrawardy Medical College Hospital from January 2018 to December 2018. All patients with CP who underwent LPJ that were included in the study. The exclusion criteria are the following:

- Patients of chronic pancreatitis who did not follow up.
- Patients who refused to give consent.
- Patients of CP with pancreatic head mass were excluded from the study.

Patients enrolled using the above inclusion criteria were provided with patient information sheet and a voluntary informed consent was obtained from them. This study involved a questionnaire studying various factors and symptoms related to CP, LPJ. All the patients were followed up for 6 months.

Pain being a major symptom was assessed using visual analogue scale (VAS). The pain VAS is a unidimensional measure of pain intensity, which has been widely used in diverse adult populations. Also, the requirement of the number of analgesics both pre- and postoperatively were entered. Other symptoms studied in the questionnaire were weight loss, steatorrhea and diabetes mellitus and their course postoperatively. The questionnaire also studied preoperative risk factors that would alter the postoperative results. The factors that were considered included the following:

1. Alcohol intake
2. Smoking
3. Family history of chronic pancreatitis
4. DM

### Statistical Analysis

The numerical data were tested for normality and those found to be normally distributed, paired t test, were used

and those not normally distributed, Wilcoxon signed rank test, were used. The categorical data were expressed in percentage and proportions and compared using chi-square test. All statistical tables and analysis were performed using SPSS (SPSS Version 22.0.1, December 2017). Institutional Ethic Committee approval was taken before commencing the study. A p value less than 0.05 was considered statistically significant.

### Preoperative Assessment

In our study all the patients daily activities were hampered by chronic severe upper abdominal pain requiring a variety of analgesics. Investigations for general fitness of the patients were done and pancreas was evaluated by doing plain X-ray and USG of abdomen and assessing pancreatic enzyme levels. In some cases MRCP and CT scan of abdomen were done. All the co-morbidities were managed accordingly.

### Operative Procedure:

Surgery was indicated in unrelenting pain due to extensive stones, dilated MPD, failure of medical and endoscopic treatment and associated complications. The Partington-Rochelle modification was used for LPJ. Needle aspiration of the pancreatic duct was routinely performed for identification of pancreatic duct. The pancreatic duct initially was incised in the body of the gland and then opened longitudinally proximally and distally. In the head, the incision was variable depending on the caliber and location of the duct. After removing the stones a 40cm Roux-en-Y jejunal limb was used to construct the LPJ anastomosis with two layers of interrupted 2-0 Polyglactin 910 (Vicryl) sutures. Closed suction drainage was used to drain the area. In some cases, tissues were histopathologically studied to exclude malignancy.

### Post-operative period:

All patients were thoroughly evaluated by clinical examination, visual analogue scale (VAS) and investigations considering objective and subjective complaints in the postoperative period. Oral feeding was started between 3rd to 5th postoperative days and discharged between 7th to 12<sup>th</sup> postoperative days. Diabetic patients had more frequent follow-ups and some needed special care for glycemic control.

### Results

A total of 28 patients underwent LPJ for CP in the period of this study. Nineteen (67.85 %) patients belonged to the age group between 20–40 years. Seven (25 %) were above 40 years of age and two (7.14 %) were less than 20 years of age. The sex ratio was 4:3 between males (16) and females (12). Twenty five (89.38%) patients were nonalcoholic and three (10.71%) consumed alcohol. Out of the 28 subjects

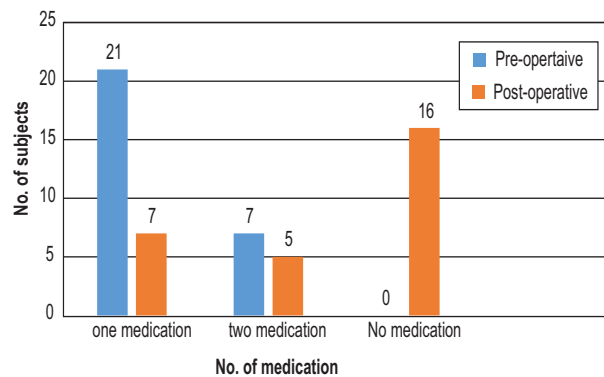
included, 3 (10.71 %) were chronic smokers. All the patients had diabetes mellitus.

The percentage reduction in pain was different in these subjects when assessed by VAS (Table I). Sixteen (57 %) of the subjects had 100 % relief of their symptoms at the end of 6 months.

**Table-I**

<i>Percentage of reduction of pain by VAS at the end of 1 month and 6 months.</i>		
Percentage reduction in pain by VAS	Postoperative pain relief in patients at 1 month follow-up	Postoperative pain relief in patients at 6 months follow-up
100 % Pain relief	13 (46.42 %)	16 (57.14 %)
60 % Pain relief	3 (10.71%)	0
50 % Pain relief	3 (10.71%)	8 (28.6 %)
40 % Pain relief	3 (10.71 %)	2 (7.1 %)
25 % Pain relief	6 (21.4%)	1 (3.6 %)
0% Pain relief	0	1 (3.57%)

12 patients (43%) had some amount of pain but their frequency of pain and number of taking analgesics were reduced. Four patients required lesser medication and eight required the same number of medication as before.



**Fig.1:** Comparison of requirement of medication preoperatively and postoperatively

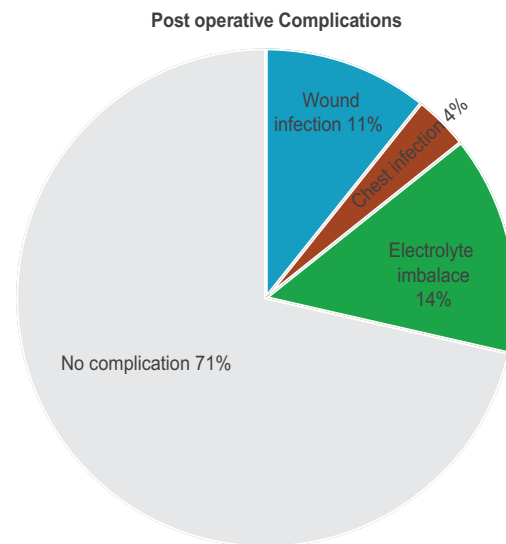
Both alcoholics and nonalcoholic had a significant pain relief (p=0.043 and p=0.06, respectively) at the end of 6 months postoperatively, but when these two groups were further compared with each other, the nonalcoholic group had a significantly better degree of pain relief by visual analogue scale (p=0.09). Among the nonalcoholic, median VAS came to 0/10 and the alcoholics VAS came down to a median of 4/10 at 6 months.

There was significant pain relief among nonsmokers (p<0.001) postoperatively as compared to their preoperative pain status.

**Table-II**

<i>Percentage of pain reduction assessed by VAS in different groups at the end of 6 months</i>				
Percentage reduction in pain by VAS at 6 months follow-up	Alcoholics	Non-alcoholic	Smokers	Non-smokers
100 % Pain relief	1(3%)	15(53.5%)	0	16(57.14%)
50 % Pain relief	1(3%)	0	1(3%)	0
40 % Pain relief	5(17.8%)	3(10%)	2(7%)	6(21.4%)
25 % Pain relief	1(3%)	1(3%)	0	2(7%)
0 % Pain relief	1(3%)	0	0	1(3%)
Total ( n=28)	9(32.5%)	19(67.4%)	3(10.7%)	25(89.3%)
P value: (<0.05)	0.043	0.06	0.08	<.001

Three patients (10.71%) developed wound infection while one patient (3.57%) had chest infection in the post-operative period. Electrolyte imbalance was observed in four patients (14.28%). None of them required any re-surgery.



**Fig-2:** Showing post-operative complications following LPJ

**Discussion:**

Treatment in chronic pancreatitis is mainly to palliate the symptoms. The present study included 28 subjects who were followed up for 6 months. Majority of the patients belonged to the age group of 20–40 years. Various studies showed pain relief between 36.5 and 93%.<sup>6</sup> Isaji in a review article says that pain relief is anywhere between 66 and

91% after LPJ.<sup>7</sup> In comparison, our study had a pain relief in 100 % of population and 16 (57.1 %) had complete remission of pain on VAS. Many studied in the past have used the different tools to assess pain relief like the 5 point system suggested by Nealon and Thompson and the health status scale by Adams et al.<sup>8,9</sup> These are either investigation-based or more complex to administer when compared to VAS. VAS has previously been used to evaluate surgical and medical treatments in CP and is an effective tool used by both medical professional and allied health workers.

In this study, an attempt is made to analyze the preoperative risk factors and its influence on the postoperative results in LPJ. It is a proven fact that alcoholism and smoking are independent risk factors for CP.<sup>10</sup> Others like familial, trauma, pancreatic divisum, cassava intake, and drug intake were absent in the study group . There was a significant difference in pain relief among the alcoholics as compared to nonalcoholic. Though Schnelldorfer and Adams studied the influence of preoperative alcohol intake on postoperative results, they did not find any difference between alcoholics and nonalcoholics.<sup>9,11</sup> According to our study, nonalcoholics did significantly better outcome than alcoholics. Thus, surgery appears to be one single factor that has drastically altered outcomes of the disease.

The requirement of analgesics was reduced to nil at 6 months in 16 patients. Four patients required lesser medication and eight required the same number of medication as before. Interestingly, those subjects belonged to the female sex and were alcoholics, and they too had reduction in the frequency of attacks of pain.

About 4-8% of complications have been reported in various studies.<sup>12</sup> In the present study similar results have been observed. Complications were more in smokers and alcoholic group.

The study limitation is short months of follow-up. Limitations to the use of the pain VAS include older patients, who may have difficulty in completing the pain VAS due to cognitive impairments or motor skill issues. We would have to see the results of pain relief over the years to comment on the effective procedure for pain relief.

## Conclusion:

LPJ is an organ-preserving procedure with minimal mortality and morbidity. We found, surgery is the most effective strategy despite medical and endoscopic management. Although the degree of pain relief is less in the alcoholics and smokers, we recommend LPJ for chronic calcific pancreatitis which offers better pain control with improved quality of life.

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