

EARLY POSTOPERATIVE OUTCOME OF LATERAL
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ABSTRACT

Background: Chronic pancreatitis is an inflammatory disease characterized by irreversible destruction of the pancreas with progressive loss of functional parenchyma ultimately resulting in endocrine and exocrine insufficiency. The most common symptom is intractable pain. The different treatment options for management of chronic pancreatitis are medical measures, therapeutic endoscopy and surgery. Surgical intervention is required in patients with unmanageable pain resistant to narcotic use. Many studies have established the benefits of surgical treatment in chronic pancreatitis. The surgical drainage procedure most commonly performed is the lateral pancreaticojejunostomy (LPJ) due to its safety and feasibility. The objective of this study was to evaluate post operative outcome of LPJ in patient with chronic pancreatitis.

Objectives: To get an effective procedure to relieve the sign symptoms as well as to evaluate the effectiveness of Lateral Pancreaticojejunostomy in patient with chronic pancreatitis. **Methods:** This was an observational study which is conducted at Department of Surgery, Dhaka Medical College Hospital from 06th June 2018 to 05th June 2019. Total 50 cases of chronic pancreatitis with evidence of a dilated pancreatic duct (8 mm or more) and planned for lateral pancreaticojejunostomy were enrolled for study after fulfillment of selection criteria. Sample was selected by consecutive sampling technique. Data were collected from the patients and/or informant and recorded in structured case record form. Clinical examination and relevant investigations were done meticulously. Lateral pancreaticojejunostomy was done according to operational definition. Post operative follow up was documented during follow up period. Follow up period was 3 months after surgery. Outcome was evaluated. All the demographic variables and perioperative variables were studied and compared. Quantitative data expressed as mean and standard deviation and qualitative data as frequency and percentage. Comparison was done by tabulation in the form of tables. **Results:** The study was carried out on the consecutive 50 clinically diagnosed chronic pancreatitis patients who admitted in the departments of surgery unit of Dhaka Medical College Hospital (DMCH). The observations were also compared with results of other similar sorts of studies done at different parts of the world. In this study maximum numbers of patients (44.0%) were between 31-40 years age group, mean±SD age was 43.7±10.2 years. Middle to elderly aged patients were high in contrast to elderly age groups. In this study most common symptoms were abdominal pain, anorexia and generalized weakness (76.0%, 46.0% & 88.0% respectively). In this study all patients were conducted lateral pancreaticojejunostomy. Early post operative outcome, measured by pain relief and postoperative morbidity and mortality, have been excellent; however, long-term follow-up and overall outcome has been less clearly defined in these patients. Study shows that clinical improvement of exocrine insufficiency was found in 22(75.0%) patients out of 29 pre operative exocrine insufficient patients at first follow-up, subsequently only 4(14%) patients found poor outcome. 27 patients were diabetic and getting insulin or oral hypoglycemics pre operatively. The daily dose of insulin was decreased following surgery in 12% of patients. 8.0% patients developed pancreatic fistula & it was resolved by conservative management. All the patients had a period of hospital stay about 7-10 days post operatively. At first follow up, 9(18%) patients were rehospitalized, out of them 7(78%) were for recurrent attack of pain and 2(22%) were for development of abscess. At second follow up, only 3(6%) patients were admitted for recurrent attack of pancreatitis. Overall early postoperative morbidity rate was 14.0%. In this study after treatment, patient's compliance and outcome of surgery was evaluated. Present study shows that, 24(48.0%) good outcome, 19(38.0%) fair outcome and 7(14.0%) revealed poor outcome in terms of pain relieve. **Conclusion:** Present study concluded that lateral pancreaticojejunostomy is a safe and feasible technique for chronic pancreatitis treatment.

KEYWORDS: Chronic pancreatitis, Pancreaticojejunostomy, therapeutic endoscopy.

INTRODUCTION

Chronic pancreatitis (CP) is an inflammatory disease of the pancreas characterized by progressive fibrotic destruction of the pancreatic secretory parenchyma. Despite the heterogeneity in pathogenesis and involved risk factors, processes such as necrosis/apoptosis, inflammation or duct obstruction are involved. This fibrosing process ultimately leads to progressive loss of the lobular morphology and structure of the pancreas, deformation of the large ducts and severe changes in the arrangement and composition of the islets. These conditions lead to irreversible morphological and structural changes resulting in impairment of both exocrine and endocrine functions.^[1] Chronic pancreatitis has three debilitating features: pain, steatorrhea and diabetes mellitus. The principal aim in management of chronic pancreatitis is to alleviate pain, which is the main symptom of this disease, using one or more of the following strategies^[2], a) Reducing secretion (Enzyme therapy) and/ or decompress the Major Pancreatic Duct (MPD) [Lateral Pancreaticojejunostomy (LPJ)]; b) resecting the focus of chronic inflammatory disease, most commonly located in the head region of pancreas (Frey's procedure, Beger's procedure, Whipple's surgery, Distal pancreatectomy); and c) Interrupting the transmission of afferent neural impulses through neural ablative procedures like coeliac plexus block and thus ultimately improve the health status of the patient.

The etiological risk-factors associated with Chronic Pancreatitis are multiple and involve both genetic and environmental factors. Throughout this review the M-ANNHEIM classification system will be used, comprising a detailed description of risk factors such as: alcohol-consumption, nicotine-consumption, nutritional factors, hereditary factors, efferent duct factors, immunological factors and miscellaneous and rare metabolic factors. Increased knowledge of the different etiological factors may encourage the use of further advanced diagnostic tools, which potentially will help clinicians to diagnose Chronic Pancreatitis at an earlier stage.^[3] Proper management requires an accurate diagnosis, recognition of the modifiable causes of disease, assessment of symptoms and complications, treatment of these symptoms and complications utilizing a multidisciplinary team and ongoing monitoring for the effect of therapy and the occurrence of complications.^[4,5]

Surgical procedures remained less successful until the discovery of insulin, blood groups, and finally the possibility of blood donation. Throughout the centuries, the surgical approach went from radical resections to minimal resections or only drainage of the gland in comparison to an adequate resection combined with drainage procedures. Today, the well-known and standardized procedures are considered as safe due to the high experience of operating surgeons, the centering of pancreatic surgery in specialized centers, and optimized perioperative treatment.^[6] Previous study reported chronic pancreatitis associated with pancreatic ductal

dilation and intractable pain has been managed successfully with lateral pancreaticojejunostomy (LPJ). Excellent early results, defined by relief of pain and low postoperative morbidity and mortality rates have been documented in many reports. Patients with chronic pancreatitis frequently have comorbid medical conditions and other complications associated with chronic pancreatitis, continuing alcohol abuse or both which may influence the long-term benefits achieved by LPJ.

The high operative risk and late detection of pancreatic cancer led to proceeding more palliative techniques such as a bypass.^[7] In 1929, a preoperative diagnosed insulinoma was resected curatively by Roscoe Graham.^[8] After hearing about the resection of a neuroendocrine tumor, Whipple saw a reason in a more aggressive approach in patients with carcinoma of the ampulla of Vater and also described a two-step approach. First, he performed a cholecystogastrostomy and posterior loop gastrojejunostomy, followed by a partial duodenectomy, partial pancreatic head resection, and pancreatic stump occlusion weeks later.^[9] He was followed by Verne Hunt and Ridgway Trimble who independently performed a pancreatoduodenectomy in the same year. With findings of the importance of vitamin K and intraoperative blood transfusions, these high-risk methods became safer.

Assessment of outcome after procedures that provide ductal drainage for chronic pancreatitis is influenced by several variables.^[10] There are two types of surgeries practiced widely for chronic pancreatitis. Drainage procedures are undertaken in those patients with a dilated pancreatic duct, whilst resectional procedures are undertaken for inflammation. Drainage procedure in the form of LPJ is performed widely. Therefore aim of this study was to evaluate the effectiveness of Lateral Pancreaticojejunostomy in patient with chronic pancreatitis at our setting.

OBJECTIVES

General

- To get an effective procedure to relieve the signs and symptoms of chronic pancreatitis.

Specific

- To diagnose and select the patients for LPJ.
- To perform LPJ.
- To observe the outcome of LPJ (short time).
- To compare the outcome with pre operative signs and symptoms.

MATERIALS AND METHODS

Study design

Observational study.

Place of study

Department of Surgery, Dhaka Medical College Hospital, Dhaka.

Study periods

Twelve months from 06th June 2018 to 05th June 2019.

Study Population

All the patients of chronic pancreatitis.

Sample size

50 patients.

Sampling Technique

Sample was selected by consecutive sampling technique.

Selection Criteria**Inclusion criteria**

- Evidence of a dilated main pancreatic duct (8 mm or more) in USG/MRCP.
- Presence of pancreatic duct calculi.
- Failed medical treatment.
- Age above 18 years.

Exclusion criteria

- Critically ill patient.
- Stone impacted in head, uncinata process or ampulla of vater.
- Pancreatic malignancy.
- DM that could not be controlled even after proper insulin therapy.
- Age above 65 years.
- Pancreatic pseudocyst, Duodenal obstruction, Portal hypertension.
- Patients did not give consent.

Data collection procedure

Sample was selected by purposive sampling technique. Diagnosis was made on the basis of patient's statement,

statement of the witness, characteristic features of pain, clinical examination, USG and MRCP findings. After fulfilling the inclusion and exclusion criteria, patients were enrolled with unique ID. Subjects were briefed about the objectives of the study, risk and benefits, freedom for participating in the study and confidentiality. Informed consent was obtained accordingly. Patient was managed according to the feature of corresponding aetiology. Lateral pancreaticojejunostomy procedure was carried out in all the cases. Post operative follow up was documented during follow up period. Follow up period was 3 months after surgery. The pre-structured Case Record Form (CRF) was filled up by the study physician himself. The case definitions of operational variable were described. Patient data such as age, residence, occupation, clinical presentation etc were noted. This questionnaire was used for collection of information by interviewing patients. All the collected data questionnaire were checked very carefully to identify errors in collecting data.

Data analysis

Data processing work will consist of registration schedules, editing computerization, preparation of dummy table, analyzing and matching of data. After editing and coding, the coded data directly entered into the computer by using SPSS latest version. Data cleaning validation and analysis was performed using the SPSS/PC software and graph and chart by MS excel. The result was presented in tables in proportion. A "P" value <0.05 considered as significant.

RESULTS**Table 1: Demographic Characteristics of the Patients (n=50)**

Variables	Frequency	Percentage	p value
Age			
20-30 yr	5	10.0	0.503
31-40	22	44.0	
41-50	10	20.0	
50-60	13	26.0	
Mean+Sd	43.7±10.2		

In this study maximum numbers of patients (44.0%) were between 31-40 years age group, mean±SD age was

43.7±10.2 years. Middle to elderly aged patients were high in contrast to elderly age groups.

Table 2: Sex distribution of patient (sex) (n=50)

Sex	No.	Percentage
Male	28	56%
Female	22	44%

Male female ratio was 1.27:1.

Among total 50 patients number of male patients were 28 (56%) and number of female patients were 22 (44%).

Table 3: Distribution of respondents by clinical presentations (n=50)

Clinical presentations	Frequency	Percentage (%)
Abdominal pain	50	100.0
Nausea, Vomiting	12	24.0
Anorexia	23	46.0
Dyspepsia	15	30.0
Generalized weakness	44	88.0
Steatorrhoea	29	58%

In this study most common symptoms were abdominal pain, anorexia and generalized weakness (76.0%, 46.0% & 88.0% respectively). In this study all patients were conducted lateral pancreaticojejunostomy. Early post

operative outcome, measured by pain relief and postoperative morbidity and mortality, have been excellent; however, long-term follow-up and overall outcome has been less clearly defined in these patients.

Table 4: Investigations findings of chronic pancreatitis patients (n=50)

Investigations findings	Frequency	Percentage (%)
Presence of radio-opaque shadow in plain X-ray	40	80%
Dilated duct > 8mm in USG with evidence of inflammation	45	90%
MRCP findings of stone disease with dilated MPD	50	100%
Raised Serum amylase	05	10%
Raised CA-19-9	02	04%
Raised Blood Sugar	27	54%

Raised CA-19-9, with subsequent malignancy excluded.

consequently 100% and 90%. Raised CA-19-9, Serum amylase and raised blood sugar level was 4%, 10% and 54% respectively.

In this table opaque shadow in plain x-ray was in 80% patients, dilated MPD(>8 mm) in MRCP and USG was

Table 5: Preoperative assessment of glycemic status (Preoperative diabetic Patients=27)

Blood sugar level (mmol/l) (2HABF)	No of patients	Mean insulin dose
8-10	07	20 units
10-12	12	
>12	08	

27 patients were diabetic and getting insulin or oral hypoglycemics pre operatively. Mean insulin requirement was decreased slightly following surgery.

Moreover, 2 non diabetic patients developed DM postoperatively.

Table 6: Assessment of major symptomatic improvement/ deterioration at different follow-up time (n=50)

Follow up time	Frequency	Percentage (%)
Haematemesis, melaena	3	6.0
At 1 st follow-up (at 1 st month of operation)	Not clinical improvement of exocrine insufficiency	7
Haematemesis, melaena	0	0
At 2 nd follow-up (at 3 rd Month of operation)	Not clinical improvement of exocrine insufficiency	4
		8.0

In this table 8.0% patients developed pancreatic fistula & it was resolved by conservative management.

Table 7: Degree of pain sensation using Visual Analogue Score (VAS) (n=50)

VAS	Before surgery (With Drugs)		At first follow-up (With conventional analgesics)		At 2 nd follow-up (With conventional analgesics)	
	No	%	No	%	No	%
0-2	15	30.0	24	48.0	29	58.0
3-6	23	46.0	19	38.0	21	42.0
7-10	12	24.0	7	14.0	0	0
Mean Score	5.8		3.5		2.7	

All the patients had a period of hospital stay about 7-10 days post operatively. At first follow up, 9(18%) patients were rehospitalized, out of them 7(78%) were for recurrent attack of pain and 2(22%) were for development of abscess. At second follow up, only 3(6%) patients were admitted for recurrent attack of pancreatitis. In this study after treatment, patient's compliance and outcome of surgery was evaluated. Present study shows that, 24(48.0%) considered good outcome, 19(38.0%) fair outcome and 7(14.0%) revealed poor outcome in terms of pain relieve.

DISCUSSION

In this study maximum numbers of patients (44.0%) were between 31-40 years age group, mean±SD age was 43.7±10.2 years. Middle to elderly aged patients were high in contrast to elderly age groups.

Findings consistent with result of other studies. In a study conducted by Pezzili *et al*^[11] showed mean age of the 85 patients (65 men, 20 women) was 43.6 years (range, 24 to 73 years). In another study by Isaji S^[12] total 45 patients were followed post operatively. The mean age of the 45 patients (30 men, 15 women) was 35.7 years (range, 8 to 65 years age). The causes of chronic pancreatitis were alcohol abuse in 31 and unknown in 14. Thus, alcohol accounted for 69% of the cases.

Chronic pancreatitis is usually diagnosed based on results of imaging analyses or tests of pancreatic function. Although histologic evidence of fibrosis and tissue loss might be considered the most definitive diagnostic criteria, it is rarely available. In addition, similar changes in histologic features are observed in patients without symptoms of chronic pancreatitis, such as very elderly patients, those with diabetes or renal failure and those who smoke. These changes can result from normal "wear and tear" on the pancreas. Diagnosis requires recognition of the variety of symptoms (if present) and complications that constitute the syndrome^[13], in conjunction with appropriate imaging or functional tests. In early stages of disease progression, results from these tests can be negative or inconclusive. Investigation findings revealed that radio opaque shadow in plain x-ray was in 80% patients, dilated MPD(>8 mm) in MRCP and USG was consecutively 100% and 90%. Raised CA-19-9, Serum amylase and raised blood sugar level was 4%, 10% and 54% respectively.

In this study all patients were conducted lateral pancreaticojejunostomy. Early post operative outcome, measured by pain relief and postoperative morbidity and mortality, have been excellent; however, long-term follow-up and overall outcome has been less clearly defined in these patients. Study shows that clinical improvement of exocrine insufficiency was found in 22(75.0%) patients out of 29 pre operative exocrine insufficient patients at first follow-up and subsequently only 4(14%) patients found poor outcome. 27 patients were diabetic and getting insulin or oral hypoglycemics pre operatively. Mean insulin requirement was decreased slightly following surgery. Moreover, 02 non diabetic patients developed DM after surgery. 8.0% patients developed pancreatic fistula & it was resolved by conservative management. All the patients had a period of hospital stay about 7-10 days post operatively. At first follow up, 9(18%) patients were rehospitalized, out of them 7(78%) were for recurrent attack of pain and 2(22%) were for development of abscess. At second follow up, only 3(6%) patients were admitted for recurrent attack of pancreatitis. In this study after treatment, patient's compliance and outcome of surgery was evaluated. Present study shows that, 24(48.0%) considered good outcome, 19(38.0%) fair outcome and 7(14.0%) revealed poor outcome in terms of pain relieve.

In a study of Van der Gaag^[14] shows pain relief in immediate postoperative period was uniformly impressive. Many patients indicated the pain for which they sought medical attention was improved or absent early in the recovery period. Five patients developed postoperative complications for a morbidity rate of 5.9%. One required reoperation and adhesiolysis to relieve a jejunal obstruction.

Long-term pain control is an important outcome of surgery, were not possible in this study. So, it was not compared with other studies. Pain relief was classified as excellent in 26 (42%) and good in 16 (26%). This favorable response of 68% is comparable to that reported by Bradley (66%)^[15] and somewhat less than that of Greenlee and associates (82%).^[31] In an another study of Dite P^[16], overall health status was considered good in 15 (24%), fair in 19 (31%) and poor in 28 (45%) of 62 patients who were alive at the review. Furthermore, 22 patients were known to have died during the study period; 13 of these deaths were considered to be attributed directly to continued alcohol abuse, progression of chronic pancreatitis or late complications

of the operation. Of the 62 survivors, 26 (42%) continued to consume alcohol.

In this study after treatment, patient's compliance and outcome of surgery was evaluated. Present study shows that, 24(48.0%) considered good outcome, 19(38.0%) fair outcome and 7(14.0%) revealed poor outcome in terms of pain relieve. Similar observation was noted in Yin Z^[17] study where out of 62 patients, health status was characterized as good in 24%, fair in 31%, and poor in 45%. Alcohol abuse continued in 42% of patients, whereas narcotic use continued in 35%, insulin use continued in 23%, and pancreatic enzyme supplementation continued in 34%. Rehospitalization for recurrent attacks of pancreatitis and pain was necessary in 40% of patients. Six patients required subsequent operations for complications of chronic pancreatitis.

Little JM^[18] showed, twenty-five patients required rehospitalization for recurrent attacks of pancreatitis or persistent pain. They were routinely evaluated with computed tomographic scans; endoscopic retrograde studies were used selectively. Several authors have recommended endoscopic retrograde pancreatography to identify residual areas of ductal obstruction, particularly in the head of the gland. As indicated above, inadequate decompression of the head area appeared to be the most common source of recurrent attacks. In our patients, some had a dense stricture of the duct in the head with associated obstruction of side branches. Prinz and associates^[19] have reported some success after reoperation to decompress residual, dilated ducts and revision of the LPJ. Izbicki et al.^[20] have advocated pancreaticoduodenectomy for recurrent disease in the head, a formidable undertaking in the patient previously managed with LPJ. Pancreaticoduodenectomy as the initial approach is an option in the subset of patients in whom a long stricture of the main duct in the head of the gland is demonstrated after operation.

CONCLUSION

Chronic pancreatitis is a long-standing inflammation of the pancreas that alters the organ's normal structure and functions, ultimately hampered the quality of life. Therefore early and appropriate management is mandatory. LPJ is the surgery of choice for chronic pancreatitis patients with pain not relieved by NSAIDs, dilated MPD (>8mm), with or without MPD stones and no inflammatory mass in head region. Adequate MPD decompression is the key to successful surgery. Complete/ substantial Pain relief is seen in 60 to 80% patients; however the pain recurs as the years pass due to progression of the disease. Further follow up is required to assess long term pain relief following surgery.

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