

## Outcome of Chronic Pancreatitis with Special Reference to Surgical Intervention

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### Abstract:

**Background:** Chronic pancreatitis is characterized by progressive and irreversible damage of exocrine as well as endocrine functions of the gland that eventually results in significant impairment.

**Objective:** To study the outcome of optimum surgical management of chronic pancreatitis

**Methods:** A hospital based observational follow up study was undertaken among the patients attending surgical units of a tertiary care institute in Assam, who were diagnosed as chronic pancreatitis.

**Results:** Total 50 patients presenting with symptoms of chronic pancreatitis, confirmed by radiological and laboratory investigation were included in the study. Most of the cases were 41-50 years (32%) of age, with a male, female ratio of 7:3. Pain abdomen was the main complaint of each patient (100%), followed by nausea and vomiting in 66% patients. Majority of the patients had epigastric tenderness (38%) followed by tenderness on left hypochondrium. Out of 50 patients, 29 patients treated conservatively and where 6 patients had aggravated symptoms after initial recovery. So, 27 patients required surgical interventions. A systematic follow up of all patients done upto 12 months. It was found that all patients undergoing surgery recovered from abdominal pain, irrespective of the type of surgical procedure.

**Conclusion:** An integrated approach for correct diagnosis and planning early intervention is required for chronic pancreatitis.

**Keywords:** Chronic Pancreatic, Outcome, Surgical Intervention.

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### Introduction

Chronic pancreatitis is an irreversible condition of the pancreas characterized by chronic progressive pancreatic inflammation, fibrosis, and scarring resulting in loss of both exocrine (acinar) and endocrine (islet cells) [1]. The prevalence of chronic pancreatitis in the Asia-Pacific region had the high prevalence of chronic pancreatitis in South India, 114–200/100 000 population year [2].

The etiology of chronic pancreatitis is multifactorial, but heavy alcohol consumption is always being an important cause. The risk of the disease is present in patient with even a low or occasional exposure to alcohol perhaps due to CLDN2 gene mutation [3]. Other factors include chronic duct obstruction, trauma, pancreas divisum, cystic dystrophy of the duodenal wall, hyperparathyroidism, hypertriglyceridemia autoimmune pancreatitis and tropical pancreatitis. A mutation in SPINK1 gene also predisposes to

idiopathic pancreatitis. Pain is the primary manifestation of chronic pancreatitis. It is often dull and gnawing. Nausea and vomiting is common during attacks. Hallmark features are abdominal pain, Malabsorption, Malnutrition, Diabetes mellitus and pancreatic insufficiency.

Epidemiologically it has been seen that chronic pancreatitis at a younger age develop more to the active smokers as compared to the non-smokers. Tropical pancreatitis is a form of idiopathic pancreatitis that begins at a younger age and has been described in Kerala, Southern India as well as other developing countries in Asia, Africa and Central America [4]. The treatment of chronic pancreatitis requires an interdisciplinary approach involving the general practitioner, gastroenterologist, radiologist, and surgeon.

The choice of surgical procedure depends on the symptoms requiring palliation and the presence or

absence of pancreatic ductal obstruction [5]. Surgical outcome may vary with the different surgical procedures done for chronic pancreatitis.

#### Aims and Objectives:

To determine the outcome of surgical intervention of chronic pancreatitis.

#### Materials and Method:

**Study site:** The study was done in six surgical units of Surgery Department, Gauhati Medical College and Hospital, Guwahati, Assam.

**Type of study:** Hospital based observational follow up study.

**Sample Size:** A total 50 cases of chronic pancreatitis attending the Surgery Out Patient and Emergency department of Gauhati Medical College during the study period from 1st July 2018 to 30<sup>th</sup> June 2019 were enrolled.

#### Methods of Data Collection:

Informed written consent to participate in the study as well as for investigative procedures were taken from the participants. A pre-structured and pretested proforma was used to collect the baseline data. After admission to the hospital, thorough history taking and clinical examination was done in each case. For each participant, biochemical and radiological investigations were done and recorded; and the patients were managed accordingly. Detail intra-operative findings, operative procedure records were maintained.

Immediate post-operative outcome including complications and its management were also put into account. Patients were followed up at an interval of 2 weeks, 4 weeks, 6months and 12 months.

**Inclusion Criteria:** All Patients of chronic pancreatitis of age group 10-60 years irrespective of causative factors and patients with chronic pancreatitis and its sequelae were included in the study.

**Exclusion Criteria:** Patients with acute pancreatitis with its complications and sequelae were excluded from the study.

**Ethical Clearance:** Institutional Ethical Committee clearance was obtained by submitting the study protocol to the Ethical Committee of Srimanta Sankaradeva University of Health Sciences.

Statistical analysis was done using software SPSS 21.0 and Instat.

#### Results and Observations

This study included 50 patients suffering from Chronic Pancreatitis. Keeping all the factors in consideration, 29 patients were treated with medical or conservative management for a period ranged between 3 to 12 months; 23 patients were successfully treated and relieved from their symptoms. In 6 patients after initial period of recovery, presented with aggravation of symptoms and developed increased drug dependency. Surgical intervention was planned in 21 patients after initial evaluation along with those cases, failed with conservative approach. In 27 patients surgery was done.

The cases of our study group presented mostly within the age of 41-50 years 32% (n=16), followed by 51-60 years 26%(n=13). The youngest patient was 15 years old and the oldest was 60 years old. Out of 50 patients in our study, 70% (n=35) were male and 30% (n=15) female. Male to female ratio was 7:3.

**Table 1: Distribution of participants as per presenting symptoms and findings on abdominal examination**

Variables		Frequency (N=50)	Percentage (%)
Presenting symptoms	Pain abdomen	50	100
	Weight loss	15	30
	Jaundice	8	16
	Reduced appetite	28	56
	Steatorrhea	13	26
	Nausea/Vomiting	33	66
	Lump abdomen	6	12
	Irregular Bowel habit	15	30
Findings of abdominal examination	Epigastric tenderness	19	38
	Left hypochondrium tenderness	15	30
	Epigastric lump	6	12
	Palpable liver	5	10
	Palpable spleen	2	4
	Shifting dullness	3	6

Pain abdomen was the main complaint of each patient (100%). There was no definite time of onset. Mode of onset of pain was gradual in most

patients. Pain lasted for hours to days. In most of them medication was required for pain relief. Severity was moderate to severe as patient's

subjective experience. The duration of pain ranged between 6 months to 13 years. It was observed that 66% (n=33) of patients presented to the facility within 5 years of their symptoms, followed by 6 to 9 years of pain (22%) and 10 to 13 years (12%). Site of pain was epigastrium in 19 (38%) and left hypochondrium in 16 (32%) and in 15(30%) patients it was in both sites. Character of the pain was dull in all patients. In most patients' pain radiated to back. Pain was aggravated by fatty food,

after heavy meal or alcohol or a combination of the factors. In most of the patients medication was required for pain relief. Other co-morbidities associated are diabetes mellitus, Alcoholic liver disease and Peptic ulcer disease.

In this study, NSAIDS as an analgesic was given to all the patients. (Table 1)

#### Personal habits of the patients:

**Table 2: Personal habits among pancreatitis patients**

Personal habits		Frequency	Percentage
Alcohol consumption	Yes	32	64
	No	18	36
Smoking	Yes	10	20
	No	40	80
Tobacco chewing	Yes	6	12
	No	44	88
Betel nut chewing	Yes	5	10
	No	45	90
Duration of alcohol consumption (years), N=32	10 - 15	19	59
	16-20	11	35
	>20	2	6
Duration of smoking (years), N=10	5 - 10	3	30
	11 -15	3	30
	16 -20	4	40

There was history of alcohol consumption in 32 (64%) patients. The duration of alcohol consumption was for 10 to 15 years in 59% (n=19) patients, 16 to 20 years in 35% (n=11) patients and more than 20 years in 6% (n=2) patients. There was history of smoking cigarettes in 20% (n=10) patients. The duration of smoking cigarettes was 16 to 20 years in 40% (n=4) patients, for 16 to 20 years in 30% (n=3) patients and 5 to 10 years in 30% (n=3) patients. History of chewing tobacco and betel nut was 12% and 10% respectively. (Table 2)

#### Findings on investigation of blood and imaging:

In this study blood sugar was raised in 52% (n=26) patients, serum amylase and lipase elevated in 12% (n=6) of patients. Serum calcium found to be raised in 16% (n=8). Increased amount of faecal fat was detected in 30% (n=15) patients.

In radiological investigations, USG whole abdomen, endoscopic USG, CECT whole abdomen

and CEMRI with MRCP were done. Amongst them USG of whole abdomen and EUS findings were similar where increased echogenicity were seen in 66% (n=33) patients, calcification detected in 40%(n=20) patients, dilated main pancreatic duct (MPD) in 60%(n=30), atrophied gland was seen in 54%(n=27) patients and pseudocyst and dilated common bile duct (CBD) was detected in 8%(n=4), and 12%(n=6) patients respectively.

CECT (Contrast-Enhanced Computed Tomography) whole abdomen and CEMRI (Contrast-enhanced magnetic resonance imaging) with MRCP (magnetic resonance cholangio pancreatography) findings were similar where Heterogenous density was detected in 100%(n=50) patients, whereas dilated and irregular MPD, Gland atrophy, Parenchymal calcification, Focal MPD calcification, Head mass lesion and pseudo cyst were found as 60% (n=30), 54% (n=27), 40% (n=20), 22% (n=11), 14% (n=7) and 8% (n=4) respectively. (Table 3).

**Table 3: Findings on examination of blood and imaging**

Variables		Frequency (N)	Percentage (%)
Blood examination (N=50)	Raised blood sugar	26	52
	Raised serum Amylase	6	12
	Raised serum Lipase	6	12
	Abnormal GTT	5	10
	Raised serum bilirubin	8	16
	Raised ALKP	6	12
	Raised serum Calcium	8	16
	Abnormal CA 19-9	5	10
	Presence of Fecal fat	15	30
USG of whole abdomen (N=50)	Increased echogenisity	33	66
	Calcification	20	40
	Atrophy	27	54
	Dilated & Irregular MPD	30	62
	Pseudocyst	4	8
	Dilated CBD	6	12
CECT of whole abdomen	Heterogenous density	50	100
	Head mass lesion	7	14
	Dilated and irregular MPD	30	60
	Focal MPD calcification	11	22
	Parenchymal calcification	20	40
	Atrophy	27	54
	Pseudocyst	4	8

**Interventions:****Conservative treatment:**

Total 58% (n=29) patients were treated with medical or conservative management for a period ranged between 3 to 12 months; 23 patients relieved from their symptoms after conservative treatment.

In 6 patients after initial period of recovery, presented with aggravation of symptoms and developed increased drug dependency. Surgical intervention was planned in 21 patients after initial evaluation along with those cases who failed with conservative approach.

NSAIDS were given for pain relief initially, whereas narcotics were also used in some intractable cases. Exocrine insufficiency was treated with pancreatic enzyme supplementation. Diabetes was managed by life style modifications

or by oral hypoglycemics and insulin in some patients.

**Surgical Treatment:**

A total of 54% (n=27) patients have undergone surgery with 21 patients were decided for intervention after initial evaluation and 6 more after a failed conservative approach. The decision of the operative procedure was made keeping all the factors such as clinical examination, radiological findings into consideration. In the present study, out of 27 patients operated, 37%(n=10) patients were selected for Lateral Pancreaticojejunostomy (LPJ), Frey's procedure was done in 26% (n=7), LPJ with Choledocholithotomy was done in 15% (n=4), LPJ with Pseudocyst drainage in 12% (n=3), Frey's procedure with Choledocholithotomy in 7% (n=2) and Frey's procedure with Pseudocyst drainage done in 3% (n=1). (Table 4)

**Table 4: Distribution of patients as per the operative procedure done**

Procedure	No of patients (N=27)	Percentage
Lateral Pancreatico jejunostomy (LPJ)	10	37%
LPJ with Pseudocyst drainage	3	12%
LPJ with Choledocholithotomy	4	15%
Frey's procedure	7	26%
Frey's procedure with Pseudocyst drainage	1	3%
Frey's procedure with Choledocholithotomy	2	7%

**Intra-Operative Findings:**

Intra-operative identification of the pancreatic duct was done by simple palpation, if the duct is dilated. Aspiration and localization was necessary in

patients with duct diameter <10mm. If this maneuver fails to locate the duct, an incision over the body of the pancreas exposes the duct. Out of 27 cases undergoing surgery, in 48% (n=13) cases

the main pancreatic duct was dilated and there were calculi in the duct.

In 15% (n=4) patients pancreatic pseudocyst was encountered which were managed by draining into

stomach or jejunum. Inflammatory mass lesion was found in 25% (n=7) patients. (Table 5)

**Table 5: Intra-operative findings of patients undergoing surgery**

Intra-operative findings	Frequency (N)	Percentage (%)
Dilated main pancreatic duct	13	48
Inflammatory mass lesions	7	25
Fibrosis	8	26
Main pancreatic duct calculi	13	48
Dilated common bile duct	6	22
Pseudopancreatic cyst	4	15

The average time require for operative procedure was 3.5 hours (range-2–5 hours). There was no operative death. There were no immediate post-operative complications except for wound infection in 2 patients, which were managed with regular antiseptic dressing and judicious use of antibiotics. The average post-operative hospital stay was 13 days, ranging from 7 to 21 days.

#### Discussion:

Chronic pancreatitis is a benign, inflammatory disorder of the pancreas resulting in fibrotic replacement of the pancreatic parenchyma. The clinical presentation of CP is marked by severe, refractory abdominal pain. It often leads to progressive endocrine and exocrine failure which presents with type 3c diabetes mellitus and malabsorption.

In the present study majority cases were within the age of 41-50 years, 32% (n=16), followed by 51-60 years, 26%(n=13) unlike study done by Gawali A et.al.in Nagpur, India, where majority of patients were in the age group of 51-60-years (47.89%) followed by 41-50-years (21.12%) [9].

A majority of patients 64% (n=32) patients were alcoholic and majority 59% (n=19) had drinking history of 10 to 15 years, 35% (n=11). Study done by Gawali A et.al. found, 43.67% [9], G Farkas et al 86% [6], G Talamini et al (73%) [8] patients had history of consumption of alcohol.

In the present study, all patients presented with pain abdomen with moderate to severe intensity, site of pain was epigastrium (38%) and left hypochondrium (32%) or both (30%). Pain was dull, radiating towards back and aggravated by fatty food, after heavy meal or alcohol. Diabetes mellitus has been found as contributing factor in studies done by Bellin MD et.al. They found diabetes in 30-40% of their study participants in across sectional study [10]. In present study raised blood sugar was found in 52% patients.

Based upon the clinical presentation and investigational findings, 58% (n=29) patients were treated with medical or conservative management.

23 patients relieved of symptoms after treatment for 3 to 12 months, 6 patients presented with aggravated symptoms after a period of initial relief of symptoms. Surgery was planned in 27 patients, including the 6 failed conservative management patients. Out of 27 patients 37%(n=10) patients Lateral Pancreaticojejunostomy done 37%(n=10) patients, Frey's procedure was done in 26%(n=7), LPJ with Choledocholithotomy was done in 15%(n=4), LPJ with Pseudocyst drainage in 12% (n=3), Frey's procedure with Choledocholithotomy in 7%(n=2) and Frey's procedure with pseudocyst drainage done in 3%(n=1).

It was observed intra-operatively that 48% (n=13) patients had main pancreatic duct calculi and dilatation and Inflammatory mass lesion in 25% (n=7). Gawali A et.al. Found main pancreatic duct calculi 12.67% and pancreatic duct dilatation in 23.94% patients, which was lower than the present study [9].

Each patient was systematically followed up for at least 12 months after the operation to look for the treatment response and complications. All patients undergoing different surgical procedures had relieved of pain (100%). There was no difference with regard to pain relief between these groups of patients in duct pressure, duct diameter, length of the anastomosis and or operative procedure executed, or the extent of tissue removed from the pancreas. One patient having diabetes mellitus had normalized blood glucose level after surgery Frey's+cyst drainage. Patient had steatorrhoea, which became normal following LPJ.

#### Conclusion:

In the current study, which was done in the North-Eastern population of India found a satisfactory outcome of surgical procedures in managing chronic pancreatitis. Although patients of chronic pancreatitis can be managed with analgesics, opioids, pancreatic enzymes, hypoglycemic, some patients become intractable, impairing the quality of life. Surgical treatment should be considered in this group of patients. An early, reliable diagnosis of chronic pancreatitis requires integration of

clinical, laboratory and imaging procedures for making decision about the mode of intervention to be given.

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