

## Evaluation of Surgical management for Tropical Chronic Pancreatitis: An observational study

<sup>1</sup>Anuj Kumar Kundalia, <sup>2</sup>Mradul Kumar Sharma

<sup>1</sup>Associate Professor, Department of General Surgery, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh, India;

<sup>2</sup>Assistant Professor, Department of General Surgery, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India

### ABSTRACT:

**Background:** The present study was conducted for assessing patients undergoing Surgical management for Tropical Chronic Pancreatitis (TCP). **Materials & methods:** This study aimed to evaluate patients receiving surgical treatment for Tropical Chronic Pancreatitis (TCP). A total of 100 patients were included in the assessment. The focus was exclusively on individuals diagnosed with TCP, intentionally omitting cases of chronic alcoholic pancreatitis. Detailed clinical histories and physical examinations were carried out, along with standard hematological and biochemical tests for all participants. Each patient underwent a comprehensive preoperative evaluation before proceeding to surgical interventions. The collected data were documented in a Microsoft Excel spreadsheet and analyzed statistically using SPSS software. **Results:** The average age of the patients was 51.7 years, with 65 percent being male. The predominant clinical presentation included pain accompanied by steatorrhea, followed by jaundice, pseudocyst formation, and ascites. Surgical interventions were performed in the following proportions: Frey procedure in 61 percent of cases, Whipple procedure in 20 percent, Partington-Rochelle procedure in 7 percent of the patients. **Conclusion:** Frey's procedure was the most effective surgical intervention for treating TCP.

**Key words:** Tropical Chronic Pancreatitis, Surgery

**Corresponding author:** Mradul Kumar Sharma, Assistant Professor, Department of General Surgery, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India

**This article may be cited as:** Kundalia AK, Sharma MK. Evaluation of Surgical management for Tropical Chronic Pancreatitis: An observational study. *J Adv Med Dent Scie Res* 2015;3(4):233-235.

### INTRODUCTION

TCP is characterized as an early manifestation of chronic calcific non-alcoholic pancreatitis, predominantly observed in developing tropical regions. Notable characteristics include a younger age of onset, the presence of substantial intraductal stones, a rapid progression of the disease culminating in diabetes and/or steatorrhea, and an elevated risk of pancreatic cancer. Abdominal pain is the primary symptom, reported as the initial complaint by 30% to 90% of patients across various studies. This pain is typically intense, localized in the upper abdomen, radiating to the back, and often alleviated by bending forward or lying flat.<sup>1, 2</sup> As the disease advances, the intensity and frequency of the pain generally diminish, often resolving with the onset of exocrine insufficiency and/or diabetes. TCP is a progressive condition, and thus the pathological findings are contingent upon the disease stage at which the tissue sample is collected. Most pathological alterations associated with TCP have been documented through postmortem or surgical specimens, with several comprehensive reviews available. In terms of gross pathology, the size of the pancreas tends to decrease with the duration of the disease, potentially shrinking to the size of a little finger in its advanced stages. The pancreatic surface appears nodular, and the gland's shape becomes distorted, losing its typical lobular

structure. The consistency of the gland is generally firm, fibrous, and gritty; however, variations may occur in different pancreatic regions depending on the presence of fibrous tissue, cysts, or stones.<sup>3- 5</sup>Hence; the present study was conducted for assessing patients undergoing Surgical management for Tropical Chronic Pancreatitis (TCP).

### MATERIALS & METHODS

This study aimed to evaluate patients receiving surgical treatment for Tropical Chronic Pancreatitis (TCP). A total of 100 patients were included in the assessment. The focus was exclusively on individuals diagnosed with TCP, intentionally omitting cases of chronic alcoholic pancreatitis. Detailed clinical histories and physical examinations were carried out, along with standard hematological and biochemical tests for all participants. Each patient underwent a comprehensive preoperative evaluation before proceeding to surgical interventions. The collected data were documented in a Microsoft Excel spreadsheet and analyzed statistically using SPSS software.

### RESULTS

The average age of the patients was 51.7 years, with 65 percent being male. The predominant clinical presentation included pain accompanied by

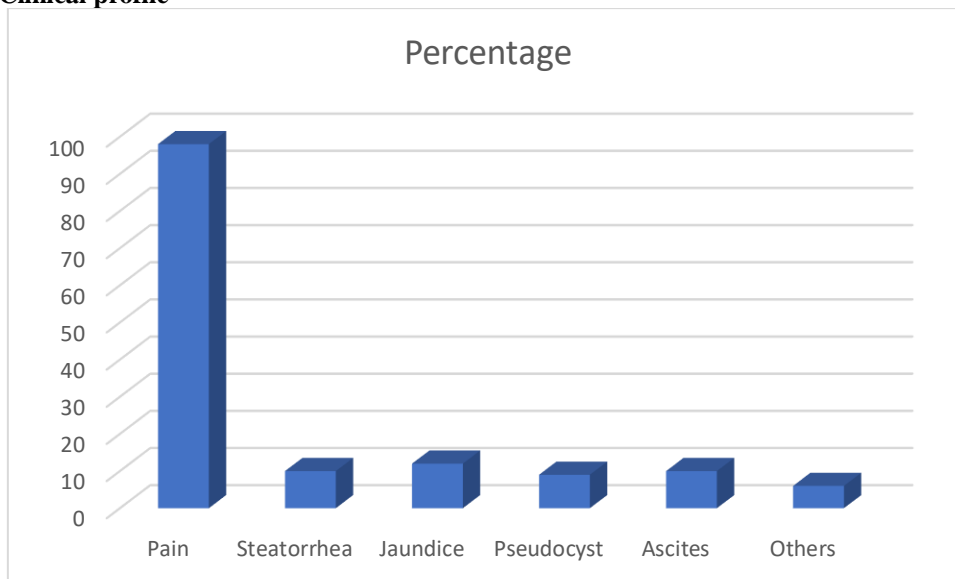
steatorrhea, followed by jaundice, pseudocyst formation, and ascites. Surgical interventions were performed in the following proportions: Frey

procedure in 61 percent of cases, Whipple procedure in 20 percent, Partington-Rochelle procedure in 7 percent of the patients.

**Table 1: Demographic data**

Demographic data	Number	Percentage
Mean age (years)	51.7	years
Males	69	69
Females	31	31
Rural residence	52	52
Urban residence	48	48

**Graph 1: Clinical profile**



**Table 2: Surgical procedure done**

Surgical treatment	Number	Percentage
Frey procedure	61	61
Whipple procedure	20	20
Partington-Rochelle procedure	7	7
Others	12	12
Total	100	100

**DISCUSSION**

Tropical calcific pancreatitis (TCP) represents a variant of chronic non-alcoholic pancreatitis that was first identified in the developing regions of the tropical world. Since its initial characterization in 1968, the clinical presentation of TCP has evolved significantly. Currently, it is predominantly observed in older individuals who exhibit milder symptoms compared to earlier cases. Furthermore, there is a lack of consensus regarding the prevalence of imaging findings such as calcifications, ductal dilation, and glandular atrophy among affected patients. Considerable advancements have been made in elucidating the etiopathogenesis of TCP. The previously suggested roles of malnutrition and cassava toxicity have been refuted, while limited research has explored the implications of micronutrient deficiencies and oxidative stress in the disease's development. Recent findings indicate that

genetic predispositions may play a crucial role in TCP. Various studies have identified that, instead of mutations in trypsinogen genes, variations in genes such as serine protease inhibitor kazal type 1, cathepsin B, chymotrypsin C, cystic fibrosis transmembrane conductance regulator, and carboxypeptidase A1 are associated with an increased risk of developing TCP. Additionally, these investigations have highlighted the mutational differences between TCP and chronic pancreatitis observed in Western populations.<sup>6-9</sup> Hence; the present study was conducted for assessing patients undergoing Surgical management for Tropical Chronic Pancreatitis (TCP).

The average age of the patients was 51.7 years, with 65 percent being male. The predominant clinical presentation included pain accompanied by steatorrhea, followed by jaundice, pseudocyst formation, and ascites. Surgical interventions were

performed in the following proportions: Frey procedure in 61 percent of cases, Whipple procedure in 20 percent, Partington-Rochelle procedure in 7 percent of the patients. Ramesh H et al, over a 7-year period, analyzed 91 patients with tropical pancreatitis who underwent operation for intractable pain. Univariate and multivariate analyses were performed to identify factors correlating with mortality, major complications, poor pain relief and associated malignancy. Patients with benign disease (group 1, n = 72) had longer survival than those with superimposed malignancy (group 2, n = 19). Pain relief was better in group 1 (59 patients compared with none, P less than 0.01). Age above 40 years, short duration of symptoms, mass lesions on ultrasonography and main pancreatic duct obstruction on endoscopic retrograde pancreatography were associated with a high risk of cancer. After reoperation major complications (four of ten) or death (three of ten) occurred more commonly than after primary procedures (seven of 81, P = 0.019 and five of 81, P less than 0.05, respectively). Poor pain relief in group 1 patients was more common after incomplete clearance of main duct stones (four of 13 versus three of 53, P less than 0.01) and after short length ductotomy (three of eight versus four of 58, P less than 0.01). Tropical pancreatitis has a high association with pancreatic adenocarcinoma. Wide ductotomy, stone clearance and drainage gave good symptomatic results in patients with benign disease. Overall results were poor in patients with cancer.<sup>10</sup>

Dana K Andersen et al established the current status of surgical therapy for chronic pancreatitis, recent published reports are examined in the context of the historical advances in the field. The basis for decompression (drainage), denervation, and resection strategies for the treatment of pain caused by chronic pancreatitis was reviewed. These divergent approaches have finally coalesced as the head of the pancreas has become apparent as the nidus of chronic inflammation. The recent developments in surgical methods to treat the complications of chronic pancreatitis and the results of recent prospective randomized trials of operative approaches were reviewed to establish the current best practices. Local resection of the pancreatic head, with or without duct drainage, and duodenum-preserving pancreatic head resection offer outcomes as effective as pancreaticoduodenectomy, with lowered morbidity and mortality. Local resection or excavation of the pancreatic head offers the advantage of lowest cost

and morbidity and early prevention of postoperative diabetes. The late incidences of recurrent pain, diabetes, and exocrine insufficiency are equivalent for all 3 surgical approaches. Local resection of the pancreatic head appears to offer best outcomes and lowest risk for the management of the pain of chronic pancreatitis.<sup>11</sup>

## CONCLUSION

Frey's procedure was the most effective surgical intervention for treating TCP.

## REFERENCES

1. Mohan V, Snehalatha C, Ramachandran A, et al. Plasma glucagon responses in tropical fibrocalculous pancreatic diabetes. *Diabetes Res Clin Pract* 1990;9:97-101.
2. Yajnik CS, Shelgikar KM, Naik SS, et al. The ketosis resistance in fibrocalculous pancreatic diabetes: clinical observations and endocrine metabolic measurements during oral glucose tolerance test. *Diabetes Res Clin Pract* 1992;15:149-56.
3. Mohan V, Ramachandran A, Vijaya Kumar G, et al. Insulin resistance in fibrocalculous (tropical) pancreatic diabetes. *Horm Metab Res* 1988;12:746-8.
4. Mehrotra RN, Bhatia E, Choudhury G. Beta cell function and insulin sensitivity in tropical calcific pancreatitis from North India. *Metabolism* 1997;46:441-4.
5. Mohan V, Ahmed MR, Ramachandran A, et al. Clinical profile of tropical pancreatic diabetes at Madras. In: Balakrishnan V, ed. *Chronic pancreatitis in India*. Trivandrum: Indian Society of Pancreatology, 1987:97-104.
6. Nagalotimath SJ. Pancreatic pathology in pancreatic calcification with diabetes. In: Podolsky S, Viswanathan M, eds. *Secondary diabetes: the spectrum of diabetic syndromes*. New York: Raven Press, 1980:117-45.
7. Nair B. Pathology of tropical calcific pancreatitis. In: Kumar N, Acharya SK, eds. *Tropical calcific pancreatitis*. Kerala: Roussel Scientific Institute, 1994:83-90.
8. Nair B, Latha P. Pancreas in chronic pancreatitis in India. In: Balakrishnan V, ed. *Trivandrum: Indian Society of Pancreatology*, 1987:115-20.
9. Schultz AC, Moore PB, Geevarghese PJ, et al. X-ray diffraction studies of pancreatic calculi associated with nutritional pancreatitis. *Dig Dis Sci* 1986;31:476-80.
10. Ramesh H, Augustine P. Surgery in tropical pancreatitis: analysis of risk factors. *Br J Surg* 1992;79:544-549.
11. Dana K. Andersen et al. The Evolution of the Surgical Treatment of Chronic Pancreatitis. *Ann Surg* 2010;251: 18-32