

CHRONIC CALCIFIC PANCREATITIS WITH MULTIVARIATE PRESENTATIONS - ROLE OF FREYS PROCEDURE AND ITS SHORT TERM OUTCOMES

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Abstract

Background: Chronic calcific pancreatitis(CCP) is an uncommon disease with reported annual incidence rates of 4 -14 per 1 lakh individuals. CCP may have variable presentations in each and every patient with multiple concomitant complications and can be addressed simultaneously along with Freys surgery without causing surgical burden and morbidity to the patient. There are very less studies on complicated presentations of chronic calcific pancreatitis and surgical outcomes. The aim of the study is short term follow up of multiple complicated presentation patients with Freys procedure and simultaneous other surgeries in one single operation and their prospective follow up on post op complications and outcome. **Materials and Methods:** After Ethical committee clearance, prospective observational study was conducted at a Tertiary care centre in Government Royapettah Hospital at Chennai India, in Department of surgical gastroenterology. Total no of patients included 6. All patients with only complex presentations are included in the study, such as chronic calcific pancreatitis along with pseudocyst in Tail of pancreas, Cholelithiasis, Distal common bile duct stricture with Choledocholithiasis and Forgotten MPD stent. Preoperative and Postoperative statistical analysis and followup outcome done for a period of 6 months. **Result:** All patients Preoperative and Postoperative characteristics and outcomes analysed. Out of 6 patients 2 patients had CCP with Cholelithiasis and 2 patients had CCP with pseudocyst and 1 patient had choledocholithiasis with Distal common bile duct stricture, and another 1 patient had forgotten MPD stent for 20 years. Median intra operative head size 48 mm and Median MPD diameter 11 mm and no malignant correlation was found in 6 months followup and in post operative histopathology. Mean pain score in Preoperative 8 and postoperative period 2, improvement noted in postoperative steatorrhoea and exocrine deficiency (100%) and symptoms of Diabetes and insulin requirements remained the same. Postoperative Pancreatolithiasis relapse remained 0 % in our followup. **Conclusion:** Freys Procedure in combination with other procedures is safe and feasible with acceptable outcome in terms of pain relief and recovery of pancreatic function, and long term pain relief if cessation of Alcohol and Smoking in post op periods strictly followed. In our followup no Malignant changes in post Freys procedure pts found, after analysing Intraoperative Main pancreatic ductal diameter and Pancreatic Head Diameter, however further long term followup is needed.

INTRODUCTION

Chronic pancreatitis (CP) is an inflammatory disease of pancreas which undergoes irreversible changes in the gland and ductal system with multiple intraductal and intra parenchymal calcification and fibrosis leading to both endocrine and exocrine impairment

with persistent pain and in long course development of pancreatic ductal adenocarcinoma.^[1]

Repeated acute episodes on the chronic phase of pancreatitis with glandular dysfunction leads to social and functional impairment in day to day life. It is an uncommon disease with reported annual incidence rates 4 -14 per 1 lakh individuals. Most

commonly patients presents with abdomen pain radiating to back, relieves on bending forward along with symptoms of exocrine and endocrine deficiency like steatorrhea, malabsorption, diabetes mellitus, and weight loss. Current guidelines recommend Contrast enhanced computer tomography, MRCP, Endo sonography, Biopsy to confirm the diagnosis.^[2] Treatment of CP remains still controversial, currently literature suggests conservative management at initial stages with analgesics, diet modification, pancreatic enzyme supplementation and smoking and alcohol cessation along with other lifestyle modifications, if failure in medical management observed, Endoscopic procedures and other modalities of therapies such as Endoscopic papillotomy with ductal dilatation, stent placement and stone removal to relieve ductal hypertension and celiac plexus block and other neuromodulation therapies. In spite of that 40-75% will require surgery. Many studies have quoted that earlier surgery within 3 years of symptoms is superior in reducing pain and pancreatic insufficiency and improves quality of life.^[3]

Common indications for surgery are Intractable persistent pain, symptoms of endocrine and exocrine deficiency, suspected malignancy and complications such as complex pseudo cyst, biliary and duodenal strictures, and failure of medical and endoscopic management. The main goal of surgical intervention is to treat effectively pain relief, preserve pancreatic parenchyma and function and reduce morbidity. Several techniques to treat CP include surgical decompression of pancreatic duct, resection of pancreatic parenchyma or both combined, pancreaticoduodenectomy, distal pancreatectomy and others. In our study we preferred Freys procedure as it combines both lateral pancreaticojejunostomy with limited head coring and has good short term and long term outcomes and associated with improved quality of life and less operation time, and low postoperative complication rate than other surgeries for CP. Hence our aim in this study is to represent multiple variable presentations with CP, and surgical outcomes Freys procedure combined with other Procedures and follow up outcomes.^[4]

MATERIALS AND METHODS

After Ethical committee approval, Government Royapettah Hospital, Tertiary care centre in Chennai, prospective study was conducted in Department of Surgical Gastroenterology between May 2023 to October 2023 year a 6-month prospective observational study on pts admitted with variable complications with chronic calcific pancreatitis and surgical outcome of the procedures performed. Total number of pts included in the study 6 pts, all are above 18 years old and with proper consent and clearance from ethical committee all were included for 6 monthly follow up and outcomes.

Pre operative clinical evaluation and Radiological investigation were done in all patients, All pts findings confirmed with the below mentioned parameters. Surgery was indicated based on CECT / MRCP evaluation in each pts. Out of 6 pts studied all of them had chronic calcific pancreatitis and 2 pts had Cholelithiasis with stone size 10 mm, one pt had distal CBD stricture with CBD dilated upto 20 mm with sludges, and one pt had forgotten paediatric main pancreatic duct stent with encrusted calcifications for 20 years and another 2 pts had pancreatic tail pseudo cyst of average 5 cm size with wall thickness of 8 mm. All pts serum amylase evaluated preoperatively and on post op Day 3 and day 5 for drain fluid Amylase.

Surgical technique: All pts underwent open surgery (Freys procedure + other surgeries) under General anaesthesia, with Chevron incision peritoneal cavity entered and gastrocolic ligament opened and pancreatic capsule reached, Kocherisation of duodenum done for pancreatic head and vascular control. Needle aspiration of pancreatic duct confirmed and laid open longitudinally pancreatic head to tail and pancreatic duct stones removed, as pancreatic head is the pacemaker of CP, head coring done for all cases, Roux limb jejunum prepared 25 cm from duodenum-jejunal flexure and divided with 60 blue 3.6 mm stapler and distal Roux limb through transmesocolic way reached upto pancreas and jejunal loop laid open longitudinally and side to side pancreaticojejunostomy done in single layer with 2-0 prolene, roux en y jejuno jejunostomy done 50 cm distal to PJ (pancreaticojejunostomy) Anastomosis. Drain kept at PJ site and day 3 and day 5 Drain fluid amylase analysed for PJ Leak/ Fistula and graded according to ISGPS (International study group on pancreatic surgery) guidelines and treated accordingly.

Apart from above mentioned Freys procedure, pt with Cholelithiasis (2 pts) underwent open cholecystectomy and one pt with distal CBD stricture underwent cholecystectomy with diamond shaped choledochoduodenostomy Gledman technique with 3-0 vicryl sutures, 2 pts underwent Frey's procedure with opening and draining of pseudocyst with cyst wall jejunal anastomosis, by slight modifications in tail with LPJ and taking bites in the pseudo cyst wall and including in PJ anastomosis with 2-0 prolene, and another one pt known case of chronic pancreatitis since 10 years of age and had Pancreatic stent done and forgotten for 24 years had Freys procedure and MPD STENT removal.

Statistical Analysis: Descriptive statistics were reported in terms of variable nature, qualitative analysis in terms of percentages and quantitative analysis in terms mean, median and standard deviation with standard statistical software.

RESULTS

All patients Preoperative and Postoperative characteristics and outcomes analysed. Out of 6 patients 2 patients had CCP with Cholelithiasis and 2 patients had CCP with pseudocyst and 1 patient had choledocholithiasis with Distal common bile duct stricture, and another 1 patient had forgotten MPD stent for 20 years. Median intra operative head size 48 mm and Median MPD diameter 11 mm and All pts postoperative histo pathology reported as chronic calcific pancreatitis and none reported malignant (0%) in our study even with ductal diameter and head size measurement with inflammatory mass. In short term follow up with radiological investigations no abnormalities of malignant change detected, may need a long term followup. Mean pain score in Preoperative period 8 and postoperative period 2, improvement noted in postoperative steatorrhoea and exocrine deficiency (100%) and symptoms of Diabetes and insulin requirements remained the same

(0%). Postoperative Pancreatolithiasis relapse remained (0 %) in our followup., in earlier surgical outcome one pt with Cholelithiasis had Type A pancreatic leak on Day 5 and was discharged with drain on pod 8 and was managed with high protien diets and managed conservatively and on follow up DT Removed on 20 th POD , and pt was doing well on further followup. 3 Pts with surgical site wound infection recovered with regular dressings on followup. Morbidity was Classified as per clavien dindo classification. Pain score assessment was done with visual analog pain scale and graded preoperativly and postoperatively. All pts had improvement in pain score post operatively, exocrine function recovered fully, no pts complained of steatorrhoea and malabsorption in post operatively, endocrine deficiency with diabetes mellitus remained the same on our short term follow up and may need long term analysis. No mortality (Clavien dindo 5) was recorded on short term follow up in our study, none of them required reintervention.

Table 1: Details of patients - pre op characteristics

| Patient numbers | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------------------|---------|---------|---------|---------|---------|------------|
| Age | 56 | 60 | 50 | 56 | 33 | 34 |
| Gender | Male | Male | Male | Male | Male | Male |
| Alcoholism > 5years | + | + | + | + | + | + |
| Smoking > 5 years | + | + | + | + | - | - |
| Diabetes | + | + | + | + | + | + |
| BMI | 24 | 23 | 19 | 23 | 21 | 24 |
| Diagnosis time duration | 6 years | 5 years | 7 years | 8 years | 6 years | 20 years |
| Steatorrhoea | + | + | + | + | + | + |
| Persistent Abdomen pain | + | + | + | + | + | + |
| pancreaticolithiasis in MRCP | + | + | + | + | + | + |
| MPD size | 12 mm | 10 mm | 8 mm | 10 mm | 12 mm | 14 mm |
| Idiopathic | - | - | - | - | - | - |
| IgG4 related | - | - | - | - | - | - |
| PRE OP PAIN SCORE/ VAS | 8 | 8 | 8 | 8 | 8 | 8 |
| ERCP/ PD STENT | - | - | - | - | - | 8 mm stent |
| Celiac plexus block | + | - | + | - | - | + |
| CP with Cholelithiasis | - | + | - | - | + | - |
| CP with Distal CBD Stricture | + | - | - | - | - | - |
| CP with Tail pseudocyst | - | - | + | + | - | - |
| CP with forgotten MPD STENT | - | - | - | - | - | + |
| Preop Ca19.9 | 19.38 | 21.4 | 16.2 | 18.1 | 22.43 | 11.22 |
| Preop serum AMYLASE | 46 | 62 | 34 | 56 | 48 | 42 |
| Postop DT Amylase -POD 3 | 23 | 14 | 16 | 22 | 24 | 17 |

Table 2: Operative characteristics and surgical complications

| Variables | Values |
|--|---------|
| Pancreatic head size intraop median | 48 mm |
| pancreatic duct diameter | 11 mm |
| Operative time | 240 min |
| Intraop bleeding/ blood loss median | 150 ml |
| Hospital stay average | 8 days |
| Pancreatic fistula | 1 pt |
| wound infection | 3 pts |
| portal vein thrombosis | 0 |
| Upper GI bleeding | 0 |
| Reintervention | 0 |
| Mortality rate | 0 |
| Clavien Dindo type 5 | 0 |
| Post op Drain fluid Amylase on POD 3 median (IU) | 19.5 |

Table 3: Follow up outcomes

| Follow up median time | 6 months |
|----------------------------|----------|
| post op new onset Diabetes | 0 pts |

| | |
|--|-------|
| Insulin replacement requirement | 0 pts |
| Pancreatic enzyme supplementation needed in post op period | 0 pts |
| Exocrine pancreatic dysfunction improvement | 100 % |
| Post op pain score median | 2 |
| Pancreatolithiasis relapse | 0 % |
| Pancreatic malignancy in HPE | 0 % |
| Pancreatic malignancy in short term follow up | 0 % |

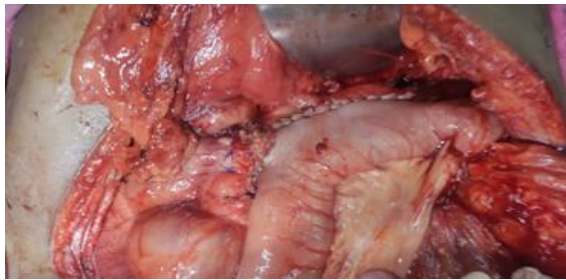


Figure 1: Completed Roux en y longitudinal pancreaticojejunostomy

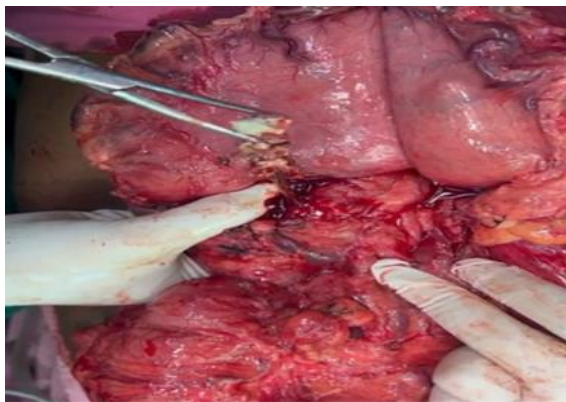


Figure 2: pancreatic stones with forgotten PD stent



Figure 3: CECT Abdomen showing calcific pancreatitis - multiple intra ductal and parenchymal stones.



Figure 4: CECT showing multiple intraparenchymal and intraductal stones with pseudocyst of size 4.3*3.7 c in tail of pancreas

DISCUSSION

Current guidelines suggest that surgery is superior to endoscopic therapies in pain relief and to preserve pancreatic function.^[5] Overall in our study we found combined FREYS surgery is a safe procedure with 0 % mortality in short term follow up, but long term has to be analysed. Pain control was reached in all patients and 60 % improvement in visual analogue score.^[6] IN our study we found long term alcoholism more than 5 years is recognised as leading cause of chronic pancreatitis (100%) with additive effect if chronic smoker (60%).^[7] In the last decades idiopathic pancreatitis is also increasing. According to Yadhav et al and shah et al alcohol consumption is related to more aggressive inflammatory response with increased morbidity, hospital length of stay, and post op complications, as we couldn't find in our short term followup as all pts are chronic alcoholism as etiology.^[8] Pain control is key factor in these patients as consuming alcohol and tobacco may aggravate pain score in these pts, hence it should be counselled to stop. One pt had grade A Biochemical leak and was managed conservatively with high protein diets, and steatorrhea improved in all pts, none of them needed pancreatic enzyme replacement in our study.^[9] Long term followup is needed to identify malignancy after freys procedure, needs further analysis.^[10]

Main limitations of our study is short term follow up and small sample size and our strength is Various Complicated presentations of chronic calcific pancreatitis and combined freys procedure with other surgeries and short term outcomes.^[11,12]

CONCLUSION

According to our data Freys procedure remains safe and feasible with acceptable outcomes in terms of pain relief and pancreatic function. For long term pain control post Freys procedure Alcohol and Tobacco should be stopped as done in our study.

Freys procedure can be combined with other procedures if concomitant complications of chronic pancreatitis persists, and can be modified for communicating tail pseudo cyst with slight modifications in Freys procedure. However in terms malignancy in chronic pancreatitis our short term study with duct and head mass analysis and post op Histopathology and on follow up Radiology in post Freys procedure pts, couldn't find any malignant lesions in these pts, and may need a long term followup.

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