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Groove pancreatitis: A rare case series

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Abstract

Groove pancreatitis (GP) is a rare type of segmental chronic pancreatitis that affects the anatomical area between the pancreatic head, the duodenum, and the common bile duct, called - "the groove area". It remains largely an unfamiliar entity to most physicians and is often misdiagnosed as pancreatic malignancy or an autoimmune pancreatitis. We report three cases diagnosed as GP and in our department and their management. The first and second patient had recurrent episodes of abdomen pain and vomiting, while the other one was asymptomatic with steatorrhea. The second and third patients had history of long-standing alcohol intake. First two cases underwent pancreatico-duodenectomy for intractable recurrent pain and other patient is doing well with conservative management.

Keywords: PD groove, pancreatitis, pancreatico-duodenectomy, abdominal pain

Introduction

Becker^[1] first used the German term 'Rinnenpankreatitis' to describe segmental pancreatitis of the groove area and this was later translated into groove pancreatitis (GP) by Stolte *et al.*^[2]. GP is also known as para-duodenal pancreatitis^[3], periampullary duodenal wall cyst, cystic dystrophy of heterotopic pancreas, pancreatic hamartoma of duodenum and myoadenomatosis. Stolte *et al.* classified groove pancreatitis into a pure form, in which scarring is localized to the groove area and a segmental form, in which scarring extends to the dorso-cranial portion of the pancreatic head^[2]. Due to its rarity, the incidence of groove pancreatitis is not clearly known, but it accounts for 19.5–24.4% of pancreatico-duodenectomies performed to treat chronic pancreatitis^{2,4}. Differentiation between GP and pancreatic malignancies are difficult before operation. However, with increased understanding in the radiological findings, preoperative diagnosis is often possible. In this article, we present three cases of GP diagnosed radiologically in our unit over a 3-year period with a brief review of its pathogenesis and management.

Case Reports

Case 1: 40 years male presented with recurrent episodes of severe upper abdominal pain and intermittent vomiting for past 1 year. There was history of sitophobia but no steatorrhea, jaundice, anorexia, weight loss or diabetes. Examination revealed no features of malignancy. Amylase and CRP was raised. CECT scan abdomen was suggestive of GP (Figure.1).

Case 2: 40 years male with history of ethanol abuse, smoking with recurrent episodes of upper abdominal and back pain was diagnosed to have chronic pancreatitis. Patient was on conservative treatment now presented with recurrent pain even with abstinence from alcohol and lost 10kg weight. Upper GI endoscopy showed edematous, erythematous duodenal mucosa and CECT abdomen showed multiple small cysts in head of pancreas cysts compressing Pancreatico-duodenal groove suggestive of GP.

Case 3: 37 years male, a churn alcohol and smoker presented with activity related short lasting occasional chest pain. No history of abdominal pain, but there was occasional steatorrhea and weight loss of 3 kg over two months. Abdomen was unremarkable and no features of malignancy. Based on USG, OGD scopy and CECT, he was diagnosed to have GP. CA19-9 and CEA levels were within normal limits in all the three patients. Since there was strong suspicion of pancreatic head malignancy, first two patients underwent endoscopic

ultrasound (EUS) guided biopsy which were negative.

First two cases underwent Whipple's pancreaticoduodenectomy for intractable recurrent pain and other patient doing well with conservative management. Detailed histopathology revealed nodular pancreatitis with inter-lobular fibrosis, pancreatic duct dilatation with peri-ductal fibrosis, showing marked Brunner's gland hyperplasia (Figure.2).

Discussion

GP is a variant of chronic pancreatitis characterized by extensive fibrosis and inflammation in the pancreato-duodenal groove. GP mainly affects middle-aged men with a history of long term alcohol abuse. Classical symptoms include recurrent episodes of upper abdominal pain, early satiety, nausea, vomiting and weight loss mainly due to duodenal obstruction. Rarely, jaundice can occur when there is common bile duct obstruction³. Many mechanisms have been proposed regarding the pathogenesis of GP. Increased viscosity of pancreatic juice due to excessive alcohol consumption and/or smoking, leads to calcification of the pancreatic duct. Pancreatitis in the groove area might arise due to impaired pancreatic juice outflow. Thus, the pancreatic secretion via the Santorini's duct is directed towards the body of the pancreas, to Wirsung's duct, which forms an acute angle, causing interference with the flow and an accumulation secretion leading to pseudocyst formation (Flow chart.1). Other causes of GP are incompetent minor papilla, anatomic disruption, pancreatic heterotrophs in duodenal wall, duodenal ulcers and biliary tract disease⁵.

Peripancreatic malignancy must be in mind as a differential diagnosis of groove pancreatitis. Other differential diseases include autoimmune pancreatitis and duodenal hamartoma⁶.

After eliciting proper history and thorough clinical examination, ultrasound scan of abdomen and upper GI endoscopy are the first line investigations. Increased thickness of the duodenal wall and stenosis of the lumen, with a hypoechoic lesion between the pancreas head and the duodenum are the features of GP in ultrasound scan. Upper GI endoscopy often shows an inflamed

and polypoid duodenal mucosa with stenosis of the duodenal lumen⁷.

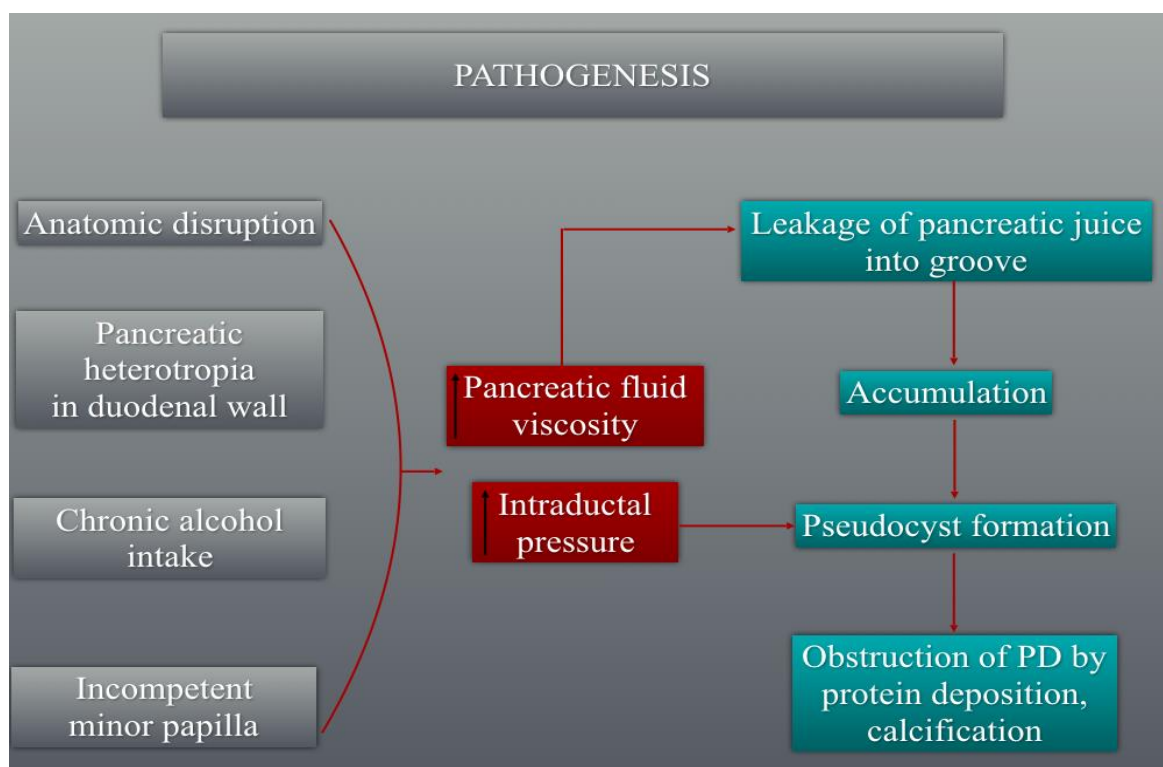
CECT scan abdomen is a sensitive investigation to differentiate GP from pancreatic head malignancy. Findings that differ from those of pancreatic carcinoma are as follows: groove pancreatitis appears as a sheet-like mass, whereas pancreatic carcinoma manifests as a round irregular mass. Stenosis of the bile duct is smooth and long in GP, but abrupt and short in pancreatic cancer. Cystic lesions are more often present in the duodenal wall in GP than in pancreatic carcinoma. However, arteries in pancreatic head lesions are often encased in pancreatic carcinoma⁸.

Recently, Kalb *et al.* achieved a diagnostic accuracy of 87.2% for GP using three strict MRI criteria: focal thickening of the second duodenal portion, an abnormally increased enhancement of the second duodenal portion and cystic changes in the region of the accessory pancreatic duct⁹.

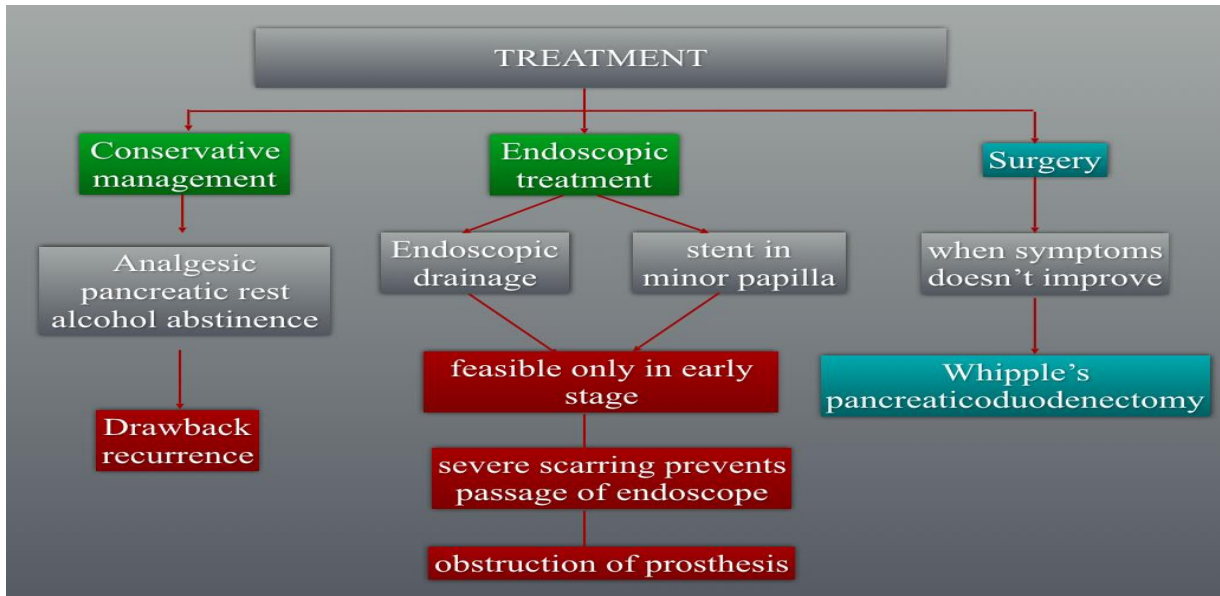
ERCP and EUS guided biopsy can help, although its usefulness is limited if the cancer is small and does not invade the duodenal mucosa. The presence of Brunner's gland hyperplasia is more characteristic of GP and is usually absent in pancreatic cancer¹⁰.

There are three therapeutic options for GP: (a) conservative, (b) endoscopic management and (c) surgery (flow chart.2). Conservative measures includes analgesics, pancreatic rest and abstinence from alcohol and are usually successful at treating the initial symptoms but may not be long-lasting. Isayama *et al.* reported the treatment of GP by endoscopic stenting of the minor papilla, but the long-term clinical course remains obscure¹¹.

Surgery is indicated when symptoms do not improve or when there is difficulty to distinguish GP from pancreatic carcinoma. Surgical procedures comprise Pancreatico-duodenectomy and Pylorus-preserving pancreaticoduodenectomy. In a study by Rahman *et al.*, body weight increased and chronic abdominal pain was relieved in all patients who underwent pancreaticoduodenectomy¹².



Flow Chart 1: Schematic representation of pathogenesis of Groove Pancreatitis



Flow Chart 2: Treatment algorithm for Groove Pancreatitis

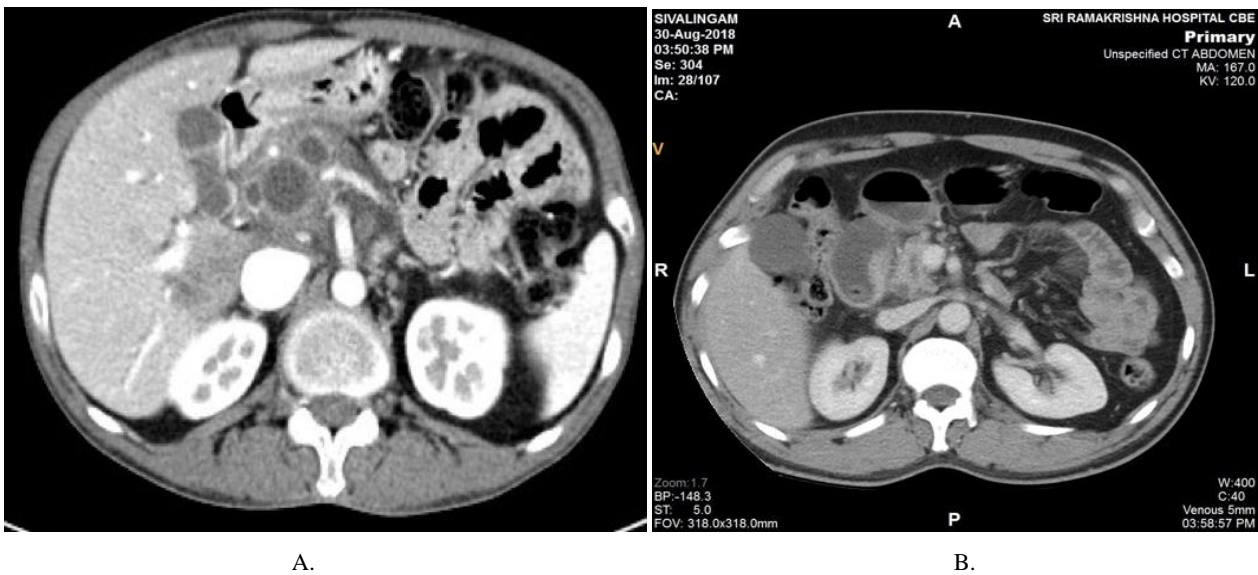
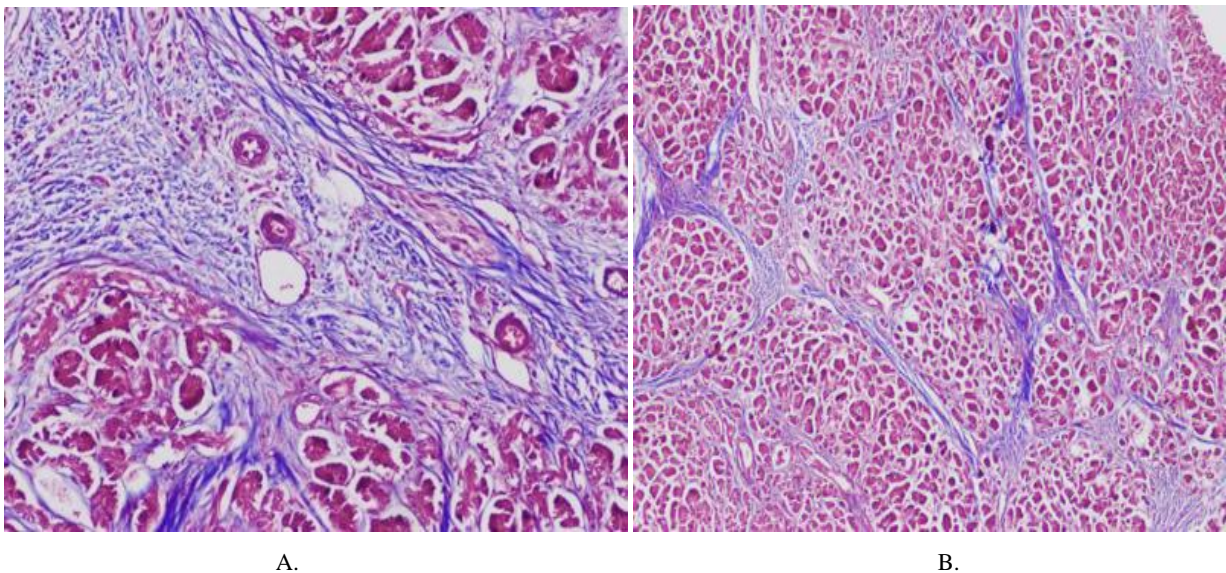


Fig 1: CECT abdomen showing a) multiple small cysts in the head of pancreas, compressing the pancreatico-duodenal groove. b) thickening of medial duodenal wall.



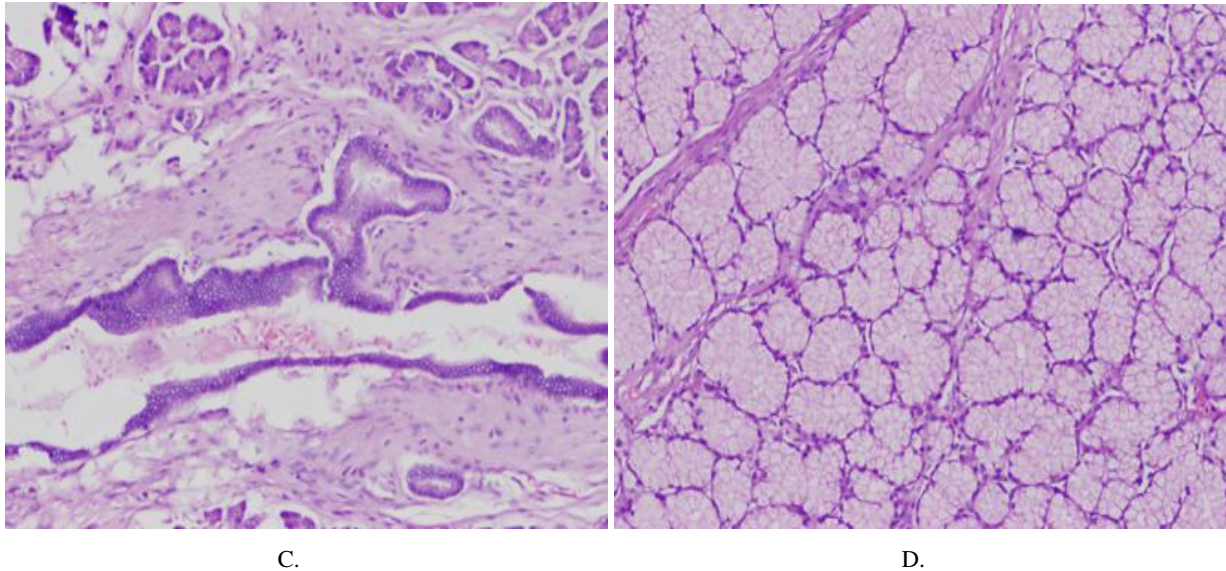


Fig 2: a) Histo-pathological examination showing nodular pancreatitis- Masson's Trichrome x 100, b) inter lobular fibrosis-Masson's Trichrome x 100, c) Pancreatic duct dilatation with peri ductal fibrosis- H&E X100, d) marked Brunner's gland hyperplasia- H&E X 100.

Conclusion

Even though GP can be managed successfully with abstinence from alcohol, Pancreatico-duodenectomy can be safer option for GP patients with intractable pain affecting quality of life, in experienced hands. To make the surgical community aware of this rare condition that presents certain diagnostic and management challenges.

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