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## Occult splenic rupture in a case of chronic calcific pancreatitis with a brief review of literature



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## ABSTRACT

**INTRODUCTION:** Splenic rupture in chronic pancreatitis is a life threatening rare complication. The anatomical proximity of the pancreas with the spleen and the pathophysiological process in acute and chronic pancreatitis form the basis of this dreaded complication.

**PRESENTATION OF CASE:** We cite the case of a young male previously undiagnosed with chronic pancreatitis presenting with atraumatic splenic rupture. Definitive diagnosis was made by contrast enhanced computed tomography of the abdomen, intra operative findings, and histopathological examination of the splenectomy specimen.

**DISCUSSION:** The splenorenal ligament forms the main anatomic proximity between the pancreas and the spleen. A few pathophysiological mechanisms though suggested are incompletely understood. splenic vein thrombosis, intrasplenic pseudocysts, splenic rupture, infarction, necrosis, splenic hematoma, and severe bleeding from eroded splenic vessels are the complications noted of which splenic rupture is the second most common following splenic vein thrombosis forming 36% of the complications noted. Chronic pancreatitis as an etiology of occult splenic rupture is rare and forms 8.27% of cases; commonest causes being neoplastic and infectious. The diagnosis is based on clinical and radiological findings and the management is predominantly surgical.

**CONCLUSION:** High clinical suspicion on the part of the treating physician and the emergency team is essential to the management of atraumatic splenic rupture. The increasing understanding of the pathophysiology and presentation of splenic complications in pancreatitis may alert the index physician to these fatal complications.

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## 1. Introduction

Splenic rupture is a very rare complication of chronic pancreatitis with approximately 65 reported cases in literature. We report a case of a splenic rupture in a patient not previously diagnosed with chronic pancreatitis. The case highlights the importance of a high index of suspicion in such patients and prompt adequate evaluation for diagnosis.

## 2. Presentation of case

A 25 year old male presented with one day history of pain in left upper abdomen associated with left shoulder pain with no antecedent trauma. He had an episode of similar pain one week back which subsided with analgesics. He consumed moder-

ate amounts of alcohol occasionally with history suggestive of acute episode of mild pancreatitis a year ago, last alcohol consumption being 2 months back. On examination he was tachycardic and pale. Abdomen appeared distended with mild guarding in epigastrium and left hypochondrium.

Initial investigations showed haemoglobin of 8.6 mg/dl with normal coagulation profile. Amylase and lipase was normal. Contrast enhanced CT of abdomen and pelvis showed chronic calcific pancreatitis, splenomegaly with perisplenic hematoma and hemoperitoneum. On emergency midline laparotomy about 2.5l of blood was found in the peritoneal cavity with clots. Spleen was found to be adhered to the tail of pancreas with a ruptured sub capsular hematoma (Fig. 1). A small clot was found in the lesser sac with the pancreas being unremarkable. Splenectomy with a thorough peritoneal lavage was done. Post-operative period was uneventful. There was no evidence of exocrine deficiency in the patient. Histopathological examination of the spleen specimen showed features compatible with rupture; parenchyma had expanded red pulp. In addition the capsular surface showed fibrino-purulent exudates and ruptured hematoma (Fig. 2).

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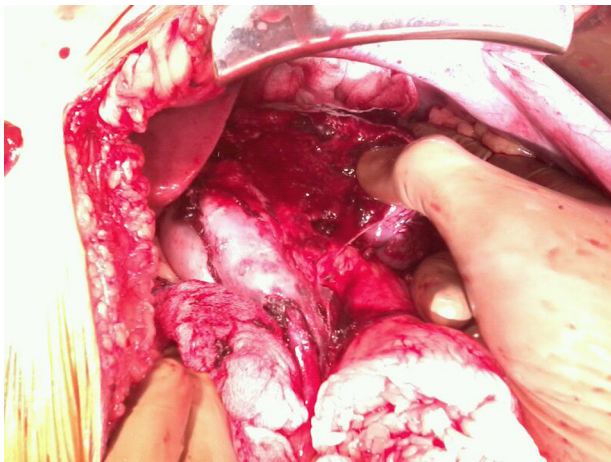


Fig.1. Intraoperative image.

### 3. Discussion

The pancreas and the spleen lie in close proximity and splenic complications may occur during the course of acute or chronic pancreatitis. The complications described include splenic vein thrombosis, intrasplenic pseudocysts, splenic rupture, infarction, necrosis, splenic hematoma, and severe bleeding from eroded splenic vessels. These complications are rare and their pathophysiology incompletely understood. The anatomical relationship of the pancreas and the spleen leave the latter vulnerable to injury and is a major contributor to the pathophysiology. The tip of the pancreatic tail reaches the splenic hilum and along with the splenic vessels is enclosed within the two layers of the splenorenal ligament. The leaked pancreatic fluid rich in enzymes thus may gain direct access to the splenic hilum and capsule dissecting along the splenic vessels. The fluid involvement may be perisplenic, intrasplenic or both. Thus owing to the anatomical relationship the splenic complications are more prone to occur in disease involvement of the distal pancreas [1]. The proposed mechanisms of injury include (a) splenic vein thrombosis which is frequently initiated by local, pro-thrombotic, inflammatory changes in the vascular endothelium, extrinsic splenic vein compression by pseudocysts, relatively low pancreatic perfusion, or later in the course of disease pancreatic fibrosis (b) dissection of the pancreatic pseudocyst into the splenic hilum (c) tryptic erosion at the splenic hilum (d) perisplenitis by recurrent episodes of acute pancreatitis or chronic pancreatitis fixing the spleen leaving it liable to injury by minor trauma [2,3].



Fig.2. Splenectomy specimen.

The term spontaneous rupture is often used in reference to splenic rupture in case of chronic pancreatitis. As defined by Hyun et al. this term is reserved for a healthy spleen which has ruptured without overt trauma. The Orloff and Peskin's criteria also exclude the rupture in chronic pancreatitis from being termed as spontaneous. The terms pathologic rupture or occult rupture better describe the rupture in a case of chronic pancreatitis. The term atraumatic rupture of the spleen encompasses both these entities. The most common cause of pathologic rupture of spleen is neoplastic followed by infectious among which commonest being infectious mononucleosis; and malaria in the tropics. Chronic pancreatitis is a rare cause of pathologic rupture [4,5]. QBC for MP for the patient in our case report is negative nor did the histopathological examination of the specimen reveal any features of malarial rupture or infectious mononucleosis like malarial pigments in macrophages and reactive lymphoid hyperplasia, respectively.

In a medico-surgical series of 500 patients with chronic pancreatitis followed prospectively for 7 years 2.2% had splenic complications. 0.8% of the series or 36% of the patients with splenic complications had rupture of the spleen. The most common splenic complication was splenic vein thrombosis followed by rupture. Also rupture of the spleen is relatively more common in chronic pancreatitis than acute pancreatitis. This study concurred that splenic complications occur early in the course of chronic pancreatitis (mean duration 2 years), are rare and are favored by splenic vein occlusion and pseudocyst or necrosis of the pancreatic tail. Surgical treatment is usually required. Alcohol was the etiology in 84.6% of cases and all patients with splenic complications in this series were men (median age 39) [2]. Approximately 65 cases of splenic rupture in chronic pancreatitis have been reported in literature forming 8.27% of occult splenic rupture [5]. A recently published systematic review of 613 cases of splenic rupture without risk factors or previously diagnosed disease reported 5 cases due to pancreatitis, 2 with pancreatic pseudocyst, 2 with splenic vein thrombosis and 1 splenic artery pseudoaneurysm [6,7].

Clinical features at presentation include abdominal pain radiating to the left shoulder (Kehr's sign), tachycardia, left sided pleural effusion or more dramatic presentation of exsanguination. USG and CT abdomen are the investigations of choice though the type of splenic complication may not be established in certain cases [8,9]. Surgical treatment is usually required i.e., splenectomy with or without distal pancreatectomy depending on the intra operative findings [2,10]. The role of splenic artery embolization in the management of occult splenic rupture is yet to be defined.

### 4. Conclusion

Splenic rupture in chronic pancreatitis, though exceedingly rare, is a life threatening complication requiring prompt diagnosis and treatment. Patients with chronic pancreatitis with distal pancreatic involvement, splenic vein thrombosis may merit close monitoring and follow up.

### Conflict of interest

The authors declare there is no conflict of interest.

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### Ethical approval

Not applicable. No research study involved.

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

## Authors contribution

Dr. Sharada Sundaramurthy: assisting surgeon. Writing the paper. Author for correspondence.

Dr. Santosh Olakkengil: operating surgeon. Literature review. Writing the paper.

Dr. Anthony Rozario: operating surgeon. Paper and literature review.

## Guarantor

Dr. Anthony Prakash Rozario.

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