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Original Research Article

A Retrospective Study Assessing Outcome of Surgical Management of Local Complications of Acute Pancreatitis

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Abstract

Aim: This study aims to evaluate the indication and outcome of different surgical management modalities in local complications of acute pancreatitis.

Methods: A hospital-based retrospective study was conducted in the Department of General Surgery, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India. 50 patients required surgical intervention due to failure of endoscopic or radiological intervention or positions of lesions being inaccessible to these techniques.

Results: Of the 50 cases, males made up 54%. Pseudocyst pancreatic fluid collection was observed in 34% of cases, while 50% had ethanol origin. Where they were, 70% were either at the body or the tail. Grade 2 accounted for 30%, grade 1 for 26%, and grade 4 for 20%, all based on the Clavien-Dindo system.

Conclusion: Despite the availability of different endoscopic procedures for managing pancreatic fluid accumulation and pancreatic necrosis, surgery remains necessary for treating the illness.

Keywords: Acute pancreatitis, Local complications, Surgical management

Introduction

When the pancreas undergoes an acute inflammatory attack, known as acute pancreatitis (AP), symptoms can appear suddenly. If the gland does not sustain post necrotic damage, the histology, physiology, and symptoms of the condition will eventually resolve, and subsequent attacks will not occur, as long as the underlying cause is eradicated. Gallstones (40–65%) and alcohol (25–40%) are the most prevalent causes of AP, with a number of other variables, such as autoimmune diseases and hereditary predisposition, accounting for the remaining 10–30%. [1,2] No matter what causes it, the trigger factors activate the trypsin inside the zymogen granules by triggering supraphysiological intracellular signaling. [3-5] Inflammation occurs both locally and systemically as a consequence of the resulting death of acinar cells. In the beginning, the most noticeable symptoms are out-of-town organ failure, namely in the kidneys and lungs, which usually lasts less than 48 hours. [6,7]

The rapid activation of digesting enzymes inside acinar cells causes acute pancreatitis, a nonbacterial inflammatory illness of the pancreas that may affect the gland, surrounding tissues, and other organs in different ways. Although the etiology and progression of acute pancreatitis are well-documented, the exact processes by which the condition manifests are not. Treatment may be put in place to prevent or reduce the inflammatory process or its associated problems if the early events that cause it are recognized, and if pro- and anti-inflammatory variables that modify the severity of the illness are identified. [8] Draining the contents and removing all affected pancreatic tissues is the main objective of treating acute necrotic collection. [9] Endoscopic transgastric procedures, image-guided retroperitoneal drainage, open and laparoscopic transperitoneal drainage, and other therapeutic options. [10] As it stands, the "step-up" method is the way to go when dealing with acute necrotic collection. The Dutch PANTER experiment first utilized the phrase "step-up," which is now used widely in several fields to describe less invasive methods that may be used to drain infected

pancreatic necrosis, with the eventual goal of escalating to more intrusive operations. The trial's findings in 2010 showed that the step-up method had many advantages over laparotomy. [11] For ANC in our series, the main treatment technique was the "step-up" strategy.

The purpose of this research is to compare the efficacy and safety of various surgical treatments for acute pancreatitis's local consequences.

Materials and Methods

1. A hospital-based retrospective study was conducted in the Department of General Surgery, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India from may 2022 to December 2022 . 50 patients required surgical intervention due to failure of endoscopic or radiological intervention or positions of lesions being inaccessible to these techniques.

Inclusion and Exclusion Criteria

The inclusion criteria for the study were patients who underwent laparoscopic, retroperitoneal or open surgical procedures for the management of local complications of acute pancreatitis for the period of one year. Exclusion criteria for the study were patients who had associated vascular and bowel-related complications.

Procedure

Clinical, laboratory and imaging findings including, contrast-enhanced CT scan findings of all the cases, were recorded as per the proforma. In addition, the indication of each procedure, perioperative outcome and associated complications were evaluated in all the studied cases. All minimally invasive procedures were performed under general anesthesia using Karl Storz© laparoscopic set by the surgical team experienced in pancreatic surgery. The local complications of acute pancreatitis were based on the revised Atlanta classification 2012.[1] All complications were graded according to the Clavien-Dindo classification.[7]

Data were analyzed using the statistical package for the social sciences (SPSS) version 20.

Results

Table 1: The demographic and clinical characteristics of patients

Variables	N	%
Gender		
Male	27	54
Female	23	46
Clinical characteristics		
Etiology		
Biliary	21	42
Ethanol	25	50
Others	4	8
Category of pancreatic fluid collection (PFC)/complications		
PPC	10	20
ANC	15	30
WON	8	16
Pseudocyst	17	34
Location of the cavity		
Head	15	30
Body or tail	35	70

Out of 50 patients, 54% were males. 50% had ethanol etiology and 34% had pseudocyst pancreatic fluid collection. According to the location, 70% were at body or tail.

Table 2: Clavien-Dindo classification of the complication following surgical intervention

Clavien-Dindo classification	N	%
Grade 0	9	18
Grade 1	13	26
Grade 2	15	30
Grade 3	3	6
Grade 4	10	20

According to Clavien-Dindo classification, 30% were in grade 2 followed by grade 1 (26%) and grade 4 (20%).

Discussion

Most people with acute pancreatitis will have a modest, self-limiting, and straightforward course of symptoms. Inadequate blood flow to the pancreatic parenchyma may produce pancreatic necrosis, which affects 10–20% of patients. Infected pancreatic necrosis can cause death in as little as 30% of cases, and the disease can last for a long time. [12] Pancreatic and/or peripancreatic fluid collections, walled-off necrosis, infected pancreatic necrosis, disconnected pancreatic duct syndrome, vascular complications, and other local and systemic problem types might develop, which can be minor or even fatal. A multidisciplinary team of gastroenterologists, surgeons, interventional radiologists, critical care physicians, infectious disease experts, and nutritionists is necessary for the effective treatment of these patients. Patients with sterile necrosis who have symptoms (such as a blocked biliary or gastric or duodenal outlet) are less likely to need intervention than those with infected pancreatic necrosis. [13]

Males made up 54% of the 50 patients. Thirty-four percent had pseudocyst pancreatic fluid collection and fifty percent had ethanol etiology. About 70% were either at the tail or body, depending on the location. Classification by Clavien-Dindo showed that 30% were in second grade, 26% in first, and 20% in fourth. There has been a shift in approach to managing walled-off necrosis. As long as symptoms and additional problems, such as infection of the walled-off necrotic collection, are nonexistent, cautious management of certain WON may be appropriate. [14] On the other hand, endoscopic draining or open necrosectomy may be necessary to treat an infected WON. [12] Because the locations of WON were not amenable to endoscopic methods, all patients in our study who had WON had open transperitoneal necrosectomy. For the treatment of symptomatic pancreatic pseudocysts, many endoscopic drainage techniques are available. [15] Examples of these procedures include transmural drainage, transpapillary pancreatic duct stenting, or a mix of the two. [16,17] The clinical success rate of endoscopic ultrasonography (EUS)-guided transmural drainage (EUS-TM) and transpapillary stent implantation (TPS) for PPC draining varies widely. [18,19] However, surgical therapy is a viable modality for pancreatic pseudocyst when these modalities are not suited for the patient. [20]

Currently, there is no silver bullet when it comes to surgical procedures for pseudocysts. Local competence is the most essential component that determines the style of therapy. [21] Internal drainage using an open surgical technique is the most successful and dependable way to empty a pseudocyst, despite the different endoscopic and less invasive methods. [22] The most prevalent internal drainage technique for pancreatic pseudocyst care in our dataset was cystogastrostomy, followed by Roux-en-Y cystojejunostomy. Avoiding dissection through inflammatory tissues is the goal of this method, which involves an anterior gastrostomy followed by a posterior gastrostomy centered on the cyst. [23,24]

Conclusion

The optimal management of individuals experiencing local complications of pancreatitis is achieved at a specialist tertiary care center with skilled pancreatic surgeons who has competence in handling such situations. Despite the availability of several endoscopic procedures for treating pancreatic fluid accumulation and pancreatic necrosis, surgery continues to be a crucial method for controlling the condition.

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