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Original Research Article

A Hospital-Based Assessment of the Surgical Management of Chronic Pancreatitis: A Comparative Study

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Abstract

Aim: The aim of the present study was to assess the surgical management of chronic pancreatitis.

Methods: The present study was conducted in the Department of General Surgery, Shri Ramkrishna Institute of Medical Sciences, Durgapur, West Bengal, India. 100 patients of chronic pancreatitis were screened during the study period.

Results: The mean age was 36.4 years and 38.6 in both the groups respectively and there were male predominance in the study. There were more blood loss in open surgery as compared to laparoscopic surgery but laparoscopic surgery took more operating time. Most of the patients had no intraoperative complications in both the groups. In open surgery, iatrogenic perforation was noted and in laparoscopic surgery, difficulty to identify the MPD was noted. Post-operatively, there were no complications in laparoscopic surgery. 72% patients showed improvement in pain.

Conclusion: The two methods of pancreaticojejunostomy are comparable to each other. However, the laparoscopic method has its advantages over the open technique in terms of lesser amount of blood loss encountered, faster onset of enteral nutrition and lesser duration of hospital stay. Intra and post-operative complication profile are similar for both methods. Post-operative pain relief was also similar in both.

Keywords: Chronic pancreatitis, Surgical treatment, Laparoscopic pancreatojejunostomy

Introduction

In patients known to have chronic pancreatitis (CP), relapsing upper abdominal pain is the main reason to seek surgical treatment. [1,2] A step-up approach is done, and surgery is deemed necessary when medical and endotherapy fail to relieve the pain. Almost half of the patients have surgical intervention during the disease. [3] Surgery first in cases of advanced CP has shown to be superior to endotherapy in terms of pain control and a lesser number of procedures. [4] In addition, patients having local complications due to fibrosis leading to duodenal stenosis, biliary strictures, and splenic vein thrombosis leading to gastric varices benefit from surgery. Surgery aims to relieve pain, treat complications, preserve pancreatic reserve, and improve quality of life. [5] There are several proposed mechanisms to explain the pain related to CP. It is mainly attributed to pancreatic duct hypertension, raised intrapancreatic pressure leading to pancreatic ischemia, and ultimately replacing pancreatic parenchyma with fibrotic tissue. [6]

Pain relief after decompressing a dilated pancreatic duct supports the hypothesis of the origin of pain due to ductal hypertension. [7] Similarly, supplementation by pancreatic enzymes decreases intrapancreatic pressure by reducing the pancreatic exocrine stimulation and has resulted in fewer pain scores in some patients with CP. [8] Pancreatic hypertension can lead to compartment syndrome-like features resulting in ischemia, which leads to pain. [9] Surgical drainage releases this compartment effect causing relief in pain which is not achieved with endoscopic pancreatic stent placement [6]. Bile duct and duodenal stenosis are caused by repetitive fibrosis in the plane between the pancreatic head and duodenum which is termed groove pancreatitis, which compresses the neurons located in this groove causing pain. [1] Pancreatic fibrosis causes scarring of pancreatic tissue that can raise intraductal pressure causing pain, however, no direct relationship between the degree of fibrosis and pain has been established. [10,11]

Classically pancreatic head has been deemed the source of pancreatic pain in most cases. [12] The optimal timing of surgical intervention has several patient and disease-related factors, with better outcomes in terms of pain control and pancreatic reserve with intervention within three years of the onset of symptoms. On the contrary, prolonged duration of disease and regular narcotic use may lead to recurrent pain even after surgery that is attributed to central pain pathways sensitization. [13,14]

The aim of the present study was to assess the surgical management of chronic pancreatitis.

Materials and Methods

The present study was conducted in the Department of General Surgery, Shri Ramkrishna Institute of Medical Sciences, Durgapur, West Bengal, India for one year. Patients with chronic pancreatitis aged 18-65 yrs from our tertiary care institution were screened and selected to undergo modified lateral pancreaticojejunostomy. After obtaining valid written informed consent, they underwent either the conventional open procedure or the laparoscopic procedure according to the inclusion and exclusion participant. 100 patients of chronic pancreatitis were screened during the study period and they were divided into laparoscopic and open surgery equally.

Selection Criteria

Age between 18-65 years. Diagnosis of chronic pancreatitis, based on clinical symptoms and morphologic changes (e.g., calcifications and ductal changes) detected by imaging studies; pancreatic functional insufficiency; or both. Obstruction of the pancreatic duct due to stenosis, intraductal, extraductal or both, with dilatation of the duct by at least 7 mm proximal to the obstruction, as determined by Magnetic Resonance Cholangio Pancreatography, Abdominal Computed Tomography, or both Severe, recurrent pancreatic pain insufficiently relieved by non-narcotic analgesics or requiring opiates and Patients who are willing to give consent.

Exclusion Criteria

Exclusion criteria were; Enlargement of the pancreatic head >4 cm, Contraindications to surgery, American Society of Anesthesiologists class IV, Severe portal hypertension, Gastrectomy with Billroth II reconstruction, other pancreatitis-related complications requiring surgery, Previous pancreatic surgery, Suspected pancreatic cancer with Life expectancy <2 yr, Pregnancy and Patients not willing to give consent.

Results

Table 1: Age and gender distribution

Mean age (years)	Group		
	Laparoscopic Surgery	Open Surgery	
	36.4	38.6	
Gender			Total
Male	31	24	55
Female	19	26	45
Total	50	50	100

The mean age was 36.4 years and 38.6 in both the groups respectively and there were male predominance in the study.

Table 2: Blood loss and procedure duration

Meanbloodloss (ml)	Laparoscopic Surgery	Open Surgery
	108	124.6
Procedure duration (minutes)	320	255

There were more blood loss in open surgery as compared to laparoscopic surgery but laparoscopic surgery took more operating time.

Table 3: Intraoperative and post-operative complications

Type of complications	Number of cases		Total
	Laparoscopic Surgery	Open Surgery	
Difficult anastomosis	4	0	4
Difficulty to identify theMPD	10	0	10
Iatrogenic perforation	0	4	4
Nil	28	46	74
Technical difficulty	8	0	8
Post operative			
Nil	50	40	90
Pancreatic fistula	-	2	2
Paralytic ileus	-	4	4
Wound gape	-	4	4

Most of the patients had no intraoperative complications in both the groups. In open surgery, iatrogenic perforation was noted and in laparoscopic surgery, difficulty to identify the MPD was noted. Post-operatively, there were no complications in laparoscopic surgery.

Table 4: Post-operative improvement in pain

Post opendocrinepain	Group		Total
	Laparoscopic Surgery	Open Surgery	
Improved	38	34	72
Status quo	12	16	28
Total	50	50	100

72% patients showed improvement in pain.

Discussion

The outcome of inflammation of the gland is decided by whether the gland was previously normal or not. This distinction remains blurred. In acute pancreatitis, the normal architecture of the gland is restored after the acute attack, whereas in chronic pancreatitis, restoration of normal glandular architecture is not possible, and it does not take place. Early in the disease, the pancreas appears to be normal. As the disease progresses, with more and more clinical and subclinical attacks of acute pancreatitis, the pancreas turns oedematous, indurated and enlarged. The main pancreatic duct of wirsung may still be normal in architecture or might have developed slight dilatations. [15]

In the chronic setting the pancreas is down sized to a cord like structure which is no more than 2-3 cm wide. The edge of a chronically inflamed pancreas is rounded. It is rubbery or hard in consistency. Ductal stones are frequently present. The duct varies in size from a few millimetres to a few cm in diameter. The calcification in pancreas is usually restricted to the ducts, hence the diameter of the duct can be made out by using plain radiographs also. [16] The mean age was 36.4 years and 38.6 in both the groups respectively and there were male predominance in the study. . This can be compared to a mass retrospective study conducted in the Institute of post graduate medical education and research, Delhi, 2019 wherein the median age of surgery was found to be 31 for open and 32 for laparoscopic technique. [17]

The spontaneous course with respect to pain development and the occurrence of endocrine and exocrine insufficiency is variable. The two main manifestations are recurrent attacks of abdominal pain and progressive insufficiency of endocrine and exocrine organ function. Drug therapy of CP focuses on treatment of abdominal pain symptoms, treatment of exocrine insufficiency including prevention of weight loss, stabilization of the metabolic condition, prevention of disease progression as well as prevention of complications. Finally, the psychosocial care of patients, especially considering an alcohol problem has to be considered. [18] After the disease has progressed for years or even decades, the limit of analgesia is reached in many cases and in addition to the severe long-term pain, organ complications occur which cannot be managed conservatively or interventionally. These include bile duct stenosis, duodenal stenosis, portal vein constriction with portal hypertension, formation of pseudocysts, pancreatic necroses, pancreatogenic ascites and the formation of pancreatic fistulas. [19] There were more blood loss in open surgery as compared to laparoscopic surgery but laparoscopic surgery took more operating time. This can be compared to the blood loss of 100ml, 120ml for laparoscopic and open surgeries as reported by Senthilnathan et al. [20] However, a confounding factor of the study can be the fact that laparoscopic techniques are undertaken by experienced hands only. Comparing the two operative techniques, the average time taken for the completion of laparoscopic method was 317 mins, while that of open surgery was 260 mins. The difference turned out to be statistically significant and not due to any bias. Tantia et al [21] and Senthilnathan et al[20] reported an operation time of 220-277 min for LLPJ and 271-377 min for patients with additional surgical procedures.

Most of the patients had no intraoperative complications in both the groups. In open surgery, iatrogenic perforation was noted and in laparoscopic surgery, difficulty to identify the MPD was noted. Post-operatively, there were no complications in laparoscopic surgery. 72% patients showed improvement in pain. Adolf et al [22] reported long-term pain relief in 93% of patients, but there was no improvement in endocrine and exocrine functions. However, Palanivelu et al [23] and Sielezneff et al [24] reported improved or static endocrine and exocrine functions following surgery. In none of the patients who underwent surgery did the pain worsen after the surgery

Conclusion

The two methods of pancreaticojejunostomy are comparable to each other. However, the laparoscopic method has its advantages over the open technique in terms of lesser amount of blood loss encountered, faster onset of enteral nutrition and lesser duration of hospital stay. Intra and post-

operative complication profile are similar for both methods. Post-operative pain relief was also similar in both.

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