



ROLE OF ERCP IN ACUTE BILIARY PANCREATITIS.

Gastroenterology

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ABSTRACT

Acute pancreatitis is an inflammatory disease of the pancreas. Although ERCP with Endoscopic Sphincterotomy (ES) and stone extraction has been shown to be useful for early treatment of severe biliary pancreatitis. For this reason accurate predictors of common bile duct stones are required. **MATERIAL AND METHODOLOGY:** This was a hospital based retrospective and prospective study conducted in the Department of Gastroenterology on patients of all age groups with clinical/laboratory/imaging findings suggestive of acute pancreatitis. The protocol of the study was approved by the Institutional Ethical Committee.

Exclusion Criteria:

Patients having the following condition were excluded;

1. Chronic calcific pancreatitis
2. Those patients refusing consent for participation

650 patients of acute pancreatitis who presented to the emergency department as acute abdomen were included in the study. Informed consent was obtained from all the patients prior to enrolment in the study and where given standard medical care throughout the study period as approved by the Ethical Committee SKIMS Soura. The study period included, total duration of stay in hospital and thereafter follow up.

All the participants were thoroughly interviewed and subjected to clinical and laboratory examination. Hemogram, blood sugar, serum amylase, lipase, blood urea, serum creatinine, serum calcium [Serum calcium concentration (mg/dL) were calculated by correcting with $0.8 \times [4 - \text{albumin (g/dL)}]$, phosphate, lipid profile and liver function tests, HCT, CRP, BUN were done on the day of admission followed by 24 hours, 48 hours and 72 hours. Abdominal ultrasound was performed on all the patients on the day of admission. Contrast enhanced computerized tomography (CECT) of abdomen was done to stage the severity according to modified Computed Tomography Severity Index (CTSI)61 when required. MRCP was done for idiopathic pancreatitis and to confirm biliary pathology of acute pancreatitis. Grading of acute pancreatitis was done according to Revised Atlanta classification. Severity was assessed by BISAP scoring system at presentation and after 48 hours of admission.

Statistical Analysis: The data shall be recorded in n (%) or mean \pm SD, whichever is applicable and accordingly appropriate statistical test shall be applied. **OBSERVATIONS AND CONCLUSIONS:** Out of total 650 patients of acute pancreatitis, 339 were acute biliary pancreatitis. Out of 339 patients of acute biliary pancreatitis, 165 patients (48.7%) had gallstone, 85 (25.1%) had Gall stones with CBD stones, 55 (16.2%) had biliary ascariasis, 14 (4.1%) had Post-Cholecystectomy with CBD Stones and 20 (5.9%) patients had GB Sludge. None of the 165 Patients with Gall stones underwent ERCP, 54 (63.5%) of 85 patients with gall stones with CBD stones underwent ERCP, out of 14 patients with post cholecystectomy CBD stone 9 (64.3%) needed ERCP, 17 (30.9%) of 55 biliary ascariasis patients underwent ERCP whereas none of 20 patients with GB sludge needed ERCP. Total of 80 patients of acute biliary pancreatitis underwent ERCP. On ERCP, technical success, stone in CBD, sludge in CBD, dead worm with sludge in CBD and worm in PD were the findings in 80 (100%), 47 (58.7%), 8 (10.2%), 8 (10.2%) and 17 (21.9%). None of the patients with acute biliary pancreatic (ABP) without cholangitis underwent ERCP in <24 hour while as 12 patients with ABP with cholangitis underwent ERCP <24 hours, 68 patients with ABP without cholangitis underwent ERCP in 24-72 hours. ERCP was performed <24 hours in 12 patients while as 68 patients underwent ERCP in 24-72 hours. Mean duration of hospital stay was 5.7 days and 6.0 in patients who underwent ERCP in <24 hours and 24-72 hours. Mean duration of hospital stay after ERCP was 4.5 days in patients of <24 hours group and 5.1 days in patients who underwent ERCP in 24-72 hours. Clinical improvement was observed in mean 2.9 days in patients of <24 hours and 4.2 days in 24-72 hours, while as, a mean 2.4 days and 3.7 days were required for biochemical improvement in patients who underwent ERCP in 24 hours and 24-72 hours. The Study concluded that there was statistically significant clinical and biochemical improvement in patients of ABP with cholangitis who undergo ERCP within 24 hrs. ERCP was performed <24 hours in 12 patients while as 68 patients underwent ERCP in 24-72 hours. Post-ERCP sepsis was found in 1 patients who underwent ERCP in <24 hours, cholangitis and papillotomy bleed was seen in 3 patients each who underwent ERCP in <24 hours and 1 patient each who underwent ERCP in 24-72 hours. None of the patients had perforations. The study also shows post ERCP complications in patients that undergo ERCP within 24 hrs included sepsis 1 patient, 2 gets post-pancreatitis and 2 with papillotomy bleed.

KEYWORDS

Pancreatitis ; stone; ERCP; Papiilotomy; biliary; CBD

INTRODUCTION

Acute pancreatitis is an inflammatory disease of the pancreas. The etiology and pathogenesis of acute pancreatitis have been intensively investigated for centuries worldwide. It can be initiated by several factors, including gallstones, alcohol, trauma, infections and hereditary factors. About 75% of pancreatitis is caused by gallstones or alcohol¹. The overall mortality rate of acute pancreatitis was 3.8%, mortality rate of severe acute pancreatitis was high as 16.3% and

mortality rate of moderately severe acute pancreatitis as 4.08%².

The risk factors in acute pancreatitis can be classified as¹:

metabolic
mechanical
vascular
infectious
viral
bacterial

parasites.

Routine ERCP for examination of the bile duct is discouraged in cases of biliary pancreatitis, as the probability of finding residual stones is low, and the risk of ERCP-induced pancreatitis is significant. But in the case of acute biliary pancreatitis in which analytical studies suggest that the obstruction persists after 24 hours of observation, emergency ERCP has to be done to prevent biliary sepsis. ERCP with Endoscopic Sphincterotomy (ES) and stone extraction has been shown to be useful for early treatment of severe biliary pancreatitis. For this reason accurate predictors of common bile duct stones are required, studies have shown that the sensitivity of preoperative abdominal US for predicting common bile duct stones is 42% and specificity is 86%.³¹ Furthermore, an endoscopic approach is unable to fully resolve the patient's biliary pathology with one procedure and one anesthesia. This adds substantial risk of morbidity and even mortality. Concern remains also regarding the potential long-term risks of ES. Although the immediate complications of ES are well documented, the long-term effects are less defined. Stricture formation and stone recurrence account for nearly all long term complications. Although most of the authors prefer the endoscopic to the surgical treatment of CBD stones, there is still some minor discussion on it.³¹ Timing of laparoscopic surgery in acute biliary pancreatitis depends upon the severity of the disease. In the case of mild pancreatitis it doesn't matter when, within 1 week, laparoscopic cholecystectomy is performed. However, in patients with severe pancreatitis, laparoscopic cholecystectomy, when performed within the 1st week after the onset of symptoms, as other authors have observed³², places patients at increased risk of operative morbidity and technical complications. In these patients, the management of complications of pancreatitis is strongly advisable before cholecystectomy.

Delaying surgery for more than a week after hospitalization, in our experience, does not adversely affect technical difficulty. Delaying surgery for several weeks in severe acute pancreatitis allows acute inflammation to settle down and might allow stones in the common bile duct to clear spontaneously. However, studies showed that approximately one-quarter of patients have symptomatic recurrence within 6 weeks if gallstones are untreated, and it increases with time^{4,5}. Cholangiogram of good quality during laparoscopic cholecystectomy, since the risk of common bile duct stones is 14–20%. This strategy minimizes the need for common bile duct exploration and still achieves the goal of a limited hospital stay and the prevention of recurrence of pancreatitis. If common bile duct stones are found at cholangiogram they should be treated laparoscopically if at all possible. In most instances, it should be possible to retrieve the stones via the cystic duct, since acute pancreatitis is usually caused by the migration of small stones. If this is not feasible, one alternative is to perform a laparoscopic choledochotomy. These cases have a rather long hospital stay and delayed return to work, but their level of pain is diminished.

MATERIAL AND METHODOLOGY

This was a hospital based retrospective and prospective study conducted in the Department of Gastroenterology on patients of all age groups with clinical/Laboratory/imaging findings suggestive of acute pancreatitis. The protocol of the study was approved by the Institutional Ethical Committee.

Inclusion Criteria

All patients with a diagnosis of acute pancreatitis presenting to our accidental emergency were enrolled.

Presence of at least two of the following:

1. Acute abdominal pain and tenderness suggestive of pancreatitis.
2. Serum amylase/lipase ≥ 3 times the normal.
3. Imaging findings (USG and/or CT) suggestive of acute pancreatitis.

Six fifty patients of acute pancreatitis who presented to the emergency department as acute abdomen were included in the study. Informed consent was obtained from all the patients prior to enrolment in the study and where given standard medical care throughout the study period as approved by the Ethical Committee. The study period included, total duration of stay in hospital and thereafter follow up.

Exclusion Criteria:

Patients having the following condition will be excluded;

1. Chronic calcific pancreatitis
2. Those patients refusing consent for participation

All the participants were thoroughly interviewed and subjected to clinical and laboratory examination. Hemogram, blood sugar, serum amylase, lipase, blood urea, serum creatinine, serum calcium [Serum calcium concentration (mg/dL)] were calculated by correcting with 0.8 × [4-albumin (g/dL)], phosphate, lipid profile and liver function tests, HCT, CRP, BUN were done on the day of admission followed by 24 hours, 48 hours and 72 hours. Abdominal ultrasound was performed on all the patients on the day of admission. Contrast enhanced computerized tomography (CECT) of abdomen was done to stage the severity according to modified Computed Tomography Severity Index (CTSI)⁷ when required. MRCP was done for idiopathic pancreatitis and to confirm biliary pathology of acute pancreatitis. Grading of acute pancreatitis was done according to Revised Atlanta classification. Severity was assessed by BISAP⁸ scoring system at presentation and after 48 hours of admission.

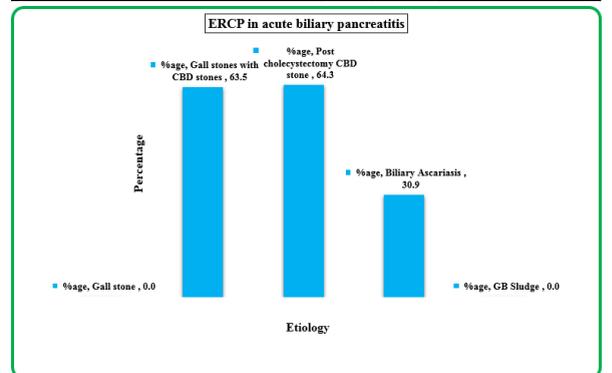
Statistical Analysis:

The data shall be recorded in n (%) or mean ± SD, whichever is applicable and accordingly appropriate statistical test shall be applied.

This table concluded that biliary pancreatitis constitutes 339 (52%) patients of AP.

Table 1: ERCP In Acute Biliary Pancreatitis

Etiology	N	ERCP	Outcome (%age)
Gall stone	165	0	0.0
Gall stones with CBD stones	85	54	63.5
Post Cholecystectomy CBD stone	14	9	64.3
Biliary Ascariasis	55	17	30.9
GB Sludge	20	0	0.0

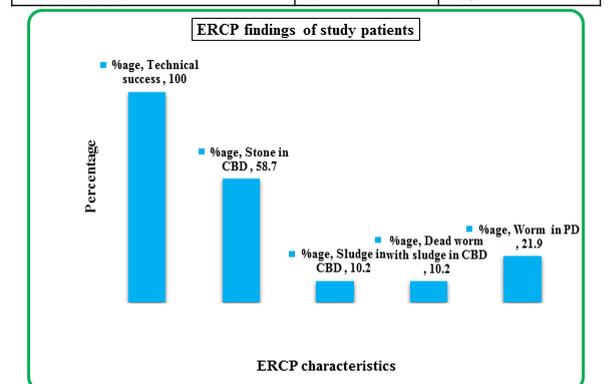


None of the 165 patients with gallstone underwent ERCP, 54 (63.5%) of 85 patients with gall stones with CBD stones underwent ERCP, out of 14 patients with post cholecystectomy CBD stone 9 (64.3%) needed ERCP, 17 (30.9%) of 55 biliary ascariasis patients underwent ERCP whereas none of 20 patients with GB sludge needed ERCP.

This table concluded that 80 patients of ABP undergo ERCP.

Table 2: ERCP Findings Of Study Patients

ERCP characteristics	Frequency	Percentage
Technical success	80	100
Stone in CBD	47	58.7
Sludge in CBD	8	10.2
Dead worm with sludge in CBD	8	10.2
Worm in PD	17	21.9



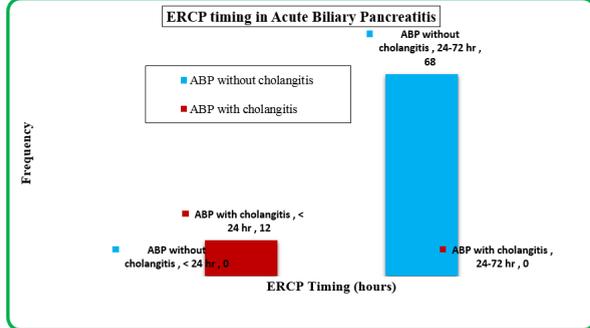
On ERCP, technical success, stone in CBD, sludge in CBD, dead worm

with sludge in CBD and worm in PD were the findings in 80 (100%), 47 (58.7%), 8 (10.2%), 8 (10.2%) and 17 (21.9%).

This table concluded that on ERCP in ABP 47 had CBD stone, 8 had CBD sludge, 8 had dead worm with sludge in CBD and 17 had worm in PD.

Table 3: ERCP Timing In Acute Biliary Pancreatitis

ERCP Timing	ABP without cholangitis	ABP with cholangitis
< 24 hr	0	12
24-72 hr	68	0



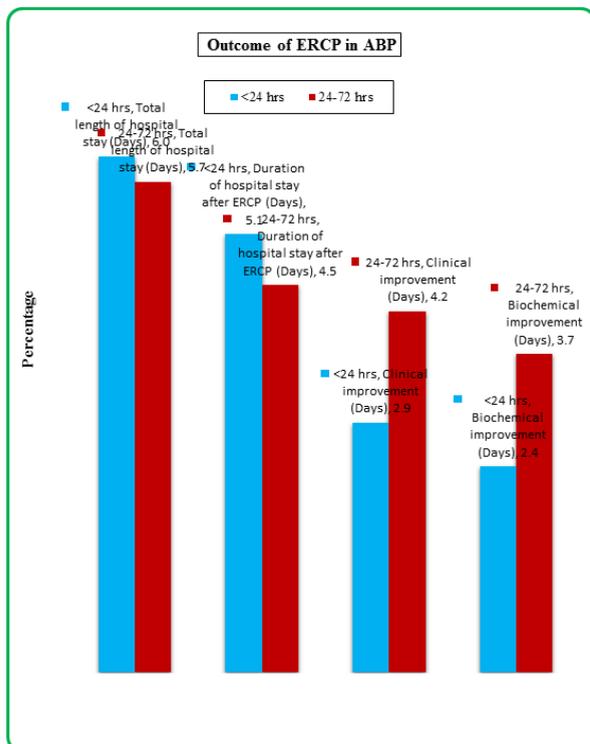
None of the patients with acute biliary pancreatic (ABP) underwent in <24 hour while as 12 patients with ABP with cholangitis underwent ERCP <24 hours, 68 patients with ABP without cholangitis underwent ERCP in 24-72 hours.

This table concluded that 12 patients with ABP with cholangitis underwent ERCP within 24 hrs and 68 patients of ABP without cholangitis underwent ERCP within 24-72 hrs.

Table 4: Outcome of ERCP in ABP

	<24 hrs [n=12]		24-72 hrs [n=68]		P-value
	Mean	SD	Mean	SD	
Total length of hospital stay (Days)	5.7	2.89	6.0	3.02	0.747
Duration of hospital stay after ERCP (Days)	4.5	1.95	5.1	2.17	0.346
Clinical improvement (Days)	2.9	1.32	4.2	1.18	0.002*
Biochemical improvement (Days)	2.4	0.89	3.7	0.96	<0.001*

*Statistically Significant (P-value <0.05)

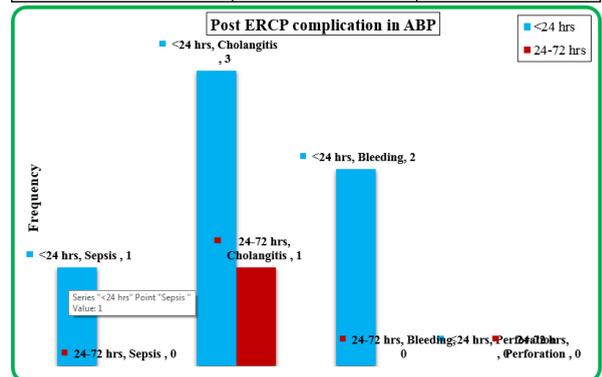


ERCP was performed <24 hours in 12 patients while as 68 patients underwent ERCP in 24-72 hours. Mean duration of hospital stay was 5.7 days and 6.0 in patients who underwent ERCP in <24 hours and 24-72 hours. Mean duration of hospital stay after ERCP was 4.5 days in patients of <24 hours group and 5.1 days in patients who underwent ERCP in 24-72 hours. Clinical improvement was observed in mean 2.9 days in patients of <24 hours and 4.2 days in 24-72 hours, while as, a mean 2.4 days and 3.7 days were required for biochemical improvement in patients who underwent ERCP in 24 hours and 24-72 hours.

This table concluded that there was statistically significant clinical and biochemical improvement in patients of ABP with cholangitis who undergo ERCP within 24 hrs.

Table 5: Post ERCP complication in ABP

	<24 hrs [n=12]	24-72 hrs [n=68]
Sepsis	1	0
Post ERCP pancreatitis	2	1
Papillotomy bleed	2	1
Perforation	0	0



ERCP was performed <24 hours in 12 patients while as 68 patients underwent ERCP in 24-72 hours. Post-ERCP sepsis was found in 1 patients who underwent ERCP in <24 hours, cholangitis and papillotomy bleed was seen in 3 patients each who underwent ERCP in <24 hours and 1 patient each who underwent ERCP in 24-72 hours. None of the patients had perforations.

This table concluded that post ERCP complications in patients that undergo ERCP within 24 hrs included sepsis 1 patient, 2 gets post-pancreatitis and 2 with papillotomy bleed.

DISCUSSION

Acute pancreatitis (AP) is a common emergency, accounting for 3% of all patients admitted with acute pain abdomen. The spectrum of the disease is wide ranging from mild attacks with mild epigastric discomfort to multi-organ dysfunction and death. The mild attacks often go undiagnosed predisposing to a severe second attack. Ours was a hospital based retrospective and prospective study of 650 patients.

In our study 80 patients of ABP underwent ERCP. On ERCP, technical success, stone in CBD, sludge in CBD, dead worm with sludge in CBD and worm in PD were the findings in 80 (100%), 47 (58.7%), 8 (11.8%), 8 (11.8%) and 17 (25%). ERCP was performed <24 hours in 12 patients of ABP with cholangitis while as 68 ABP without cholangitis patients underwent ERCP in 24-72 hours. Mean duration of hospital stay was 5.7 days and 6.0 in patients who underwent ERCP in <24 hours and 24-72 hours. Mean duration of hospital stay after ERCP was 4.5 days in patients of <24 hours group and 5.1 days in patients who underwent ERCP in 24-72 hours. Clinical improvement was observed in mean 2.9 days in patients of <24 hours and 4.2 days in 24-72 hours, while as, a mean 2.4 days and 3.7 days were required for biochemical improvement in patients who underwent ERCP in 24 hours and 24-72 hours. This study concluded that patients with ABP with cholangitis who undergo ERCP within 24 hours had both clinical and biochemical improvement earlier than those who undergo ERCP after 24 hours. The UK guidelines⁹ for the management of acute pancreatitis advocate urgent therapeutic ERCP in every patient with suspected gall stone etiology and predicted severe pancreatitis or when there is cholangitis, jaundice or a dilated common bile duct. According to Forsmark CE et al¹⁰, indications for early ERCP in the AGA Institute review on acute pancreatitis are more restricted. According to these

guidelines, early ERCP should be performed in patients with cholangitis or when there is suspicion of persistent common bile duct stone (a dilated common bile duct or visible common bile duct stone, or jaundice or persistently abnormal liver chemistry values). Acosta et al¹¹ tested the hypothesis that it is the duration of bile duct obstruction that determines the outcome of biliary pancreatitis and not the presence of stones *per se*. The authors subjected to ERCP the patients enrolled in the intervention arm, if signs of obstruction persisted over 24 h. Indications of obstruction were severe and continuous epigastric pain, bile free gastric aspirate and elevated serum bilirubin, while relief of pain, decrease of bilirubin level and reappearance of bile in the gastric aspirate were signs of spontaneous termination of obstruction. Half of the patients in the intervention group eventually underwent ERCP. When discontinuation of the obstruction occurred spontaneously or after ERCP in less than 48 h, the rate of complications was lower than in cases with obstruction lasting more than 48 h (8% vs 78%, $P < 0.001$).

Post-ERCP sepsis was found in 1 patient who underwent ERCP in <24 hours, post-ERCP pancreatitis was seen in 2 patients who underwent ERCP in <24 hours and 1 patient who underwent ERCP in 24-72 hours. Post-papillotomy bleeding was observed in 2 patients who underwent ERCP in <24 hours.

Aleksey N et al¹² identified 491,011 records eligible for analysis. 150,101 (30.6%) of patients with AGPNC underwent inpatient ERCP. The average LOS was 5.88 (+/- 6.38) days with median stay of 4 days. When adjusted for age, Elixhauser Comorbidity Index and severe pancreatitis, patients with ERCP during admission were 43% less likely to die. ERCP performed between day 3 and 9 of hospitalization resulted in a significant mortality benefit. Among those who had ERCP, a shorter wait time for ERCP was associated with a shorter LOS after adjustment for demographics and severity of illness. ERCP performed during in-patient admission for AGPNC was associated with decreased mortality with best results occurring when intervention was performed between 3 and 9 days post admission. Patients who had shorter time to ERCP had shorter LOS, when compared to those who had procedures later. This data supports ERCP in patients with acute gallstone pancreatitis without cholangitis.

In our study out of 270 patients with gallstones, 105 undergo cholecystectomy >6 weeks after an episode of AP. Out of remaining 165 patients of gallstone pancreatitis without cholecystectomy 20 patients had recurrent episode of AP.

SUMMARY AND CONCLUSION

Acute pancreatitis is one of the most common disease of gastrointestinal tract, leading to tremendous emotional, physical and financial burden. Acute pancreatitis is an acute inflammatory process of the pancreas i.e. associated with variable involvement of pancreas/peri-pancreatic tissues and one or more organ system in varying degrees. Evaluating the presented study we need to admit the main shortcoming, i.e., an insufficient number of patients within the groups, which seems precluded demonstrating more profound differences in course and outcomes between those patients of acute biliary pancreatitis who were managed with ERCP and those those patients of Acute biliary pancreatitis who were managed conservatively. biliary .Acute pancreatitis (AP) is a common cause of acute abdomen and alcohol and gallstone are the most common etiology.

Our data revealed gallstone as most common etiological agent followed by idiopathic AP. Most of the patients were females belonging to rural population, with majority presents with mild to moderately severe pancreatitis (73.22%) with low mortality and morbidity and 26.76% patients present as severe pancreatitis with organ failure leading to higher mortality and morbidity.

Mild, moderately severe AP and SAP constitutes 48.61%, 24.61% and 26.76% of patients respectively. Both BISAP score and MCTSI were used to calculate the severity of AP. It was found that both these scores can be used to calculate the severity equally and the difference was statistically insignificant. No mortality was seen in mild AP, 8.1% mortality was seen in moderately SAP and 41.4% mortality was seen in SAP. High mortality was seen in SAP because of persistent organ failure, SIRS and infected necrotizing pancreatitis. In case of SAP mortality was 50% in ESAP followed by 32.1% in late organ failure and IPN. Out of 142 patients with NP, 44 had sterile necrosis and 98 had

infected necrosis. Gm -ve organism was the most common organism followed by Gm +ve in IPN. Most common extrapancreatic source of infection seen is chest, UTI, followed by infected ascites. Out of 98 patients of IPN 26 were managed conservatively out of which 5 expired and 72 were managed initially conservatively, latter on with PCD, out of which 24 expired. Severity of AP was more in biliary AP (23%) as compared to non-biliary pancreatitis (13.8%). 80 patients with ABP undergo ERCP. 12/80 had cholangitis which undergo ERCP within 12 hrs and 68/80 without cholangitis undergo ERCP within 24-72 hrs. After ERCP there was clinical and biochemical improvement in those that undergo ERCP within 24 hrs. Out of 270 patients of gallstone 105 undergo early cholecystectomy while remaining 165 without cholecystectomy, 20 patients had recurrent episode of AP. Early cholecystectomy reduces the incidence of AP recurrence.

Year wise there is increasing trend of AP from 2015 (6%) to 2019 (8%). High BMI, increased waist circumference, high blood sugar, high hematocrit and high CRP are associated with worsening of AP.

In Kashmir valley there has been increasing number of cases of acute pancreatitis in recent years. Acute pancreatitis is one of the major cause of admission in gastroenterology ward. This, in contrast that few years back, when OCH, biliary ascariasis, UGI bleed were leading causes of admission.

The increasing incidence of acute pancreatitis in recent years is thought to be due to change in life style and food habits of patients. The sedentary life style has increased the incidence of obesity, dyslipidemia, diabetes and gall stones, all presumed to be risk factors for acute pancreatitis.

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