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Incidence & Risk Factors for Post ERCP Pancreatitis in a Tertiary Care Centre in South India

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Abstract: ***Background & Aims: The most feared adverse event of ERCP is post-ERCP pancreatitis (PEP), which occurs in approximately 8% of average-risk and 15% of high-risk procedures and is the most frequent serious Adverse event of GI endoscopy. Our aim was to evaluate the incidence of post-ERCP pancreatitis; to identify risk factors for post-ERCP pancreatitis including patient, procedure and operator related variables. Methods: This is a prospective study done in 120 patients undergoing ERCP in a high volume centre, a tertiary care centre in South India over a period of one year. Results: A Total of 120 patients were included in this study. Of them 65 males and 55 females were included in this study. Of them 90 were below 60 yrs and 30 were above 60 years. Among them 75(62.5%) patients had benign lesions like stone, stricture etc and 45 (37.5%) had malignant. In this study total of 18 patients developed PEP. Among 18 patients who developed PEP,12 cases had previous history of pancreatitits (p-value <0.05). PEP developed in 14 out of 20 cases in whom balloon dilatation was done during ERCP (P-VALUE 0.05). 23 cases were suspected for high risk of PEP during procedure and hence prophylactic PD stent in done, of them none developed post ercp pancreatitis (p value <0.05). Conclusions: PEP is one of the feared complication of ERCP, severe cases increase health related costs. Early identification of associated risk factors and management accordingly improves health related quality of life and decrease burden on health care.***

Abbreviations:
ERCP-endoscopic retrograde cholangiopancreatography;
PEP- post ercp pancreatitis;
PD- pancreatic duct

1. Introduction

Endoscopic retrograde cholangio-pancreaticography (ERCP) has become an invaluable diagnostic and therapeutic tool in biliary and pancreatic diseases. Although the equipments and techniques have improved dramatically, it is one of the most complex endoscopic procedures. The reported incidence of ERCP-specific complications ranges from 5% to 40%, depending on the complexity of the procedure, the underlying diagnosis, and the patient co-morbidities. This study aims to analyse the incidence of post-ERCP pancreatitis & risk factors for it.

2. Methods

A total of 120 patients who underwent ERCP during the period of one year were enrolled in the study

Inclusion criteria-

1) Patients with biliary obstruction evidenced before ERCP by clinical manifestations, elevated direct serum bilirubin and abdominal imaging (biliary dilatation, bile duct stones, cholangiocarcinoma, cancer head of pancreas, etc…) and/ or;
2) Patients with biliary obstruction demonstrated by cholangiography (bile duct stones, cholangiocar-cinoma, cancer head of pancreas, etc…) during ERCP.

Exclusion criteria

1) Pregnancy.
2) Patients with contraindication to ERCPincluding:
   - Coagulopathy.
   - History of contrast dye anaphylaxis.
   - Severe cardiopulmonary disease.
   - Recent myocardial infarction.
3) Patients with acute pancreatitis or cholangitis at the time of the procedure.
4) Prophylactic antibiotics.
5) Patients with hyperamylasaemia at the time of the endoscopic procedure.
6) Planned obstructed biliary stent removal or exchange.
7) Patients with certain structural abnormalities of upper gastrointestinal tract Detailed clinical history ,examination and relevant investigations done before ERCP

All ERCP procedures were performed by high volume endoscopist (who performs more than two sphincterotomies per week).

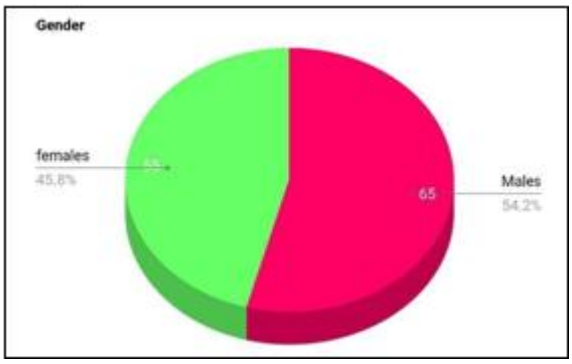
Several variables including patient-related risk factors, procedure-related risk factors and operator related risk factors were evaluated.

All patients were monitored after the procedure to detect symptoms and signs of pancreatitis (e.g. abdominal pain, tachycardia, hypotension, fever and vomiting).

Measurement of serum amylase done by sampling of blood at 8 hours post-ERCP. Abdominal ultrasonography routinely performed in all patients suffering from pancreatic-like pain lasting at least 24 hours. In cases of doubt of developing PEP, abdominal CT scan done.

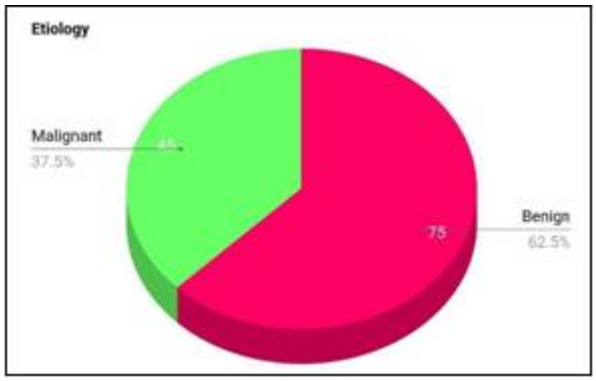
3. Results

A Total of 120 persons were studied.65 males and 55 females were included in this study.



Caption
Of them 90 were below 60 yrs and 30 were above 60 years.

Among 120cases, 75(62.5%) patients had benign lesions like stone, stricture etc and 45 (37.5%) had malignant etiology.



Caption

In this study none had previous history of post ERCP pancreatitis, pancreatic divisum, suspected SOD. 12 (10%) patients had previous history of pancreatitis; most of them were biliary pancreatitis episodes with spontaneous resolution.

Serum bilirubin was <7mg/dl in 75(62.5%) cases and >7 mg/dl in 45 (37.5%) cases.

CBD diameter < 10mm in 68(56.6%) cases and >10 mm in 52 (43.3%) cases.

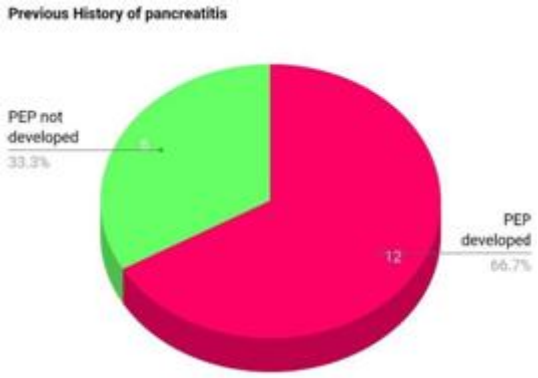
Among procedure related variables -Degree of difficulty in cannulation Easy (1 to 5 attempts); Moderate (6 to 15 attempts); Difficult (greater than 15 attempts) 82(68.3%) cases were easy, 33(27.5%) were moderate and 5(4.16%) were difficult.of them

Cannulation time < 5min in 90(75%) cases >5 min in 30 cases (25%)

Biliary sphincterotomy was done in 48 cases (40%);precut sphincterotomy was done in 8 cases(6.6%);balloon dilatation was done in 20 cases(16.66%);number of PD cannulations >1 in 28 cases(23.3%) ;prophylactic PD stent placement done in 23 cases (18.3%).

Overall

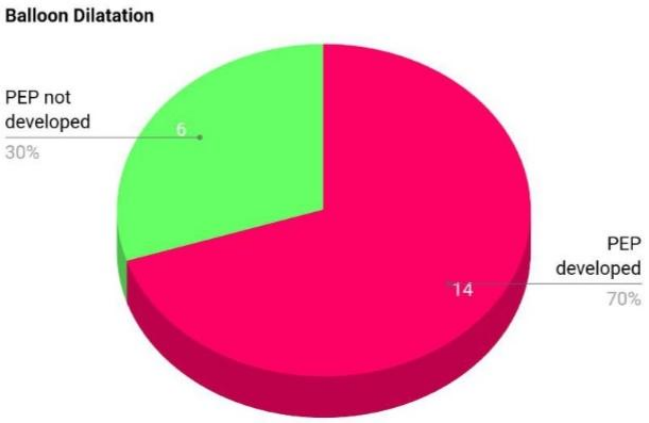
1) In the present study post ercp pancreatitis developed in 18 cases (15%) of them males were 4 and females were 14(p-value 0.003) patients.
2) Among 18 patients who developed PEP,12 cases had previous history of pancreatitits (p- value<0.05)



	PEP +	PEP -
Previous history of pancreafifis(php + Php -	12	6
	6	96

1) In the present study PEP developed in 14 out of 20 cases in whom balloon dilatation was done during ERCP (P-Value 0.05)

	PEP+	PEP-
Balloon dilafion done	14	6
Balloon dilafion not done	4	96



2) Of 23 cases in whom prophylactic PD stenting done, none developed post ercp pancreatitis (p value <0.05)

4. Discussion

Acute Pancreatitis is the most common and feared complication of ERCP, associated with substantial morbidity and occasional mortality. Asymptomatic hyper-amylasemia occurs in over 35%to 70% of ERCPs. Clinical Acute Pancreatitis occurs in 5% of diagnostic ERCPs, 7% of therapeutic ERCPs, and up to 25% in those with suspected SOD or in those with a history of post-ERCP pancreatitis.

Although there is some uncertainty in predicting which patients will develop PEP, a number of risk factors acting

independently or in concert have been proposed as predictors of PEP. Identification of these risk factors for PEP is essential to recognize cases in which ERCP should be avoided if possible, or in which protective endoscopic or pharmacologic interventions should be considered.

Factors That Increase the Risk of Post-ERCP Pancreatitis

1) Patient-Related
Young age, female gender, suspected SOD, history of recurrent pancreatitis, history of post-ERCP pancreatitis, normal serum bilirubin level

2) Procedure-Related
Pancreatic duct injection, difficult cannulation, pancreatic sphincterotomy, pre-cut access, balloon dilation

3) Operator or Technique-Related
Trainee (fellow) participation, Non use of a guide wire for cannulation, failure to use a pancreatic duct stent in a high-risk procedure. In the present study all the above variables were evaluated and it is found that PEP is more common in young females, those with previous history of pancreatitis and more difficulty in cannulation, use of precut sphincterotomy and multiple PD cannulations and usage of balloon dilatation were associated with increase risk of PEP.

The 3 major modalities shown to reduce the risk are post-ERCP pancreatitis include prophylactic pancreatic stents, preprocedural intravenous fluids, and rectal administration of NSAIDs. Pancreatic stent placement clearly decreases the risk of PEP in high-risk patients.

As per ASGE latest recommendations:

TABLE 1. Summary of recommendations

Timing	GRADE recommendation	General concepts
Preprocedure	Among unselected patients undergoing ERCP, the ASGE recommends preprocedural rectal NSAIDs to prevent PEP (Strong recommendation/ Moderate quality of evidence).	• Avoid in patients with recent peptic ulcer disease or renal insufficiency • Can be administered >30 min before or during the procedure • Use indomethacin 100 mg in adults
	For high-risk patients undergoing ERCP, the ASGE recommends preprocedural rectal NSAIDs should be given to prevent PEP (Strong recommendation/ Moderate quality of evidence)	• Avoid in patients with recent peptic ulcer disease or renal insufficiency • Can be administered >30 min before or during the procedure
Intraprocedure	In unselected patients undergoing ERCP, the ASGE suggests wire-guided cannulation over contrast-guided cannulation to minimize the risk of PEP (Conditional recommendation/Moderate quality of evidence).	• Cannulate then advance wire • Endoscopist, or experienced operator, to perform wire manipulation • Avoid forceful or repeated wire advancement into the pancreatic duct
	In high-risk patients undergoing ERCP, the ASGE recommends that pancreatic stents be used to prevent PEP in high-risk patients in which the pancreatic duct has been repeatedly or deeply accessed (Strong recommendation/Moderate quality of evidence) and suggests it for high-risk patients as long as pancreatic duct access can be easily achievable (Conditional recommendation/Moderate quality of evidence).	• Use 3F-5F stent (preferably 5F) without internal flange 3-7 cm in length • If wire cannot pass beyond the head, a short stent (2-3 cm) may be used • Get an abdominal x-ray to assess spontaneous stent migration • Remove in 2-4 weeks if needed
Postprocedure	In unselected patients undergoing ERCP, the ASGE suggests aggressive periprocedural and postprocedural intravenous hydration to prevent PEP pancreatitis (Conditional recommendation/Moderate quality of evidence).	• Can be initiated preprocedure or intraprocedure • Avoid in patients with history of congestive heart failure, renal insufficiency, or advanced liver disease • Use lactate Ringer's solution • Periprocedural bolus of 20 mL/kg followed by 3 mL/kg/h for 8 h • May be more feasible for inpatients

5. Conclusions

Although typically mild, PEP is associated with mortality in 1 in 500 patients and an annual nationwide cost of several hundred millions. Several measures can be done pre-procedure, intra procedure and post procedure to reduce the risk of PEP. Young females; those with previous history of pancreatitis and usage of balloon dilatation during ercp increase PEP risk. Therefore identifying high risk cases prior to procedure; prophylactic PD stenting in appropriate cases reduces PEP. Hence early identification of risk factors of PEP and timely intervention reduces health related quality of life.

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