

Complications of ERCP

Significant specific related complications occur in 1.8% of all ERCP's performed, with an overall mortality of 0.6%. The three major complications include perforation, haemorrhage and acute pancreatitis. Complications related to cardiorespiratory events are not included.

1. Perforation

The incidence of perforation following ERCP is 1.3% with a mortality rate of 18%.

Perforations are classified into the following categories:

- Type I Lateral or medial duodenal wall distant from the ampulla
- Type II Peri Vaterian
- Type III Bile duct
- Type IV Retroperitoneal

Adverse prognostic factors include:

- Elderly patients (>70 years)
- Diagnostic delay >24 hours
- Associated biliary sepsis

Principles of management:

- Early diagnosis – high index of suspicion, CT scan and contrast studies
- Surgery – oversewing of perforation, relief of any biliary obstruction and drainage of collections. Duodenal diversion if late diagnosis
- Consider conservative or endoscopic/percutaneous measures if:
 - Localised perforation with no extravasation
 - No significant fluid collections
 - No significant retroperitoneal emphysema
 - Stable patient

2. Haemorrhage

The incidence of haemorrhage following ERCP is approximately 1%-2%. Over 50% of these are associated with endoscopic sphincterotomy. Presentation of bleeding may vary from immediate to several days. Mortality varies with severity of bleed and patient co-morbidities. The mortality rate for these cases is <1%.

Haemorrhage following ERCP is classified as:

- Mild – clinical evidence of bleeding; Haemoglobin drop <3G/dL; no need for transfusion
- Moderate – requires transfusion (<4 units); no intervention required such as endoscopy, angiography or surgery
- Severe – requires transfusion (>5 units); intervention required such as surgery or angiography/embolisation to stop bleeding

Risk factors – cirrhosis, portal hypertension
– coagulopathy (warfarin, antiplatelet therapy)

3. Post ERCP Pancreatitis (PEP)

PEP is the most common complication of ERCP and occurs in 5%-7% of all patients undergoing this procedure. Most attacks are mild and recover with conservative measures. Approximately 0.3%-0.6% of patients develop severe pancreatitis characterised by systemic inflammatory response syndrome (SIRS), development of pseudocysts, pancreatic necrosis and multi organ failure. The mortality rate varies according to severity of pancreatitis and co-morbidities of patient, but may approach 20%.

Adverse prognostic features include:

- Female patients – twice risk to males
- Sphincter of Oddi Dysfunction (SOD). SOD increases rate of PEP by 20%-30%, with a higher incidence of severe pancreatitis
- Patients with recurrent pancreatitis or previous episodes of PEP
- Normal Bilirubin and non dilated common bile duct
- Age less than 70 years increases risk of PEP
- ERCP related factors:
 - Difficult cannulation – number of attempts proportional to PEP; use of balloon dilation or needle knife sphincterotomy
 - Contrast injection into the pancreatic duct
 - Operator training and case volume (Conjoint Committee Accreditation - more than one procedure per week).

Favourable prognostic factors:

- Previous sphincterotomy
- Patients with pancreatic malignancy

Management:

- No pharmacological therapy of any benefit
- Reduced risk of PEP with insertion of pancreatic stent or nasopancreatic catheter

Summary

Morbidity and mortality of ERCP may be reduced by:

- Well trained operator and use of suitable equipment
- Appropriate patient selection
- Consideration of non invasive diagnostic alternatives, especially in high risk patients
- Early diagnosis and management of any complication

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