



CANADIAN ASSOCIATION  
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# Dynamic Practice Guidelines for Emergency General Surgery

Committee on Acute Care Surgery, Canadian Association of General Surgeons

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## ENDOSCOPIC PERFORATION

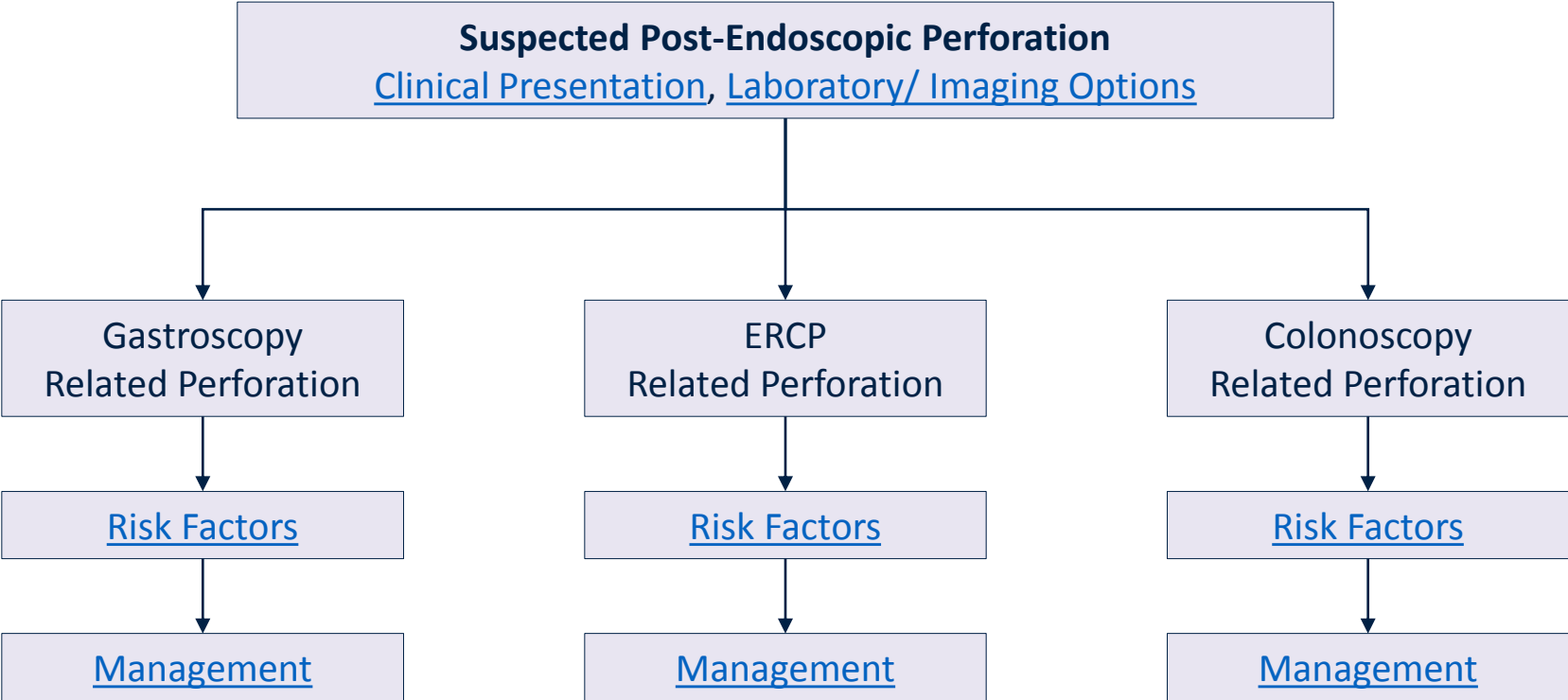
Dynamic Practice Guidelines for Emergency General Surgery

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Committee on Acute Care Surgery, Canadian Association of General Surgeons

# ENDOSCOPIC PERFORATION

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## EPIDEMIOLOGY

- Iatrogenic perforation is a rare (0.03 – 0.1%), but potentially life-threatening complication associated with any endoscopic procedure.
- Perforations occur more frequently with therapeutic endoscopy.
- Increasing incidence as a result of:
  - Widespread implementation of endoscopic screening programs.
  - Expansion of indications for therapeutic endoscopy.



## CLINICAL PRESENTATION

- Pain
- Fever
- Abdominal distension
- Subcutaneous emphysema

## PHYSICAL EXAMINATION

- Signs of sepsis (fever, hypotension, tachycardia, and tachypnea)
- Signs of peritonitis

## LABORATORY INVESTIGATIONS



Indicated Investigations:

- Full septic work-up (CXR, Pan-Cultures)
- CBC-D, Electrolytes, LFTs, BUN, and Creatinine

## IMAGING



Indicated Investigations:

- ECG
- CXR
- CT abdomen/pelvis with oral contrast

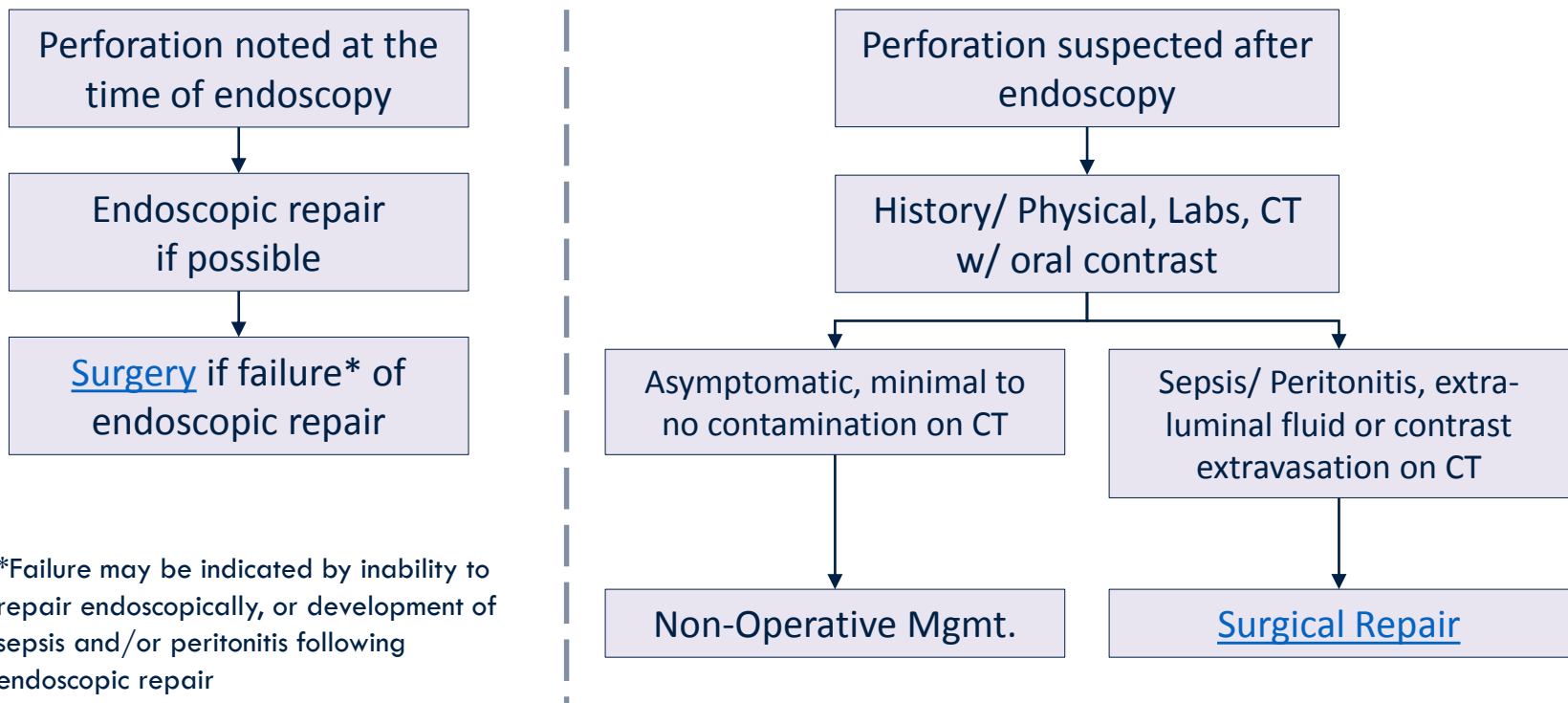
## GASTROSCOPIC RELATED PERFORATION

### Risk and Precipitating Factors

Patient Factors	Procedural Factors	Modifiable Factors
<ul style="list-style-type: none"><li>• Age (&gt;80)</li><li>• Irradiated tissue</li><li>• Ulcers</li><li>• Underlying malignancy</li></ul>	<ul style="list-style-type: none"><li>• Over-distension during argon coagulation</li><li>• Endoscopic mucosal resection (EMR)</li><li>• Endoscopic submucosal dissection (ESD)</li><li>• Anastomotic dilation</li></ul>	<ul style="list-style-type: none"><li>• Avoidance of NSAIDs</li><li>• Steroids (delayed diagnosis)</li></ul>

## GASTROSCOPIC RELATED PERFORATION

### Management





## GASTROSCOPIC RELATED PERFORATION

### Surgical Options



- Primary repair (early presentation, hemodynamic stability, small and favorable location)
- Partial gastrectomy (delayed presentation, septic complications, and located on lesser curve/ near GE junction)

## ERCP RELATED PERFORATION

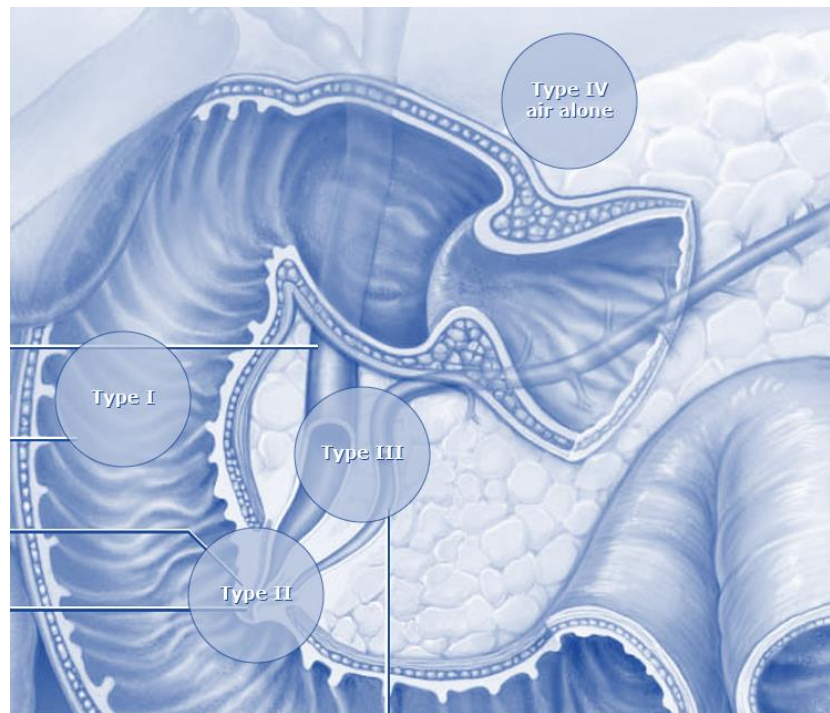
### Risk and Precipitating Factors

Patient Factors	Procedural Factors	Modifiable Factors
<ul style="list-style-type: none"><li>• Sphincter of Oddi dysfunction</li><li>• Biliary stricture</li><li>• Duodenal and peri-ampullary diverticulum</li><li>• Billroth II gastrectomy</li></ul>	<ul style="list-style-type: none"><li>• Sphincterotomy</li><li>• Guidewire manipulation</li><li>• Stricture dilation</li><li>• Stent insertion</li></ul>	<ul style="list-style-type: none"><li>• Avoidance of precut sphincterotomy</li></ul>

## ERCP RELATED PERFORATION

### The Stapfer Classification

Type	Location
Type I	Free bowel wall perforation
Type II	Peri-ampullary injury
Type III	Perforation of the pancreatic or bile duct
Type IV	Retroperitoneal air alone

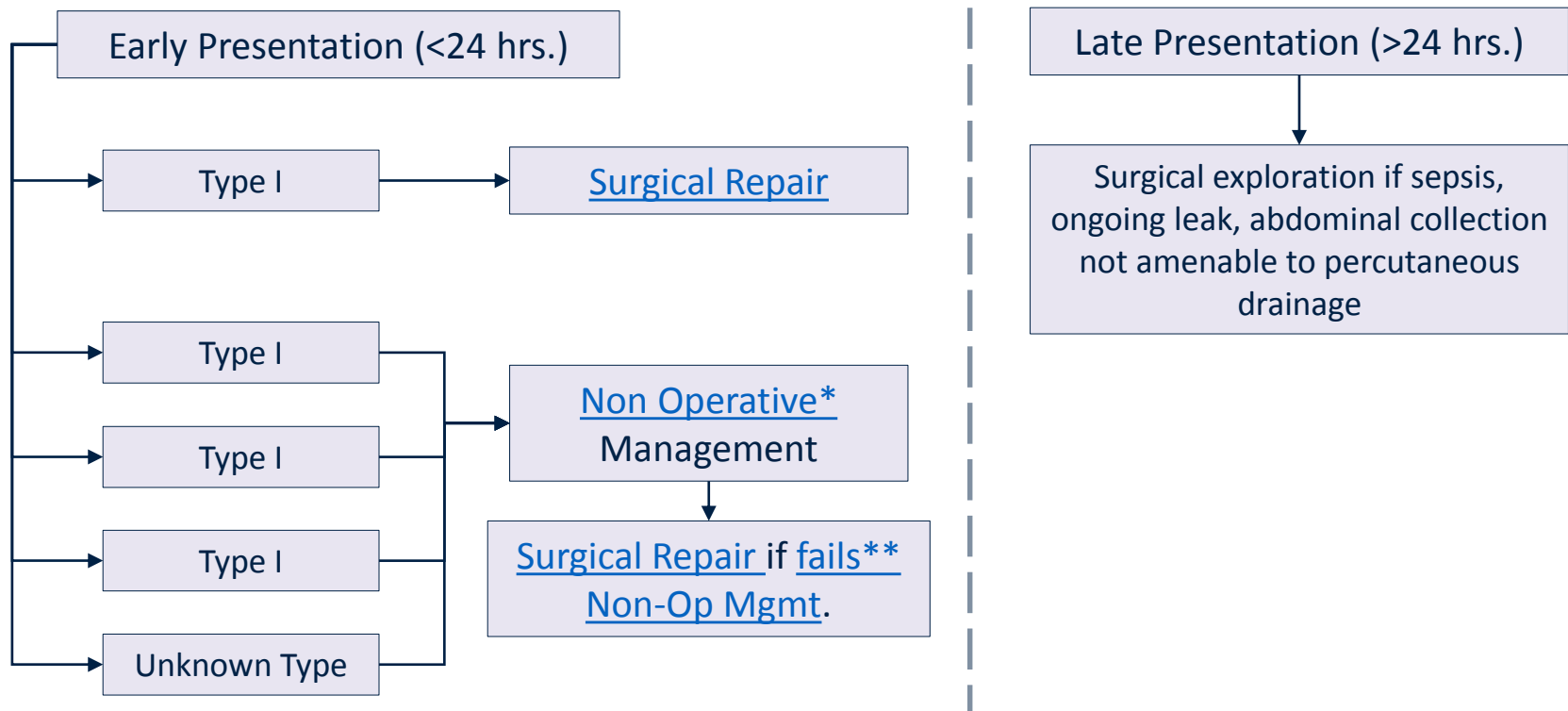


# ENDOSCOPIC PERFORATION

Return to CPG

## ERCP RELATED PERFORATION

### Management





## ERCP RELATED PERFORATION

### Management

\* Non-operative management generally includes NPO, broad-spectrum antibiotics, nasogastric or nasoduodenal drainage. Non-operative management may also include endoscopic therapies, such as stenting of the CBD

\*\* Failure of non-operative management may be indicated by generalized peritonitis, ongoing sepsis, large or ongoing leak, or fluid collection not amenable to percutaneous drainage

## ERCP RELATED PERFORATION

### Surgical Repair



- Closure of perforation alone (early surgery, minimal contamination, healthy tissue).
- Closure of perforation plus duodenal diversion (Pyloric exclusion)
- +/- drainage of retroperitoneal abscess
- +/- cholecystectomy and CBD exploration for primary diagnosis

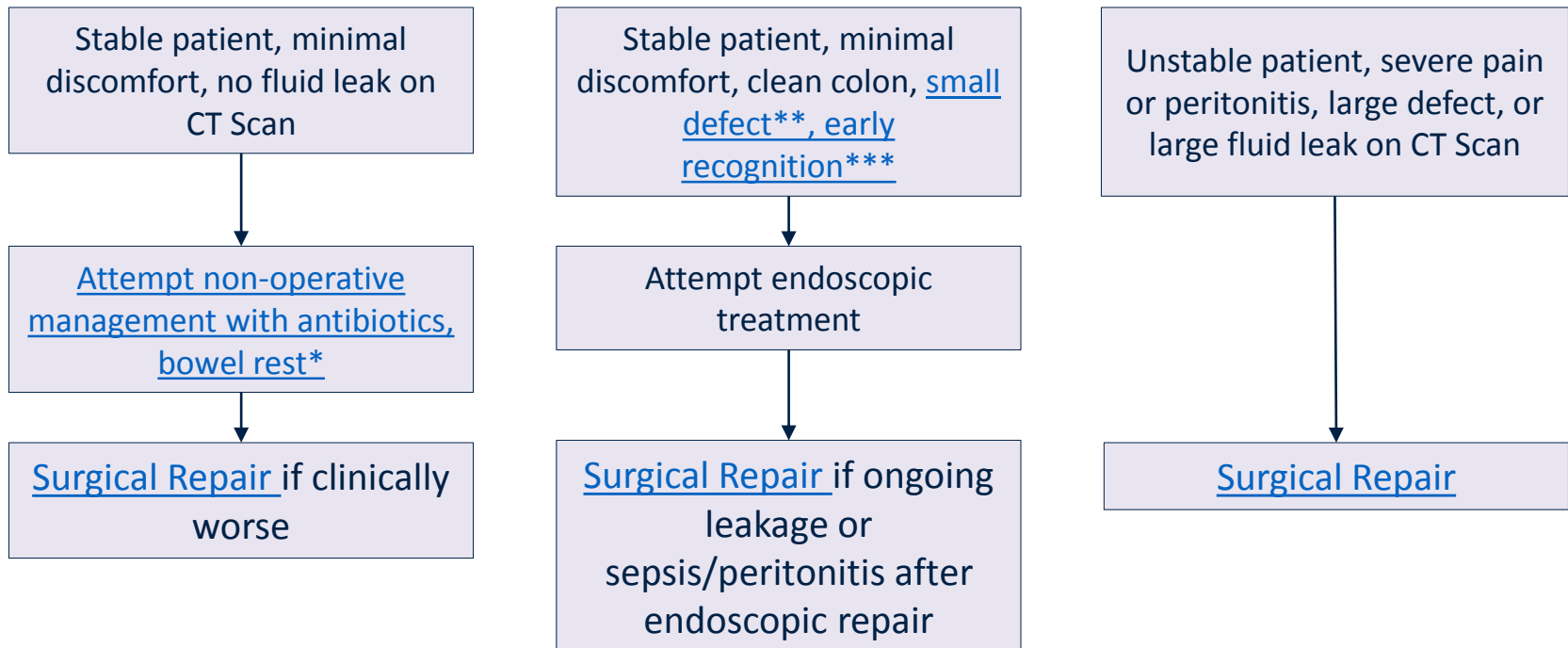
## COLONOSCOPIC RELATED PERFORATION

### Risk and Precipitating Factors

Patient Factors	Procedural Factors	Modifiable Factors
<ul style="list-style-type: none"><li>• Advanced age</li><li>• Diverticulosis</li><li>• IBD</li><li>• Reduced colon mobility (adhesion, malignancy, and radiation)</li><li>• Connective-tissue disorder</li></ul>	<ul style="list-style-type: none"><li>• EMR</li><li>• ESD</li><li>• Stent insertion</li><li>• Anastomotic dilation</li></ul>	<ul style="list-style-type: none"><li>• CO2 insufflation (less barotrauma)</li><li>• Steroids (delayed diagnosis)</li></ul>

## COLONOSCOPIC RELATED PERFORATION

### Management







## COLONOSCOPIC RELATED PERFORATION

### Management

\*Non-operative management should generally only be attempted in the minimally symptomatic patient with air leak only on CT

\*\*Endoscopic management is most likely to be successful for perforations that are  $\leq 2$ cm, although there are reports of successful endoscopic repair of larger defects

\*\*\*Endoscopic repair is best employed when a perforation is recognized at the time of colonoscopy

## COLONOSCOPIC RELATED PERFORATION



### Surgical Repair

- Primary repair of perforation (early surgery, minimal contamination, healthy tissue)
- Resection with primary anastomosis (hemodynamically stable patient)
- Resection with fecal diversion
- Outcomes are similar whether surgery is performed laparoscopically or via laparotomy