

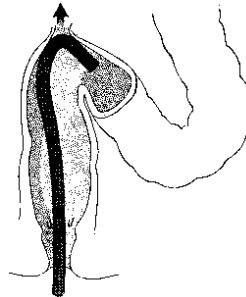
## COMPLICATIONS OF SIGMOIDOSCOPY AND COLONOSCOPY

### Perforation

- rigid sigmoidoscopy - 0.002% to 0.02%
- flexible sigmoidoscopy - 0.01%
- diagnostic colonoscopy 0.2% to 0.4%
- colonoscopy with polypectomy 0.3% to 1.0%.
- Hydrostatic balloon dilatation of colonic anastomotic strictures - 4.6%

### Mechanical perforation

- by the tip of the instrument -occurs at sites of weakness of the colonic wall (e.g., diverticula, inflammation, radiation injury, or ischemia) and distal to obstructing points (e.g., neoplasms, strictures, flexures, or kinks).
- The shaft of the endoscope may act as a lead point if the instrument is flexed sharply, and



perforation can develop as shown.  
the pelvis by diverticular disease or previous pelvic surgery predisposes to this mechanism.

Fixation of the sigmoid colon in the pelvis by diverticular disease or previous pelvic surgery predisposes to this mechanism.

### Pneumatic perforation (occurs in colon or distal ileum)

- distention by insufflated air.
- Closed loop (competent ileocecal valve, obstruction of distal lumen by colonoscope), extremely high pressure in the cecum.

### Perforation from colonoscopic polypectomy - electrosurgical injury

- immediate full-thickness cut through the wall by a snare or by hot biopsy forceps
- delayed rupture of necrotic tissue. The risk of perforation when the hot biopsy forceps were used in the cecum and ascending colon was 0.3% in a survey of endoscopists.

- The postpolypectomy coagulation syndrome of pain, peritoneal irritation, and fever may represent a microperforation.

Risk factors are poor bowel preparation, presence of acute bleeding, an uncooperative patient.

A biopsy forceps, brush, dilator, or other accessory may perforate the colon.

Perforation of the cecum during colonoscopic decompression of nonobstructive colonic dilatation has also been noted.

- Diagnosis: Immediate
  - Free perforation into the peritoneal cavity may be recognized during the procedure if abdominal viscera are seen.
  - Marked persistent abdominal distention and pain → X-ray → pneumoperitoneum..
  - Retroperitoneal perforation (usually a pneumatic injury) → subcutaneous emphysema.
  - X-ray - subcutaneous, retroperitoneal, and mediastinal air or even pneumothorax.
- Diagnosis: Delayed
  - If the leak is tiny and well localized
  - Fever, localized tenderness/peritonitis, leucocytosis – at any stage of disease.
- Study – gastrograffin enema/CT

Management: operative vs non-operative. No controlled clinical trials

Operation for: diffuse peritonitis, large lacerations, failed non-operative treatment

- Lap/open colorrhaphy (± edges debridement) – for small perforations, absence of significant underlying colonic pathology, clean colon
- Colectomy with a primary anastomosis
- Colectomy with colostomy – for significant peritoneal soilage, operative delay, underlying colonic pathology precluding primary anastomosis.
- Colostomy – significant soilage, hemodynamic instability, significant comorbidities.

Non-operative treatment: hospitalization, intestinal rest, IV fluids, IV antibiotics – to allow the perforation to seal. Same as in diverticular disease.

## Bleeding

- After colonoscopic polypectomy - 0.7% to 2.5%.
- After use of the hot biopsy forceps - 0.4%.
- Postpolypectomy bleeding may occur immediately, but in 30% to 50% of cases, it is delayed for 2 days to a week, when the eschar sloughs.
- Sessile polyps, large thick pedicles, equipment failure, and faulty technique account for some of the bleeding associated with polypectomy.
- Immediate bleeding can be treated by resnaring the remaining stalk and tightening the snare for 10 to 15 min, usually without further electrocoagulation. Injection of 5 to 10 mL of 1:10,000 epinephrine solution into the stalk or submucosa may also be helpful.
- Bleeding may also be stopped by a variceal band ligator.
- Interventional angiography with selective infusion of vasopressin or embolization is occasionally necessary.
- Delayed bleeding usually stops spontaneously, although transfusions, endoscopic therapy, angiography, and even laparotomy may be required.

## Miscellaneous Complications

- Explosive concentrations of combustible gases
- Severe dehydration, electrolyte abnormalities
- Splenic tears.
- Volvulus of the colon or the ileum
- Colonoscope or flexible sigmoidoscope can become incarcerated in an inguinal hernia.

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