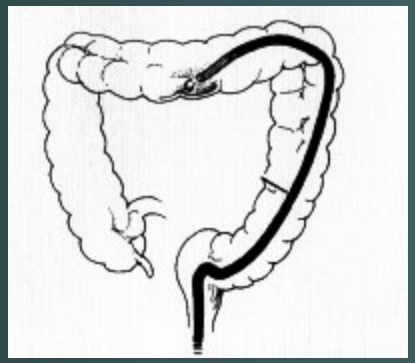
Complications of colorectal surgery



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Patient Risk Factors

Non modifiable
Age, sex
Co-morbidities
Previous surgical history

Modifiable
Nutrition, smoking, functional capacity
Obesity, sarcopenia

INTRA0PERATIVE

Intraoperative Risk Factors

Surgical approach (open vs MIS)

Type of procedure (reoperation, deep pelvic surgery)

Duration, blood loss, adhesions

Surgical wound infection (SSI) precautions

Wound closure techniques

Complications

Gastrointestinal-ileus

Hemotologic - bleeding

Infectious - SSI

Pulmonary

Renal

Cardiac

Neurologic

ILEUS

- Ileus, which is a functional obstruction of the small bowel, is the single most common complication after colorectal surgery that is likely a consequence of disturbances to normal peristalsis governed by the enteric nervous system as a result of anesthetic and surgical manipulation

- Several factors are known to slow return of bowel function including medications (i.e., opioids), electrolyte abnormalities, inflammatory conditions, pain, and degree of operative manipulation. Studies have suggested that postoperative ileus can be subdivided into severe ileus and non-severe ileus.

- Non-severe ileus “primary” ileus, was best treated with nonoperative management including NG tube decompression, bowel rest, intravenous fluids, mobilization , avoidance of opioids. Severe ileus was very different and driven by intraabdominal complications such as abscesses.As a result, management for severe ileus centers on addressing the underlying insult.

Postoperative Small Bowel Obstruction (Mechanical Bowel Obstruction)

- Mechanical bowel obstructions in the postoperative setting for the small bowel and colon are most often caused by adhesions.For the small bowel, these obstructions are termed early postoperative small bowel obstructions (ESBO) and occur in upward of 9.5% of abdominal operations

- Compared to laparoscopic approaches, open cases are at increased risk for developing this complication.
- Diagnosis can be made through abdominal radiographs,which may show air-fluid levels in loops of small bowel, and CT scans, which may show a transition point.

- Treatment is usually initially nonoperative with nasogastric decompression, and success rates have been reported as high as 87% .
- However, if the obstruction does not resolve, then the patient may require operative intervention.

Anastomotic Complications

- ***The incidence of anastomotic leak after bowel anastomosis ranges from 2% to 21% and is associated with significant risk of short- and long-term morbidity.***
- ***The site of anastomosis is strongly related to the risk of anastomotic leak. The risk of leak is lower for small bowel and ileocolic anastomoses, and higher for ileorectal and distal colorectal anastomoses***

- Patient-related risk factors for anastomotic leak are diabetes mellitus, hyperglycemia and high HbA1c,male sex, higher body mass index, tobacco use, inflammatory bowel disease, chronic immunosuppressive medications, radiation enteritis, malnutrition, hypoalbuminemia, and active infection

- ***Other risk factors*** **:more distal anastomoses, neoadjuvant radiotherapy, and advanced tumor stage,no tension-free anastomosis and poor blood supply to the ends of bowel used for anastomosis, blood loss and blood transfusions, prolonged operating time, and intraoperative contamination, Using multiple stapler firings across the rectum**

- The role of proximal fecal diversion in reducing the risk of anastomotic leak is also unclear. It has been cited as a risk factor for leak, as a protective factor, and as a neutral factor.It certainly decreases the risk of septic complications of a leak, and it may even prevent an anastomotic leak from manifesting any clinical signs.Therefore,the risk for reoperation is lower, as is the risk of mortality

- There has been considerable debate over whether mechanical bowel preparation and/or oral antibiotics prior to colorectal resection reduces the risk of anastomotic leak,because the studies had revealed a diverse range of outcomes

- The diagnosis of anastomotic leak is not always obvious.Aside from extravasation of retrograde contrast enema on computed tomography (CT) scan, which has the highest sensitivity and specificity for anastomotic leak, there is very little consensus on what clinical findings are confirmatory for an anastomotic leak

- Leaks are commonly assumed to occur within the first week of the operation during the index hospitalization, but,in reality, up to half of leaks may present after the patient has been discharged, with a significant proportion detected over a month after surgery

- Late leaks tend to present insidiously with pelvic pain and failure to thrive.
- Elevated serum C-reactive protein (CRP) and procalcitonin are biomarkers that serve as early indicators of anastomotic leak after colorectal surgery

- CRP levels are expected to be higher in patients undergoing open colorectal surgery compared to patients undergoing lap surgery. In patients undergoing open surgery, CRP levels over 209 mg/L on postoperative day 3 and123.5 mg/L on postoperative day 4 are most predictive of leak. In patients undergoing laparoscopic surgery, a CRP level over 146.7 mg/L on postoperative day 2 was most predictive of leak

- For small bowel and ileocolic anastomoses, resection and re-anastomosis can be performed if the bowel ends are viable and mobile. If the status of the patient or the bowel is marginal, then formation of an end ostomy and mucus fistula, or a divided end-loop stoma is the safest option. For colorectal anastomoses with a significant defect, then the safest option is to take down the anastomosis and bring up an end colostomy.

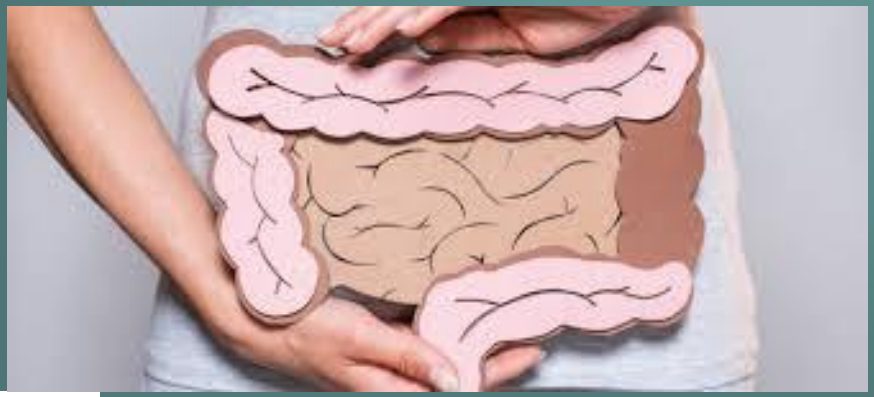
- the patient with a contained leak and a small abscess <3 cm may successfully undergo non-operative management with broad-spectrum antibiotics. Larger abscesses may require percutaneous drainage in addition to broad-spectrum antibiotics

- Larger abscesses may require percutaneous drainage in addition to broad-spectrum antibiotics. Fecal diversion may or may not be necessary, depending on the severity of the leak. For colorectal/coloanal anastomotic leaks, drain placement may be performed transrectally through the anastomotic defect

- it is ideal to wait at least 3 months to reoperate to allow for resolution of inflammatory adhesions that would make reoperation more treacherous. Waiting even longer will often result in healing of the anastomosis without the need for operative intervention

- Some groups have described the use of transanal endoscopic platforms such as Transanal Minimally Invasive Surgery (TAMIS) or Transanal Endoscopic MicroSurgery (TEMS) to directly repair anastomotic leaks

- Anastomotic Stricture
- Anastomotic Bleeding
- Blind Loop Syndrome
- Anastomotic Fistula

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