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Does drainage of the peritoneal cavity have an impact on the postoperative course of community-acquired, secondary, lower gastrointestinal tract peritonitis?

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Reoperation;
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Abstract

BACKGROUND: In the surgical management of lower gastrointestinal tract peritonitis (LGTP), drainage of the peritoneal cavity is often recommended. The objective of the study was to evaluate the impact of drainage of the abdominal cavity during management of LGTP.

METHODS: From January 2009 to January 2012, patients undergoing surgery for LGTP were included. The study comprised 3 steps: (1) description of the overall population; (2) comparison of the "no drainage" and "drainage" groups; and (3) a propensity score-matched analysis. The primary end point was the major complications rate; secondary end points were the overall complication, risk factors for postoperative complications, and the length of hospital stay.

RESULTS: A total of 205 patients underwent surgery for LGTP. Characteristics of the peritoneum were noted on the surgical report in 141 cases (68%). Abdominal drainage was implemented in 118 patients (83%). After propensity score matching, there was no difference between drainage and no drainage groups in the major postoperative complications (34.7% vs 34.8%; $P = .89$).

CONCLUSIONS: Drainage of the abdominal cavity had no impact on postoperative abscess and reoperation rates. Standardization of drainage in this context is required.

The use of drainage in planned (nonemergency) lower gastrointestinal tract surgical procedures is well codified in the literature. Drainage is no longer recommended in cases of colon surgery[1] and its value in cases of rectal excision is subject to debate, since some meta-analysis show that drainage has no impact.[1–3] In France, the systematic use of drainage is not recommended in the national guidelines on planned colectomy,[4] and there are

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no formal practice guidelines on drainage in the context of rectal excision.[5]

In contrast, the implementation of drainage during emergency surgery for lower gastrointestinal tract peritonitis (LGTP) is not codified. In the absence of evidence-based medicine in this field, drainage is often implemented as a function of a surgeon's opinion or experience of difficult clinical situations—without knowing whether it will be useful or not. The value of drainage in lower gastrointestinal tract surgery has not been investigated (other than in the setting of acute appendicitis, where recent meta-analyses have demonstrated that drainage is not useful).[2]

Peritonitis is a common surgical emergency. Our understanding of this condition and the corresponding treatment options have greatly improved over the last decade,[6] thanks to improved diagnosis (using rapid and accurate imaging techniques), better critical care, the establishment of antibiotic regimens suited to the etiology of the peritonitis, improved isolation of bacteria from peritoneal samples,[7] and determination of the source of peritonitis.[8] Surgical management of the source of peritonitis is currently the "gold standard" and has also been standardized with regard to the disease characteristics.[9] The goal is to reduce bacterial contamination by eradicating the origin of the infection and by washing the peritoneal cavity. Drainage of the abdominal cavity supposedly (1) evacuates intraperitoneal fluid from the abdominal cavity; (2) controls and helps to manage anastomotic fistula; and (3) avoids further intra-abdominal fluid collections.

In cases of community-acquired LGTP, there is no consensus on the need for drainage of abdominal cavity, the type of drainage, the number of drains, and when to remove the drains. Surgeons variously prefer passive drainage, active drainage, or a combination of the 2 for varying periods of time. However, the use of drainage per se is also associated with potential complications, such as parietal hemorrhage, pain, and/or evisceration at the drainage site, a digestive fistula (for vacuum drainage) and (in the longer term) incisional hernia at the drainage site requiring surgical treatment. Furthermore, drainage and the associated follow-up extend the patient's length of stay.

The primary objective of the present study was to assess the impact of drainage of the abdominal cavity in cases of LGTP.

Methods

Population

From January 2009 to January 2012, all patients undergoing surgery for secondary LGTP in Amiens University Hospital (Amiens, France) were included in the study.

Study criteria and design

The main inclusion criterion was surgery for community-acquired LGTP (Fig. 1). The main exclusion criteria were primary peritonitis (ie, in the absence of organ perforation), peritoneal dialysis (because of the absence of organ perforation), nosocomial peritonitis, postoperative peritonitis, upper gastrointestinal tract peritonitis, peritonitis due to appendicitis, peritonitis requiring the implementation of Mikulicz drainage (gauze is placed in the peritoneal cavity to drain the fluid by capillary action; typically, the gauze is removed progressively over a 2-week period[10]), and peritonitis in which the peritoneum was not described in the surgical report (to avoid bias).

The study comprised 3 steps: (1) a description of the overall patient population; (2) a comparison of the drainage and no drainage groups (the variables that differed significantly between the 2 groups constituted factors that influenced drain placement and thus were used to build the propensity score [PS]); and (3) a PS-matched analysis of the primary and secondary end points. The variables that differed significantly between the drainage and no drainage groups constituted factors that influenced drain placement and thus were used to build the PS.

End points and collected data

The study's primary objective was to assess the impact of drainage of the abdominal cavity on major postoperative complications after PS-matching. The secondary end points included the overall postoperative complication rate, risk factors for postoperative complications; the frequency with which the peritoneum was described in the surgical report, the surgeon's personal policy on drainage, the length of hospital stay, and the proportion of patients with Clavien–Dindo grade IIIb complications.

The following parameters were notably recorded:

- Preoperative data: age, sex, body mass index, American Society of Anesthesiologists score, cirrhosis, preoperative kidney failure, preoperative heart failure, preoperative use of corticosteroids, and clinical biochemistry data (the white blood cell count, serum C-reactive protein level, and serum creatinine level).
- Intraoperative data: cause of peritonitis, surgical approach (laparoscopy vs laparotomy), operating time, description of the peritoneum by the surgeon, type of peritonitis (purulent vs stercoral and localized vs generalized), and the type and number of drains.
- Postoperative data: the type and incidence of postoperative complications (graded according to the Clavien–Dindo classification[11]), the reoperation rate, postoperative mortality, the length of hospital stay, and follow-up procedures.
- Drainage: the mean time to removal of drainage, and drainage-related complications.
- Risk factor for postoperative complication: by analyzing preoperative and intraoperative data.
- The surgeon's level of experience (senior vs junior), and individual practice with regard to drainage for the 3 individual surgeons having performed the largest number of operations for peritonitis.