



Gastrointestinal Surgery: To Drain or Not to Drain

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Editorial

Abdominal drainage following major gastrointestinal surgery has often been a matter of debate as whether to drain or not to drain [1]. In gastrointestinal surgery, drain insertion is used for the removal of fluid collections, for the early detection of postoperative bleeding or anastomotic leakage. Incorrect use of an intra-abdominal drain can cause exudation of protein-rich ascitic fluid, which may lead to hypovolemia and hypoproteinemia, or facilitate retrograde bacterial contamination. With recent advances in interventional radiology, image-guided percutaneous drainage and aspiration procedures after the onset of complications now entail a low risk of intestinal injury [2]. Although the routine use of a drain is considered unnecessary from the perspective of recent Enhanced Recovery after Surgery (ERAS) guidelines, no high-quality evidence exists regarding whether an intra-abdominal drain would prevent or alleviate postoperative complications [1].

Previous meta-analyses have proven that there is no apparent evidence that justifies prophylactic drainage in reducing the frequency or detecting anastomotic leak in colorectal surgery [3]. There are many studies observed the detrimental effect of drains on the anastomotic lines and several randomized studies were subsequently conducted examining anastomotic healing rates and other outcomes with or without drain placement [4]. Some researchers demonstrated that drains may cause infection around the anastomotic area, affect anastomotic healing, and increase the incidence of anastomotic dehiscence and others found that drainage of the anastomosis increased leakage rate, morbidity, and mortality while interesting data reported that drains could stimulate the formation of fluid collection by causing a foreign-body reaction or inhibiting the closure of the dead space [5]. A single-institutional study analyzing over 1,500 patients revealed that the use of abdominal drain was one of the significant factors of anastomotic leak in the univariate analysis [6].

In case of upper abdominal surgery, gastric, hepatic and pancreatic resection, the relationship between peritoneal drain placement and the incidence of postoperative anastomotic leak has been well-studied where no significant difference in occurrence has been observed between those who did and did not have a drain inserted [7]. It was reported that routine prophylactic abdominal drainage following laparoscopy-assisted distal gastrectomy for early gastric cancer may not be necessary [8] and placement of intra-abdominal drains after laparoscopic sleeve gastrectomy does not facilitate detection of leaks and abscesses [9]. After hepatic resection, drains were unable to prevent the occurrence of bile collections and were associated with an increased trend toward infected intra-abdominal collections. Moreover, peritoneal drains also failed to detect bile leakage or hemorrhage when those complications did occur. Regarding drain placement in the setting of pancreatic resection, several studies have shown peritoneal drains to be associated with increased morbidity while not altering rates of secondary drainage procedures or reoperation [7]. In trial to assess the benefits and harms of routine abdominal drainage after pancreatic surgery, it was unclear whether routine abdominal drainage has any effect on the reduction of mortality and postoperative complications after pancreatic surgery. In case of drain insertion, low-quality evidence suggests that active drainage may reduce hospital stay after pancreatic surgery, and early removal may be superior to late removal for people with low risk of postoperative pancreatic fistula [10].

In case of colorectal surgery, several well-constructed, prospective studies failed to show any benefit from surgically placed closed suction drainage and there appears to be no statistical difference in the rate of complications between patients who have drains inserted and those who no drains and these data suggested that routine placement of intraperitoneal drains was unnecessary [11]. A recently published meta-analysis

studied the effect of prophylactic drain placement in patients with colorectal anastomosis in 11 randomized clinical trials and did not show any statistical differences in 1,803 patients with and without routine prophylactic drain placement with regard to overall anastomotic leakage, clinical anastomotic leakage, radiological anastomotic leakage, mortality, wound infection, reoperation and respiratory complications [12].

Surgical-site infections are a major cause of increased length of hospital stays and health care cost. Drains have been implicated as being a risk factor for the development of a surgical site infection. Some researchers did conclude that the presence of drain left was a risk factor for developing a surgical site infection. The authors concluded that drain acted like a foreign body and increased the risk of surgical site infection and potentially anastomotic leak [3]. However, surgically placed drains are not without risk. They have been associated with increased rates of infection, abdominal pain, decreased pulmonary function and prolonged hospital stay and organ damage. Drain increases the rate of leakage by preventing the mobilization of omentum and adjacent organs, obstructing their sealing action on suture line or even creating leakage by mechanical erosion of the anastomoses [11,12].

Conclusion

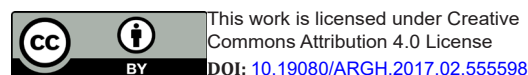
The topic of drain placement is still a matter of agreement and disagreement among gastrointestinal surgeons. With the introduction and growing experience of surgeons to use of laparoscopy, the less invasive maneuvers to treat intraperitoneal fluid accumulation decreased and therefore the indication for a drain is fading. To solve this problem, the author concludes that a large-scale, multicentric, well-designed randomized controlled trials focused on the effectiveness of insertion of drain following gastrointestinal surgery are still warranted.

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