



Preoperative oral antibiotics and mechanical bowel preparation for left-sided colorectal surgery

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Surgical site infection (SSI) is the most frequent postoperative morbidity in colorectal surgery. Once SSI occurs, hospital stay and medical cost increase, resulting in decreased quality of lives of patients. Therefore, controlling SSI has been recognized as the major challenge for surgeons. For this purpose, the use of prophylactic antimicrobial agents is now widely accepted in colorectal surgery.

Since the Center of the Disease Control (CDC) guidelines (1) has been published in 1999, intravenous administration of antibiotics has become a golden standard for prevention of SSI (2,3). However, the advantages of mechanical bowel preparation and preoperative oral antibiotics are still controversial. For decades, surgeons have long discussed about this issue, and many studies have reported the impact of mechanical bowel preparation and/or oral antibiotics on the incidence of SSI in colorectal surgery, failing to draw a conclusion on this issue. Study design to understand a real role of these two measures in prevention of SSI needs careful consideration because oral antibiotic is supposed to be ineffective when used without bowel cleansing to reduce fecal bulk. Even the international guidelines do not have consensus on this topic; In the United States, combined use of mechanical bowel preparation and oral antibiotics is recommended (4), whereas the routine use of mechanical bowel preparation is not recommended in Australia (5). The Canadian guideline states that mechanical bowel preparation should be omitted (6).

Recent studies that evaluated the American College of

Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database derived conflicting outcomes regarding the impact of full bowel preparation, which is a combination of mechanical bowel preparation and oral antibiotics, on the incidence of SSI in colorectal surgery. In 2016, Kiran *et al.* reported association of full bowel preparation with reduced SSI (7), which was confirmed by Klinger *et al.* in the next year (8). On the contrary, Garfinkle *et al.* reported no significant advantage of full bowel preparation, and recommended oral antibiotics alone by evaluating ACS-NSQIP database as well (9).

Toh and his colleagues provided a new insight on this issue. In their report, published in *International Journal of Colorectal Disease* (10), the authors investigated the incidence of SSI after colorectal surgery by the four strategies (full bowel preparation, oral antibiotics alone, mechanical bowel preparation alone, no preparation) in both of laparoscopic and open approach, using the 2015 ACS-NSQIP database since 2015. They limited the surgical procedures only to the left-sided colorectal surgery with low rectal anastomosis. In the study, the authors demonstrated significant association of full bowel preparation with reduction of SSI as well as anastomotic leakage in their targeted operations. This study has strengths in that it focused specifically on left-sided colorectal surgery and was the largest studies in this topic.

Notably, in terms of laparoscopic cohort, the authors reported that full bowel preparation had a trend of reduction of SSI and a significant risk reduction of anastomotic leakage. These results were informative for laparoscopic

colorectal surgeons as only a few studies investigated the effect of preoperative oral antibiotics and mechanical bowel preparation on SSI in laparoscopic colorectal surgery (11,12).

As the authors mentioned, limitations of this study included patient distribution bias between the four groups and lack of propensity score matching. This was a retrospective study, and the associations are not necessarily causative. To confirm the findings of this study, a larger double blinded randomized trial comparing all four strategies would be needed.

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