



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

Atsushi Ikeda, Tsuyoshi Konishi

Department of Gastroenterological Surgery, Cancer Institute Hospital of the Japanese Foundation for Cancer Research, Tokyo, Japan

Correspondence to: Tsuyoshi Konishi, MD. Department of Gastroenterological Surgery, Cancer Institute Hospital of the Japanese Foundation for Cancer Research, 3-8-31 Ariake, Koto-ku, Tokyo 135-8550, Japan. Email: tsuyoshi.konishi@jfcr.or.jp; tkonishi-ky@umin.ac.jp.

Provenance: This is an invited Editorial commissioned by the Editor-in-Chief Minhua Zheng (Department of General Surgery, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai Minimal Invasive Surgery Center, Shanghai, China).

Comment on: Toh JWT, Phan K, Ctercteko G, *et al.* The role of mechanical bowel preparation and oral antibiotics for left-sided laparoscopic and open elective restorative colorectal surgery with and without faecal diversion. *Int J Colorectal Dis* 2018;33:1781-91.

Received: 01 February 2019; Accepted: 26 February 2019; Published: 11 March 2019.

doi: 10.21037/ales.2019.02.09

View this article at: <http://dx.doi.org/10.21037/ales.2019.02.09>

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.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Mangram AJ, Horan TC, Pearson ML, et al. Guideline for prevention of surgical site infection, 1999. Hospital Infection Control Practices Advisory Committee. *Infect Control Hosp Epidemiol* 1999;20:250-78; quiz 279-80.
2. Song F, Glenny AM. Antimicrobial prophylaxis in colorectal surgery: a systematic review of randomized controlled trials. *Br J Surg* 1998;85:1232-41.
3. Baum ML, Anish DS, Chalmers TC, et al. A survey of clinical trials of antibiotic prophylaxis in colon surgery: evidence against further use of no-treatment controls. *N Engl J Med* 1981;305:795-9.
4. Ban KA, Minei JP, Laronga C, et al. American College of Surgeons and Surgical Infection Society: Surgical Site Infection Guidelines, 2016 Update. *J Am Coll Surg* 2017;224:59-74.
5. Elizabeth Murphy AH, Freeman V, Barclay K, et al. Cancer Council Australia Colorectal Cancer Guidelines Working Party (2017) PRP2-5, 7: Can peri operative management be optimised? Clinical practice guidelines for the prevention, early detection and management of colorectal cancer. 2017. Available online: https://wiki.cancer.org.au/australia/Guidelines:Colorectal_cancer#_ga=2.48329120.727499293.1551785207-560750435.1551785207
6. Eskicioglu C, Forbes SS, Fenech DS, et al. Preoperative bowel preparation for patients undergoing elective colorectal surgery: a clinical practice guideline endorsed by the Canadian Society of Colon and Rectal Surgeons. *Can J Surg* 2010;53:385-95.
7. Kiran RP, Murray ACAA, Chiuzan C, et al. Combined preoperative mechanical bowel preparation with oral antibiotics significantly reduces surgical site infection, anastomotic leak, and ileus after colorectal surgery. *Ann Surg* 2015;262:416-25; discussion 423-5.
8. Klinger AL, Green H, Monlezun DJ, et al. The Role of Bowel Preparation in Colorectal Surgery: Results of the 2012–2015 ACS-NSQIP Data. *Ann Surg* 2019;269:671-7.
9. Garfinkle R, Abou-Khalil J, Morin N, et al. Is there a role for oral antibiotic preparation alone before colorectal surgery? ACS-NSQIP analysis by coarsened exact matching. *Dis Colon Rectum* 2017;60:729-37.
10. Toh JWT, Phan K, Ctercteko G, et al. The role of mechanical bowel preparation and oral antibiotics for left-sided laparoscopic and open elective restorative colorectal surgery with and without faecal diversion. *Int J Colorectal Dis* 2018;33:1781-91.
11. Hata H, Yamaguchi T, Hasegawa S, et al. Oral and Parenteral Versus Parenteral Antibiotic Prophylaxis in Elective Laparoscopic Colorectal Surgery (JMTO PREV 07-01): A Phase 3, Multicenter, Open-label, Randomized Trial. *Ann Surg* 2016;263:1085-91.
12. Ikeda A, Konishi T, Ueno M, et al. Randomized clinical trial of oral and intravenous versus intravenous antibiotic prophylaxis for laparoscopic colorectal resection. *Br J Surg* 2016;103:1608-15.

Cite this article as: Ikeda A, Konishi T. Preoperative oral antibiotics and mechanical bowel preparation for left-sided colorectal surgery. *Ann Laparosc Endosc Surg* 2019;4:28.