

## Debate

## 1A

# Should Routine Mechanical Bowel Preparation be Performed before Primary Debulking Surgery?

Yes

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## Debate

Maximal reduction of postoperative residual disease is a well-established prognostic factor in advanced or recurrent ovarian and uterine cancer. Intestinal surgery is often required in order to achieve complete gross resection of malignant disease. Given the anatomical location of these primary tumors in the pelvis, a significant portion of these intestinal surgeries encompass rectosigmoid and ileocecal resections. One key perioperative intervention that has been employed for many years to optimize these procedures is mechanical bowel preparations (MBPs).

There are several reasons as to why mechanical bowel preparations have been used in surgeries requiring colonic or rectal resections. A clean colon can facilitate bowel manipulation, passage and firing of surgical staplers, and significantly improves visualization during intraoperative proctoscopy or colonoscopy. Additionally, MBP has also shown potential reduction in postoperative complications including surgical site infections (SSIs) and anastomotic leaks. This effect is most pronounced when used in combination with oral antibiotic bowel preparations (OABPs).

## Mechanical Bowel Preparation is a Commonly Used and Safe Intervention

Regarding the safety of MBP, studies have repeatedly shown it to be a safe and feasible intervention. Some might speculate that the rate of *clostridium difficile* colitis might increase among patients undergoing bowel preparation. However, in line with multiple other studies, Kim et al. found that *C. difficile colitis* was actually less likely among those with who received bowel preparation with combination oral antibiotics and MBP as compared to those who received no bowel preparation (0.5% vs. 1.8%;  $p=0.01$ ) [1].

## Mechanical Bowel Preparation Decreases Postoperative Complications, Specifically Surgical Site Infection

The impact of MBP on reducing surgical morbidity, primarily surgical site infections, remains the most debated aspect of bowel preparation. Colon and rectal surgery are among the most significant surgeries associated with SSIs and therefore any intervention that could decrease this morbidity rate is of critical value. Based on a recent review of the literature, the American Society of Colon and Rectal Surgeons recently released recommendations supporting the use

of combined MBP with OABP in elective colorectal resections [2]. This recommendation was assigned a level 1B grade as a strong recommendation that can apply to most patients in most circumstances without reservation based on moderate-quality evidence.

Two randomized control trials formed the foundation for this recommendation where the use of combined MBP and oral antibiotics was associated with a significant decrease in SSI rates [3,4]. This includes the study by Nichols et al., which reported a marked reduction in SSI with the combination of MBP with OABP as compared to MBP alone. Clark et al. performed a similar study where the combination therapy demonstrated a reduction in postoperative complications including not only SSI, but also anastomotic leaks. Multiple studies have subsequently reproduced these findings.

More recently, Morris et al. performed propensity matching on 8,415 patients having undergone colorectal surgery through the National Surgical Quality Improvement Program (NSQIP) database [5]. They found on multivariate analysis that the use of OABP was protective against SSI (OR=0.46, 95% CI: 0.63–0.58) as compared to no bowel preparation. Importantly, among these patients, 92% had also received a MBP. A protective effect against SSI was also present with the use of MBP alone (OR=0.85, 95% CI: 0.72–0.99). In addition to the reduction in SSI, both OABP and MBP alone were associated with a decrease in readmission as compared to no preparation. Importantly, there was also a significant reduction in frequency of anastomotic leaks, postoperative ileus, return to the operating room, acute renal injury, and sepsis among patients that received MBP with or without OABP as compared to those that did not receive any form of bowel preparation.

These findings led to several studies in the colorectal literature that have demonstrated a reduction in SSIs after introduction of SSI bundles that included MBP along with OABP. More recently, there has been similar studies performed in the gynecologic oncology literature with comparable results. This includes a study by Schiavone et al. which reported a significant decrease in the incidence of SSI from 37% to 12% ( $p < 0.001$ ) after the implementation of a SSI reduction bundle that included the use of preoperative OABP with almost routine use of MBP [6].

## Mechanical Bowel Preparation Improves Visualization during Intraoperative Proctoscopy or Colonoscopy

Surgical interventions are continuously advancing in order to improve postoperative morbidity and mortality from debulking surgery. One such morbidity is anastomotic leaks after colorectal resection. Proctoscopy is increasingly being used to visualize the anastomosis and aid in assessing its integrity. More recently data has suggested that the addition of near-infrared (NIR) angiography via proctoscopy might reduce anatomic leak rates and is associated with fewer postoperative abscesses and diverting ostomies after rectosigmoid resection performed during surgeries for gynecologic malignancies [7]. In order to use proctoscopy with or without NIR angiography, optimization of visual assessment is paramount. The use of MBPs would assist in insuring adequate visualization of the anastomosis via proctoscopy.

## Conclusions

Based on the emergence of data supporting the use of combination bowel prep, four large societies currently recommend the use of combination bowel preparation. These include the American Society of Colon and Rectal Surgeons, the Society of American Gastrointestinal

and Endoscopic Surgeons, the American Society for Enhanced Recovery, and the Perioperative Quality Initiative. In addition, the American Society of Colon and Rectal Surgeons specifically states that OABP alone, without mechanical preparation, is generally not recommended. This is largely based on the lack of any randomized trials evaluating the use of oral antibiotics without concurrent MBP. These recommendations in combination with the literature support the standard use of OABP with MBP among patients at risk of requiring colonic resection, such as in the setting of primary debulking surgery for gynecologic malignancy. The benefit of MBP appears to be synergistic with the use of OABP and therefore we recommend it always be used in combination, while the use of MBP alone should fall out of practice.

## References

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