Mechanical bowel preparation before colorectal surgery. Where do we stand?

The purpose of this editorial is to review the role of mechanical bowel preparation (MBP) before elective colorectal surgery in the light of recent literature data; this is all the more important because surgeons in daily practice follow highly variable (and sometimes personal) recommendations issued by a variety of learned societies. Of the 10 surveys of clinical practice conducted worldwide between 2008 and 2013, only a few showed practices that were largely consistent with evidence-based recommendations [1].

On the other hand, despite the seemingly robust scientific evidence (at least for colic surgery) published in the years up to 2010, we continue to see scientific publications on this topic. The particular case of rectal surgery is discussed at the end of this editorial.

"Almost unanimous" agreement for colon surgery

The results of metanalyses of all the randomized studies on MBP published from 2008 to 2012 [2–7] have been concordant in showing no benefit to antegrade oral MBP before colonic surgery, whether the agent used was polyethylene glycol or phosphosoda. There was no overall difference between MBP vs. no MBP (normal diet, no cleansing enemas). These factual data with a high level of evidence have led many European learned Societies to no longer recommend MBP for elective colon surgery; the most recent recommendations have included the omission of MBP in enhanced recovery protocols with the intention of reducing preoperative stress and improving postsurgical recovery [8]. The US guidelines published in 2013 [9] went in the opposite direction by recommending MBP (albeit with a low level of evidence), and this attitude concurs with the practices of most US surgeons, 90% of whom conform to these recommendations according to the most recent published survey [10]. Unlike European practice, American enhanced recovery protocols often include MBP [11].

Is this attitude of the English-speaking surgical world based on robust scientific evidence, and does it call into question the conclusions of the above-cited meta-analyses?

Should we revisit the recommendation against MBP before colon surgery?

The years 2014–2015 saw the publication of several large retrospective studies that questioned the abandonment of the MBP; four US studies published between May and September 2015 [12–15] and one Swedish study [16]. These studies have suggested that the omission of MBP was deleterious in terms of surgical site infection, anastomotic dehiscence, ileus, length of hospitalization, and even recurrence of neoplasm when compared to colon surgery with MBP, especially when (in the American studies) MBP was combined with oral antibiotic administration (OA). But these results deserve critical comment.

http://dx.doi.org/10.1016/j.jviscsurg.2015.10.004
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The American studies compared four groups: no MBP, MBP alone, MBP associated with OA, and OA alone. The number of patients included is certainly impressive (n = 4999–8442) but the study results are challenged by multiple biases:

- analysis of the same administrative database (American College of Surgeons National Surgical Quality Improvement Program [ACS NSQIP]) led to different numbers in the different studies — (from one year to the next, the annual patients increased from 5021 [13] to 8415 [14]);
- the retrospective nature of these studies explains the fact that the groups were not comparable; there were more comorbidities in the group that did not undergo MBP (pre-operative infection, corticosteroid use, advanced stage colorectal cancer, hemorrhagic syndrome, etc.). These comorbidities, by themselves, may account for the worse outcomes noted in non-MBP patients. The fact that the groups are dissimilar in terms of complication risks is not addressed in the conclusions of the articles;
- the numbers of patients in different groups are not similar and missing data (normal and understandable in such records) is not addressed.

In summary, rather than questioning the futility of MBP alone, these studies have stressed the importance of preoperative intestinal bacterial decontamination with OA. In this same sense, a subgroup analysis, published in the Cochrane review in 2011 [6], clearly showed that the most favorable option for reducing surgical site infections was: OA without MBP (6% for OA alone vs. 8% for MBP + OA vs. 10.6% for MBP without OA and 10.3% for and 10.3% for patients having neither OA nor MBP).

The Swedish study, published in 2014 [16] is actually a posthoc analysis of a previous multicenter randomized trial. The authors found, contrary to their expectations, that the absence of MBP was associated with an increase in the rate of colorectal cancer recurrence and a reduction in disease-free survival and overall survival. But this posthoc analysis responds to a question that was not raised by the trial protocol design; this is methodologically questionable [17].

Several biases may be noted in the Swedish study such as a higher rate of grade 3 tumors in the group without MBP, and lack of analysis based on adjuvant therapy and intensity of follow-up monitoring. Besides, two other studies that have addressed the oncologic aspect of MBP have concluded that the absence of MBP was not deleterious [18,19].

Therefore, because of methodological bias, we consider that neither the American retrospective studies [12–15] nor the posthoc analysis of the Swedish randomized trial [16] permit the conclusion that the absence of MBP is deleterious in terms of morbidity or survival after colorectal surgery. They do not negate the recommendations of the European learned Societies; especially since a new meta-analysis of 18 trials (seven non-randomized comparative studies and six cohort studies, published in 2015 [20]) following the principles of evidence-based medicine, has confirmed the results of all previous meta-analyses of randomized trials, showing no significant difference between the different bowel preparation options (MBP or single enema) vs. the no bowel preparation — albeit while drawing attention to the low quality of the included studies.

**What about rectal surgery?**

Only one specific randomized trial has been published on the role of MBP in rectal surgery [21]. This trial showed a significant increase in infectious complications in the absence of MBP but no significant difference in terms of overall morbidity or anastomotic dehiscence. This single study does not give a definitive answer, particularly since subgroup analyses in the context of a randomized trial [22] or meta-analyses [6,23] failed to confirm these findings in a greater number of patients.

We can therefore consider that there is no definitive factual answer for the role of MBP in rectal surgery, and other studies, particularly evaluating simple enema, should be considered in the future.

Finally, a new axis of research in both colon and rectal surgery is emerging in 2015: the role of intestinal bacterial decontamination by OA [24,25].

**Disclosure of interest**

The authors declare that they have no competing interest.

**References**


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Available online 29 October 2015