MBL to CLL would be possible areas of research in the future.

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The role of mechanical bowel preparation before colorectal surgery

Slim K, Vicaut E, Launay-Savary MV, Contant C, Chipponi J. (Department of General and Digestive Surgery, Hôtel-Dieu, Clermont-Ferrand, France.) Updated systematic review and meta-analysis of randomized clinical trials on the role of mechanical bowel preparation before colorectal surgery. *Ann Surg* 2009;**249:**203–9.

SUMMARY

Despite evidence challenging the ritual of mechanical bowel preparation (MBP) before colorectal surgery for over 3 decades, MBP is still performed by a majority of colorectal surgeons. The bulk of evidence demonstrating a detrimental effect of MBP was based on small trials. Recently, 2 large multicentre trials evaluating the role of MBP, each recruiting over 1300 patients, have been published. Hence, it was important to re-evaluate the evidence in the light of recently published trials incorporating all the currently available information on the subject.

The authors did a meta-analysis after doing a systematic search of the published as well as unpublished data without any time period or language restrictions using both manual search and electronic databases. Two independent reviewers selected randomized clinical trials once all the items of the QUOROM checklist were satisfied and the methodological quality of the included trials was assessed using a previously validated score. The score ranged from 0 to 5 and the methodological quality of a trial was considered poor when the score was 2 or less. The primary outcome measure was anastomotic leakage and the secondary outcomes included other infectious complications (pelvic abscess, peritonitis and wound infection), overall surgical site infection (SSI), re-operations, extra-abdominal infections (broncho-pulmonary, urinary), hospital stay and mortality. The outcomes were analysed on an intention-to-treat basis using the Peto method. A total of 87 trials were retrieved of which 73 were excluded due to various reasons and eventually 14 trials containing 4859 patients (MBP=2452 and no MBP=2407) were included in the meta-analysis. The funnel plot for primary outcome measure was symmetrical indicating a lack of publication bias. Based on the quality score, the quality of 3 trials was classified as suboptimal. The meta-analysis revealed the following:

1. Overall, there was no significant difference between those receiving and not receiving MBP with regard to the primary outcome measure, i.e. anastomotic leak (OR: 1.12, p=0.46).
2. No significant difference existed between secondary outcome measures with the exception of overall incidence of SSI which favoured no MBP (OR: 1.4, p=0.02).
3. There was no significant difference with regard to any outcome measure when analysis was stratified according to the type of solution used (polyethylene glycol or sodium phosphate).
4. When 3 trials with suboptimal quality were excluded from the analysis, the results did not change with the exception of abdominal abscess formation with a significant difference in favour of MBP (OR: 0.55, p=0.01) and this effect size became even more pronounced when only 2 large trials each recruiting over 1300 patients were analysed (OR: 0.46, p=0.004).
5. Because of a small number of patients stratified according to the level of anastomosis (200 in each arm) and a variety of solutions used, a formal meta-analysis could not be done with regard to rectal surgery.

COMMENT

The current meta-analysis highlights the methodological flaws and suboptimal quality of randomized controlled trials reported in the surgical literature, and underlines the pressing need to conduct well planned, methodologically sound clinical trials. The reliability of a meta-analysis is dependent on the quality of the trials included. The results of earlier meta-analyses reporting detrimental effects of MBP were influenced by the small and heterogeneous trials of relatively low quality.[1–4] Even in the current meta-analysis, of the 14 included trials, an important methodological variable such as sample size calculation was reported in only 5 trials (30%) and even among these 5 trials, the sample size calculated was based on the primary outcome measure of meta-analysis (anastomotic leakage) in only 1 trial.[5] The inclusion of underpowered studies increases the possibility of introducing a type 2 error in the results of a meta-analysis as well. Moreover, the length of follow up is important in defining SSI and for this

purpose the Centers for Disease Control and Prevention (CDC) guidelines recommend a follow up of 30 days.[6] Only 7 trials (50%) included in the current meta-analysis reported an adequate duration of follow up. When trials of a low quality were removed from the current meta-analysis, the detrimental effect of MBP could not be sustained and in fact MBP was found to be protective especially in terms of intra-abdominal septic complications, although the number needed to harm was quite high. These results essentially mirror the conclusions of the 2 large trials reported in the literature.[5,7]

The results of this meta-analysis essentially relate to patients undergoing elective conventional (open) colonic surgery and it would be unwise to extrapolate these to those having rectal or laparoscopic surgery. Similarly, these conclusions cannot be applied to lesions <2 cm in size, which were excluded in almost all the trials. Such small lesions may require intraoperative localization using manual palpation or even peroperative endoscopy, which might be difficult in the presence of an unprepared bowel. Although the results of this meta-analysis suggest that there was little to choose from between oral polyethylene glycol and sodium phosphate solution, the same might not hold true for other forms of bowel preparation such as enemas or senna.

As things stand today, evidence concerning the role of MBP in colonic surgery seems to be on a roller-coaster ride and might even be swinging in favour of MBP. We seem to have come a full circle—the more things change, the more they remain the same. Surgeons are an extremely difficult group to convince, especially when it involves major surgical dogmas and it would need reliable and unequivocally conclusive data to help them give up an age-old 'addiction' such as MBP. A recent survey of members of the American Society of Colon and Rectal Surgeons regarding trends in MBP is a case in point.[8] In the Indian context, there is a paucity of data regarding the usefulness of MBP, but it appears that the majority of colorectal surgeons would err on the side of using MBP. So the question is, where do we go from here? In the absence of definitive clinical benefit and possible patient discomfort, one should not routinely prescribe MBP before elective open colonic surgery. However, it might be worth exploring the role of MBP in rectal surgery especially when a low rectal anastomosis is done or small lesions are resected. It might also be educative to evaluate the role of MBP in laparoscopic colorectal resections and should include, in addition to conventional outcome measures, an assessment of the operative difficulty or ease.

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Coronary artery bypass or percutaneous intervention for multivessel coronary artery disease

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SUMMARY

Percutaneous coronary intervention (PCI) using drug-eluting stents is being used more frequently to treat complex coronary artery disease. Traditionally, coronary artery bypass grafting (CABG) has been the treatment of choice. This trial compared PCI and CABG among patients with previously untreated triple-vessel disease or left main coronary artery disease or both, and included 1800 patients in whom the treating team (cardiac surgeon/interventional cardiologist) felt that equal anatomical revascularization could be done with either procedure. If the treating team felt that in a patient either one of the treatment modalities would be beneficial because of the anatomical or clinical situation, the patients were included in a separate parallel, nested CABG or PCI registry.

A non-inferiority comparison of the two groups was done for the primary end-point—a major adverse cardiac or cerebrovascular event (i.e. death from any cause, stroke, myocardial infarction or repeat revascularization) during the 12-month period after