with type 2 diabetes using oral glucose-lowering medication) and performed the sham controlled randomized Revita-2 trial thereafter. We are also designing our next study in which we will evaluate the length of DMR.

DISCLOSURE

Dr Bergman received research support from and was a consultant for Fractyl. The other author disclosed no financial relationships.

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REFERENCES


A few considerations for follow-up surveillance colonoscopy

To the Editor:

We read with great interest the study by Kobe et al.1 This study provides new evidence on the safety of colonoscopy follow-up, which is of clinical significance. However, we wish to further discuss some issues on surveillance colonoscopy.

Concerns regarding colonoscopy-related adverse events are major deterrents to patient compliance with colonoscopy.2 We summarize, in Supplementary Table 1, previously published meta-analyses reporting the incidence of colonoscopy-related adverse events in patients for colorectal cancer (CRC) screening and/or surveillance. Recent meta-analyses have revealed that the pooled rate of perforation was 0.07 to 1.3 per 1000 colonoscopies, that of post-colonoscopy bleeding was 0.8 to 3.0 per 1000 colonoscopies, and that of mortality was 0.1 per 1000 colonoscopies.3-7 This study corroborates the safety of surveillance colonoscopy, and the risk is comparable with the lower limit in meta-analyses. Additionally, this study identified adverse events on the immediately prior examination as a risk factor for follow-up adverse events. However, no clear definition was mentioned. Considering that the recommended surveillance interval for colonoscopy is every 5 to 10 years,8 the clinical applicability of this risk factor for longitudinal adverse events requires further consideration.

The balance of benefits between reduction of CRC and harm of adverse events seems to be more important in older adults.9 The benefits of endoscopy in older adults may be compromised owing to an expected higher adverse event rate.7 Kobe et al1 proposed that long-term programmatic surveillance was safe, inasmuch as major events were rare during follow-up. Ma et al10 indicated that screening endoscopy after age 75 years was associated with a lower risk of CRC incidence and mortality in a prospective cohort. An important message from these 2 articles is that continuation of screening among individuals older than 75 is worth considering.

In conclusion, long-term follow-up colonoscopy is safe and thus allows for more consideration of its cost effectiveness and clinical utility.

DISCLOSURE

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1. Kobe EA, Sullivan BA, Qin X, et al. Longitudinal assessment of colonoscopy adverse events in the prospective cooperative studies program...
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Response:

We sincerely thank Zhang et al 1 for their interest in our article, 2 and we appreciate the opportunity to further reflect on our findings and conclusions. Whereas our goal was to evaluate the independent effect of any prior adverse event on risk at follow-up colonoscopy, on the basis of this commentary we further clarify the intervals between colonoscopies with and without adverse events. Among participants with an adverse event on an index colonoscopy and an adverse event at the next follow-up visit, the mean interval between examinations was 2.1 years (SD 1.5 years). Participants who had no adverse event on the prior examination, but then had an adverse event during the follow-up examination, had a mean interval of 3.1 years (SD 2.3 years) between examinations. Finally, the mean interval between all colonoscopies without adverse events on either examination was 3.9 years (SD 2.7 years). These time intervals may help clinicians decide about the clinical applicability of our findings in practice. However, although the finding that adverse events may not be independent of prior events remains provocative and novel, this work deserves further validation in larger prospective colonoscopy cohorts.

Additionally, our study is unique in that we evaluated participants undergoing follow-up as part of a colorectal cancer prevention program, which includes colonoscopies in those with and without prior neoplasia. There are few data that document programmatic risk, ie, the risk of major adverse events over the life of a screening-surveillance program. We agree with the authors that follow-up colonoscopy is generally safe, with few associated major adverse events. Yet, the risk of major adverse events did tend to increase with age in our study, although no statistical tests were performed because of few outcomes and small sample size (Supplementary Table 2). And with regard to the clinical utility of colonoscopy after age 75, the authors cite prior studies that evaluated the impact of screening—not surveillance for prior polyps—in individuals over the age of 75. 3 Although older individuals who have never been screened before age 75 years may benefit from screening, 4,5 evidence supporting surveillance colonoscopy in other risk groups after age 75 is less clear. 6 As screening rates increase, more individuals with adenomas will be discovered, who are then enrolled in surveillance. Therefore, as these individuals age, the challenge of estimating colonoscopy-related risk will become an increasingly important consideration. Systematically assessing the risk of ongoing colonoscopy follow-up care should be an important component of larger studies evaluating screening and surveillance outcomes in older participants.

In summary, we agree with Zhang et al 1 that follow-up colonoscopy is safe for most patients, but these risks should be carefully considered in further studies of cost effectiveness and clinical utility. To accomplish this goal, we need to overcome many barriers that have impeded the creation of rigorous adverse event tracking programs during long-term colonoscopy follow-up care. Precise definitions of various adverse events remain elusive, making reporting by individual providers 6,7 or identification from large claims-based databases difficult. 8 Building robust adverse event tracking systems as part of ongoing quality assurance programs will be critical to inform future research efforts assessing both short- and long-term colonoscopy risk. Indeed, the authors highlight many nuanced considerations that underscore the need for personalized risk assessments to help estimate the balance of benefits and harms in individuals as they consider ongoing screening and surveillance.

DISCLOSURE

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### SUPPLEMENTARY TABLE 1. Current meta-analyses on the incidence of colonoscopy-related adverse events for colorectal cancer screening/surveillance

<table>
<thead>
<tr>
<th>Publication</th>
<th>Number of included studies</th>
<th>Incidence of colonoscopy-related adverse events</th>
<th>Perforation</th>
<th>Bleeding</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Perforation (95% CI)</td>
<td>0.4/1000 procedures (95% CI, 0.2-0.5)</td>
<td>0.8/1000 procedures (95% CI, 0.5-1.4)</td>
<td></td>
</tr>
<tr>
<td>Lin et al, 2016</td>
<td>98; 26 studies for perforation; 22 studies for major bleeding events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reumkens et al, 2016</td>
<td>21; 12 studies for perforation; 9 studies for major bleeding events</td>
<td>0.3/1000 procedures (95% CI, 0.2-0.5)</td>
<td>2.4/1000 procedures (95% CI, 0.9-4.6)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Vermeer et al, 2017</td>
<td>60; 37 studies for perforation; 24 studies for major bleeding events</td>
<td>0.07/1000 procedures (95% CI, 0.006-0.17)</td>
<td>0.8/1000 procedures (95% CI, 0.18-1.63)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Lin et al, 2021</td>
<td>33; 26 studies for perforation; 20 studies for major bleeding events</td>
<td>0.31/1000 procedures (95% CI, 0.23-0.4)</td>
<td>1.46/1000 procedures (95% CI, 0.94-1.99)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Chandan et al, 2022</td>
<td>31; 18 studies for perforation; 19 studies for severe bleeding events</td>
<td>1.3/1000 procedures (95% CI, 0.9-2.1)</td>
<td>3.0/1000 procedures (95% CI, 2.0-4.0)</td>
<td>0.1/1000 procedures (95% CI, 0.0-0.1)</td>
<td></td>
</tr>
</tbody>
</table>

NA, not available.

### REFERENCES


