2 Peer-review report

Reviewer #1:

The authors reviewed the current status of the robotic, self-propelled, self-steerable colonoscope in this manuscript. Although the title is fascinating, and this is a good review, the evidence in the literature implies that the robotic colonoscope is very far from reality. However, it summarized what we are for robotic colonoscopy now. My comments for this manuscript are as follows.

-Most endoscopists would not include capsule endoscopy in "robotic colonoscopy" because capsule endoscopy cannot perform therapeutic procedures (ex., polypectomy, biopsy). For this disadvantage, it is not fair to compare the procedural pain between standard colonoscopy with capsule colonoscopy.

A very valid point. In the current climate of increasing numbers of colon capsule procedures, we thought it necessary to mention capsule endoscopy as an alternative to conventional colonoscopy, and subsequently an alternative to robotic colonoscopy. The negatives of the lack of therapeutics we discuss. There are researchers working on capsules that are capable of obtaining biopsies and with more control than current colon capsules. This field of robotic capsule endoscopes is large in itself (and not always designed with the colon in mind) so was felt to be beyond the scope of the current review article, hence why we refer to other review articles on this subject.

-In the section "Potential benefits of robotic colonoscopy," the benefits to patients (less pain, less complication) and endoscopist (easier colonoscopy training, no need to learn about loop formation) are very far from reality. Nowadays, clinical endoscopists might not think robotic endoscopy could provide these benefits. Moreover, the competent endoscopist almost got a very high success rate of complete colonoscopy and rare complications. The learning curve only is about 100-400 cases, and most of the trainees could perform colonoscopy with standard quality.

We appreciate the mentioned benefits are theoretical, hence why we use the term "potential benefits". And completion rates are better than they have ever been. However, there do remain a small percentage of failed procedures, and more importantly there are a large percentage who require analgesia to complete the procedure. The older robotic colonoscopes, the ones you rightly point out have been removed from the market, aimed to improve caecal intubation. Researchers seem to have changed the focus now to reducing patient discomfort as the primary aim for most devices.

I haven't researched all countries in the world, but in the UK the minimum number of colonoscopy for clinical independence is 300 and the ASGE in the United States recommend 270 before competence can be assessed. Alongside other clinical commitments this can take several years to achieve. As someone who went through this recently, it is not an easy process.

Adenoma detection rates (a performance marker) can vary from <20% to >50%, and we know those with the worst ADRs have the highest post-colonoscopy colorectal cancer rates. Hence the need to 'democratise' colonoscopy by improving the quality in the worst performers.

-The authors also mentioned robotic colonoscopy improves adenoma detection rate because of the integrated artificial intelligence (AI); however, standard colonoscopy could be integrated with AI nowadays. This might mislead this audience.

-In my opinion, the section "Available alternatives to colonoscopy" is too redundant, especially in the last paragraph where the authors discussed about endocuff, FUSE. They are not alternatives to colonoscopy. They are adjunct devices to enhance standard colonoscopy.

I appreciate the last paragraph does cover adjuncts and minimally modified colonoscopes, and have removed this paragraph.

In summary, the authors did a hard work in this comprehensive review; however, the current evidence showed that the benefits of robotic colonoscopy are different between "what-they-think" and "what-they-are." Many companies no longer produce many robotic colonoscope systems because of limited real-life benefits. It might be a newly developed robotic colonoscope that provides real advantages to patients in the near future. For me, this review is worth to be published to make the audience know what we are right now.

Reviewer #2:

This is a comprehensive review of evidence of robotic colonoscopy so far. The theoretical advantages of robotic colonoscopy was clearly discussed.

However, it would be much better if a discussion on 'ideal' criteria for a robotic colonoscopy first before discussing varies types of currently available robotic colonoscopy. This will aid decision and discussion of usefulness of different kinds of robotic colonoscopies.

Very helpful suggestion, and we have made this change in the form of a table of features.

On the other hand, as the issue of AI is not discussed in the manuscript, it's better to omit the term AI in core tip to avoid confusions from readers.

Thank you, this is a very valid point and we have taken AI out of the core tips.