

Peer Review File

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Reviewer A:

Thanks for the opportunity to review your very comprehensive review of revisional bariatric surgery. Hopefully, spreading this data will encourage more general surgeons towards robotics for revisional surgery,

1. My only comment is to clarify that learning curve measurement is not standardized for surgery and sometimes authors include robot positioning to OT and sometimes no.

Thank you for bringing to our attention the importance of this clarification. We agree and have subsequently added a small cautionary paragraph in lines [362 – 366].

Reviewer B:

This manuscript reviews the current experience with the use of the DaVinci surgical robot in revisional bariatric surgery. In addition to the current role of the surgical robot in relevant procedures, the article aims to summarize indications, outcomes, technical tips, and typical pitfalls. After a general introduction, causes and challenges of revision surgery will be discussed. This part of the manuscript is concluded with insights into own experiences in revisional bariatric surgery with the use of the surgical robot. Part 3 summarizes the current data on robot-assisted bariatric surgery, focusing on revision surgeries. The authors finally conclude that despite a lack of evidence, the use of the robot in revisional bariatric surgeries can be beneficial and will play an important role in the future.

The paper deals with a very important topic. Also, the conclusions or future expectations of the technology are certainly correct. However, the work should be revised in certain points.

1. In the first part of the introduction, reasons for revision operations are discussed (lines 77 to 83). The same is found in paragraph 2.1. lines 101 to 106.

Thank you for noting this; you have raised an important point here. However, we consider both mentions of the main indications for revisional surgery to be justified, with the one in the introduction being more of a general preamble to accompany the statistics presented, while section 2.1 gives more details on the specific causes for bariatric surgery ‘failure’.

1. Paragraph 2.2 concludes with an account of the author's own experience (lines 151 to 159). Various interventions are mentioned here. The paragraph should be supplemented with literature references and or facts regarding the own experience. How many operations were performed? Were there any complications? Which interventions are performed? Strictureplasty is mentioned and reference is made to a paper by Sudan R et al. However, strictureplasties after sleeve gastrectomies are extremely controversial and the reference refers to a case series of two procedures.

Thank you for these thoughtful questions. We conclude with you in strictureplasties being highly debatable and still controversial, and we have included a small clarification on this subject in lines [183 – 185] as well as two extra references that support the acceptable outcomes of this approach.

2. Regarding the own technique, it is stated to use 4-5 ports including assist trocars. The standard setup of the DaVinci already uses 4 ports. So is there a deliberate decision not to use a robotic arm? If yes, why? Why is hand anastomosis the preferred technique (line 168)? A discussion would be desirable here.

Thank you for bringing this to our attention. Our approach utilizes the standard four ports for the robotic arms and camera, and one additional port is placed for laparoscopic assistance. We have thus rephrased our original line to avoid any confusion in lines [194 – 197] and included figures [1 – 2] to exemplify our technique. In the hand-sewn anastomosis case, we consider it surgeon's preference since there is no robust data favoring linear or circular staplers versus hand-sewn. We think one of the most significant advantages of the robot is the facility to perform 'hand-like' motions facilitating this hand-sewn method.

3. When discussing OR times (lines 268-271), one should discuss primary Roux-en-Y gastric bypass and revisional bariatric surgeries in addition to sleeve gastrectomy. For primary gastric bypass surgery, there are also numerous papers with shortened OR time (Senellart P, Saint-Jalmes G, Mfam W-S, et al. Laparoscopic versus full robotic roux-en-Y gastric bypass: retrospective, single-center study of the feasibility and short-term results. J Robot Surg. 2019; Beckmann, J.H., Bernsmeier, A., Kersebaum, JN. et al. The Impact of Robotics in Learning Roux-en-Y Gastric Bypass: a Retrospective Analysis of 214 Laparoscopic and Robotic Procedures. OBES SURG 2020; Lainas, P., Kassir, R., Benois, M. et al. Comparative analysis of robotic versus laparoscopic Roux-en-Y gastric bypass in severely obese patients. J Robotic Surg 2021.

Thank you for this suggestion. We agree that it would have been interesting to further explore this aspect, and we have included a small paragraph, with the papers you suggested, dedicated to the general outcomes of robotic primary bariatric surgery as a preamble in lines [221 – 231, 234 – 241].

4. In addition to the previously mentioned literature on revision surgery, Gray KD, Moore MD, Elmously A, Bellorin O, Zarnegar R, Dakin G, Pomp A, Afaneh C. Perioperative Outcomes of Laparoscopic and Robotic Revisional Bariatric Surgery in a Complex Patient Population. *Obes Surg.* 2018 cannot go unmentioned. Again, advantages are found in a subgroup in terms of OR times when using the robot.

Thank you for pointing out the need to supplement our Outcomes section with a fascinating paper like this one by Gray et al. We have included the conclusions in this study in Table 1 which summarizes relevant published literature in a more dynamic way, as well as a paragraph highlighting the findings of this paper in lines [433 – 440].

5. Certainly, regarding primary robotic bariatric surgery, no clear advantage can be shown so far, but the literature used (line 327) Köckerling et al. dated 2014 gives only a very rough overview, which also seems to be outdated.

Thank you for your suggestion. We have accordingly added a small paragraph including several new references to emphasize the lack of clear advantages of the robotic approach in primary bariatric surgery with more up-to-date literature in lines [221 – 231, 234 – 241].

6. Regarding the use of the surgical robot in revision surgery, I would still recommend a recent paper by Dreifuss et al (Dreifuss et al. Robotic Revisional Bariatric Surgery: a High Volume Center Experience *Obes. Surg* 2021).

Thank you for your suggestion. We agree this recently published paper by Dreifuss et al. provides very valuable information for our purpose, and it has been included in the text in lines [433 – 440], and in Table 1, which summarizes the available published literature in a more dynamic way.

7. Overall, this is a very interesting and hot topic. The article should be revised in some passages and supplemented with additional current literature. If the article wants to include technical tips and pitfalls, these should be emphasized and backed up with images, literature or data as appropriate.

Good luck and best regards

Thank you for your meaningful feedback. We agree that we could have included more details on our experience and have accordingly added figures [1 – 3] linked to lines [194 – 197] to complement our recommendations on trocar placement and preferred anastomosis technique.

Reviewer C:

Thank you for this review regarding robotic revisional bariatric surgery and its outcomes. This is a clinically relevant topic.

Abstract: I liked the structure and content. No comments.

1. Introduction: I would briefly discuss about the most revised index procedures and the alternative to robotic approach (laparoscopy).

We agree with your suggestion and have included a brief mention of the most revised index procedures, as well as the traditional laparoscopic revisional procedures that are performed to correct those in lines [66 – 68, 79 – 91].

2. Introduction: “The use of robot-assisted surgery has been promoted for revisional weight loss surgery in the past few years. Proponents of this technique postulate it makes the operation safer by providing a smooth transition from open to minimal access techniques as a result of improved visualization...”: Open bariatric surgery is rarely performed nowadays. And I don’t think many surgeons transit from the open to the robotic approach in bariatric surgery.

Thank you for this spot-on comment. We apologize for the misunderstanding created by the way that phrase was worded before. We meant to communicate the idea that robotic surgery resembles the open technique more than the laparoscopic approach, given the technical advantages it provides. We have thus modified that section hoping to better transmit our idea in lines [101 – 102].

3. 2.1 Causes: you did not mention here (or after) the adjustable gastric bands which are one of the most revised bariatric operations along with RYGB and SG. Liked the discussion about patient-related factors.

Thank you for pointing this out for us. We have included this important subject in lines [66 – 68, 79 – 91] including the failure/revision rate associated with LAGB per an IFSO global survey.

4. 2.2 Challenges of revisional surgery: “El Chaar et al. (21) described a twofold increase in the incidence of complications requiring reintervention, readmission,

ICU admission, and mortality following revisional RYGB.” I would also mention the findings in SG revisions.

This observation is correct, and we apologize for the oversight of not including the SG findings. We have updated the sentence to include SG as outcomes are mostly the same except for mortality which is not statistically significant in lines [140 – 143].

5. 2.2 Challenges of revisional surgery: You mentioned decreased vascularization as one of the causes of the increased complexity in revisional cases. You can discuss here about the possibility of performing ICG fluorescence perfusion assessment. Which is particularly easy with the robotic platform.

Thank you for pointing out the need to supplement our Challenges of Revisional Surgery with this new approach to perfusion assessment. We consider ICG technology is certainly worth mentioning and have included two references mentioning its utility and our particular use of the technique in lines [164 – 168].

6. 2.2 Challenges of revisional surgery: I would remove the last two paragraphs regarding the preoperative preparation and your personal operative technique (port placement, etc).

As we received conflicting advice regarding the ‘how we do it’ section from another reviewer, we decided to keep this part and elaborate further on our port placement and preferred anastomosis technique, including figures [1 – 2]. We consider it can be useful for readers to get a better idea of how we have been successfully working with the robotic-assisted approach in our center.

7. 3. Robot-Assisted Bariatric Surgery: Authors mention here the applications of the robotic system in bariatric surgery. I would emphasize that most studies did not found any benefit in primary bariatric surgery with the robotic platform.

Thank you for your suggestion; we have accordingly added a small paragraph including several new references to emphasize this critical point in lines [221 – 231, 234 – 241].

8. 3.3 Outcomes: This section is the most interesting for the practicing bariatric surgeon and should be further extended/improved. I recommend including more articles comparing laparoscopic versus robotic revisional bariatric surgery (PMID: 31209611, 31932204, 32474795, 29417487). Is the robotic approach safer in any procedure? You should discuss the findings and limitations of the literature.

Thank you for touching on this central part of the review. We agree with the importance of this section for practicing bariatric surgeons and have thus updated it with a table [1] that synthesizes available information for a more straightforward interpretation of published data, including the five papers suggested.

9. 3.3 Outcomes: This article is about bariatric surgery and revisional bariatric surgery (which its main indication is weight loss) and you did not mention anything about weight loss outcomes. Please revise. (PMID: 33392998)

We appreciate your insightful comment and agree that it would be helpful to include more specific information on weight loss outcomes; however, given the limited follow-up in most papers dedicated to robotic revisional bariatric surgery and the ongoing discussion on how to measure weight loss following revisional surgery adequately, we found difficulties to perform a reliable analysis of weight-loss parameters. Nevertheless, we recognize this limitation should be mentioned in the paper as well as two useful references that found a difference in weight-loss outcomes depending on the index procedure, therefore pointing to a new area of focus for future research in lines [433 – 440, 445 – 447].

10. 3.3 Outcomes: Are the postoperative outcomes of robotic revisional bariatric surgery affected by the index procedure? It would be interesting to discuss about this. (PMID: 33392998, 29417487).

Thank you for bringing this to our attention. Both papers by Dreifuss et al. and Gray et al. prove an interesting point about outcomes being influenced by the index procedure, so we agree that this should be mentioned in the manuscript along with the necessity to focus further research in subgroup analysis and hopefully prospective studies to establish a more relevant association in the future. We have incorporated these findings in lines [424 – 440].

11. 3.3 Outcomes: Mention the limitations of the available literature (retrospective, 30-day MBSAQIP dataset analysis limitations, lack of prospective randomized trials).

Thank you for pointing out the need to discuss the limitations of the available literature. It certainly helps bring more perspective to the bigger picture. More detail has been added regarding available literature summarized in Table 1, and limitations of the general pool of knowledge are now explained in lines [441 – 448].

12. Conclusion: “In all likelihood, robotic revisional bariatric surgery will have a substantial impact in the years to come. It is a safe alternative that achieves at least equivalent outcomes to standard laparoscopy”.

I would not use “at least”. This means the robotic approach for revisional bariatric surgery is equal or better to laparoscopy, and most of the available literature do not support this statement.

Thank you for your comment on this. We agree with the misunderstanding our choice of words could cause and have subsequently removed the term ‘at least’ and reworded the sentence so as not to cause confusion in this subject in line [458].