

Peer Review File

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Reviewer A

Comment 1: 10 lines of discussion of the guidelines. Maybe this part could be improved

Reply 1: Thank you for this observation and suggestion. We have further expanded the discussion of the guidelines, focusing on the significant findings within The Brescia Guideline's eight identified domains. Given the word count limitations of the manuscript, these findings were not discussed in tremendous detail as they are in The Brescia Guidelines.

Revisions in the text: Page 6-8, paragraphs 7:

Domain 1: "The Brescia Guidelines expand upon the traditional open, laparoscopic, and robotic surgical categorizations. More specifically, roboscopic, hand-assisted, single port approaches, among others are further defined in the guidelines."

Domain 2: "...in the treatment of both benign and malignant lesions. These recommendations are stronger for distal pancreatectomy."

Domain 3: "There is limited evidence to significantly analyze the use of vascular resection and neoadjuvant therapy in these populations, and they serve as a topic of future study."

Domain 4: "The role in central pancreatectomy has yet to be elucidated. Furthermore, there is insufficient evidence to establish the optimal anastomotic technique in both robotic and laparoscopic pancreaticoduodenectomy."

Domain 5: "Evidence-based recommendations are detailed in the Brescia Guidelines – from important landmarks in a laparoscopic Kocher Maneuver to dissection of both relevant vasculature and the biliary tree."

Domain 6: "These outcome measures were further categorized as core outcomes for pancreatic ductal adenocarcinoma (PDAC), patient reported outcome measures (PROM), and Quality Adjusted Life Years (QALY)."

Domain 7: "However, despite the shorter learning curve, surgeons struggle to attain proficiency in robotic MIPS due to decreased case volumes world-wide."

Domain 8: "Given the lack of data, surgeons are encouraged to prioritize gathering data to better understand the role of artificial intelligence in the field of surgery."

Reviewer B

Comment 2: This comment addresses the 2023 Brescia Guidelines on MIPS based on evidence-based recommendations from international experts and an excellent researcher team and reads well.

Reply 2: Thank you very much for the complimentary review.

Revisions in the text: *Not applicable*

Comment 3: When summarizing the evidence in the first paragraph, there should be given reasons for the mixed outcomes. E.g. the learning curve in LEOPARD II.

Reply 3: Thank you for this suggestion. We have included the learning curve in LEOPARD II in our revised manuscript.

Revisions in the text: Page 1, paragraph 2: “As discussed by Fung, et. al., the learning curves associated with both laparoscopic and robotic pancreatic surgery could factor into these varying outcomes. They found that robotic approaches in both procedures also require more cases to be performed in order to achieve the learning curve. This can be attributed to the technically demanding nature of PD and robotics.”

Comment 4: Paragraph 3 should be supported with registry and national data illustrating the increase in MIPS.

Reply 4: Thank you for that comment; we have expanded Paragraph 3 to include a reference to national registry data regarding the adoption trend of MIPS and to further discuss large studies of MIPS.

Revisions in the text: Page 3, paragraph 4, “Between 2014 to 2019, the overall proportion of pancreatoduodenectomies being performed using minimally invasive techniques in the American College of Surgeons National Surgical Quality Improvement Project database increased from 7% to 11%¹⁹. With 1141 robotic cases during this time period, the overall proportion of pancreatoduodenectomies being performed robotically increased from 2.8% to 7.5%. By 2019, robotic cases accounted for a greater portion of minimally invasive operations than laparoscopic approach. In their meta-analysis, Pfister, et al. demonstrated that a minimally invasive approach in pancreatic surgery seems feasible and safe in comparison to the traditional open approach. The spectrum of minimally invasive pancreatic surgery is increasing as robotic surgery’s benefits, compared with both open and laparoscopic approaches, may play a fundamental role in pancreatic resections in the future, tackling the technical issues brought forward in early laparoscopic experience in pancreatic surgery.”

Comment 5: Second last paragraph: A comment incl. a reference regarding other shortcomings of the current learning curve literature in MIPS is recommended.

Reply 5: Thank you; reference number 29 was added along with a brief discussion of shortcomings of the current learning curve in MIPS.

Revisions in the text: Page 8, paragraph 8: “In addition to sheer case volume limitations, there is limited established evidence needed to create a standardized framework to measure the learning curve for minimally invasive pancreatic surgery. A standardized reporting framework with explicit outcome measures across the learning curve will help facilitate substantiated cross-study comparisons that can be better applied to performance prediction.”

Reviewer C

Comment 6: Excellent invited comment

Reply 6: Thank you very much for the complimentary review.

Revisions in the text: *Not applicable*

Reviewer D

Comment 7: In this work the authors give a short overview on modern pancreatic surgery and in particular on MIPS. Furthermore, they comment on the Brescia guidelines. In my opinion this article, despite being well written, does not provide any new insights on MIPS and is not of particular interest for a surgical audience.

Reply 7: Thank you very much for these comments. However, our intention as an invited review of the Brescia guidelines was to comply with the manuscript size limits and to model our review on the provided example. The goal of this review was to provide some extra background to and to briefly review the guidelines in question.

Revisions in text: *Not applicable*