



Do we all agree that the future of pancreaticoduodenectomy lies in how effectively we use robots?

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The penetration of minimally invasive pancreaticoduodenectomy (MIPD) has been low due to the technically demanding surgical dissection, many anastomotic procedures needed, and the lack of confidence regarding the additional benefits from the minimally invasive approach compared to the conventional open approach [1]. However, retrospective series and randomized trials have reported some key advantages of MIPD, which include a decrease in intraoperative blood loss, wound complications, and postoperative pain, in addition to a shorter length of stay compared with the open pancreaticoduodenectomy (PD) [2–4]. Since robotic PD (RPD) surgery was first performed in 2003, the development of robotic platforms and the accumulation of surgical experience has meant that RPD has led to a gradual increase of adoption RPD [5]. However, no large comparative studies have been performed for RPD and laparoscopic PD (LPD), even though only a limited number of institutions perform MIPD [6].

There are two main adopters for the robotic platform in PD depending on the preference of the surgeons. Indeed, surgeons who began their MIPD journey using laparoscopy tend to prefer a hybrid approach of laparoscopic resection and robotic

reconstruction, whereas other surgeons prefer a full robotic approach. There are a multitude of reasons why some surgeons prefer a hybrid approach: (1) Familiarity with the surgical devices and the operative field is a critical factor in proficient and efficacious procedures for MIPD surgeons. (2) The availability of multi-fire laparoscopic clip appliers reduces the time taken by a bedside assistant to manually reload and reinsert the robotic clip applicators. (3) Easy access to laparoscopic energy devices facilitates a quicker transection than the da Vinci Vessel Sealer Extend (Intuitive Surgical, Inc.), which has big advantages with articulation. (4) The availability of a combination laparoscopic hook and suction/irrigation device eliminates the reliance on a bedside assistant for inadvertent bleeding to be handled in detail. In addition, in countries where robotic operative costs are not well-subsidized or covered by healthcare insurance, there are significant cost reductions in using the hybrid approach as limited robotic instruments are required in the reconstruction phase.

In the future, as robotic platforms become increasingly available and are priced more competitively, it is likely that centers with expertise will move to adopt the robot for MIPD. We

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believe that the full robotic approach is easier to adopt for surgeons who are undertaking the procedure without prior LPD experience, as the availability of articulating instruments allows surgeons to mimic open surgery techniques.

This study suggested some technical tips on LPD and LPD-robotic reconstruction, and their procedures with step-by-step instructions, which will be of great help and a valuable reference for both MIPD beginners and experts [7]. Similar to the author's comments, future studies are needed to evaluate the objective benefits of robotic surgery in MIPD and establish widely acceptable standardization in MIPD techniques.

Notes

Conflict of interest

The author has no conflicts of interest to declare.

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