Editorial

A call to define the targets of robotic surgery

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Comment on: Crolla RMPH, Tersteeg JJC, van der Schelling GP, *et al.* Robot-assisted laparoscopic resection of clinical T4b tumours of distal sigmoid and rectum: initial results. Surg Endosc 2018. [Epub ahead of print].

Received: 17 January 2019; Accepted: 31 January 2019; Published: 21 February 2019.

doi: 10.21037/ales.2019.02.04

View this article at: http://dx.doi.org/10.21037/ales.2019.02.04

We read with great interest the article "Robot-assisted laparoscopic resection of clinical T4b tumours of distal sigmoid and rectum: initial results" by Crolla *et al.* (1), and we look with enthusiasm at the authors' results. As they assessed, nowadays robot-assisted surgery has clear advantages in terms of view and range of motion of instruments, even more in T4 tumors in which it allows an easily approach to a narrow pelvis with a bulky lesion.

It is well established that any surgical treatment in rectal cancer patients has to be focused on reducing local recurrence and improve the opportunity of a sphincter-saving resection; by this point of view, total mesorectal excision (TME) is considered the better approach to decrease local recurrence (2).

The use of minimally invasive laparoscopy and robotic procedures continues to gain popularity among surgeons due to their mechanical benefits and robotic approach can be chosen to overcome surgical complexity in patients with locally advanced tumors and lower rectal cancers.

The surgical technique for locally advanced T4 colorectal cancer has been reported in laparoscopic and a few robotic surgery reports: the most important study in the field, the ROLARR trial, which compared conventional laparoscopic and robotic-assisted resections on 471 patients, failed to demonstrate significant benefits of robotic surgery regarding the main outcomes of circumferential resection margin positivity, TME quality, intra- and postoperative complications (3).

Little is known about oncological outcomes of this type of surgical approach in advanced colon and rectal tumors. Saklani *et al.* (4) compare laparoscopic and robotic resections in mid and low T3 and T4 rectal cancers, founding a comparable 3-year disease-free survival but a lower number of local recurrences and a lower morbidity rates in patients underwent robotic approach. Kim *et al.* (5), in their survey on 2,114 patients with rectal cancer, analyzed 661 advanced neoplasms of which 170 received a robot approach: he found early occurred more frequently in the open and laparoscopic group despite robotic group. Similarly Shin and colleagues (6) described excellent results on 36 patients underwent robot-assisted extended rectal cancer surgery, concluding that *en bloc* multivisceral resection using the surgical robot, in selected patients, is feasible and has a low morbidity.

To overcome the limitations of laparoscopic surgery, robot-assisted technology has been introduced: its three-dimensional visualization of the operating field, reduction of tremor and increased movement accuracy due to a better maneuverability of the surgical instruments, have led to a wide introduction into surgical practice. The robotic approach, particularly for cancers requiring resection beyond the TME plane, may reduce the difficulty of achieving an R0 resection compared with conventional laparoscopy and can facilitate access to extramesorectal lymph node. Moreover, as already assessed for minimally invasive surgery, there are also recovery benefits which include less postoperative pain and shorter hospital stay.

In the present study, authors achieved 86% R0 resection, which is in line with previous studies on open and laparoscopic resection, with a low rate of anastomotic leakage (10%) and no postoperative mortality. These encouraging results underline that advanced colorectal cancer, due to tumor infiltration and post radiation fibrosis, is one of the most indicated action field of robotic approach.

By this point of view, it must be stressed that robotic surgery still has very high costs; mainly for this reason, it becomes essential to frame the pathologies for which the use of the robot is appropriate and to exclude the conditions in which minimally invasive laparoscopic surgery can achieve comparable or better results with greater cost-benefit ratio.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Annals of Laparoscopic and Endoscopic Surgery*. The article did not undergo external peer review.

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/ales.2019.02.04). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

doi: 10.21037/ales.2019.02.04

Cite this article as: Milone M, Velotti N, Manigrasso M. A call to define the targets of robotic surgery. Ann Laparosc Endosc Surg 2019;4:22.

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