



Robotic and laparoscopic colorectal resection is safe in elderly patients

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Comment on: de'Angelis N, Abdalla S, Bianchi G, *et al.* Robotic Versus Laparoscopic Colorectal Cancer Surgery in Elderly Patients: A Propensity Score Match Analysis. *J Laparoendosc Adv Surg Tech A* 2018. [Epub ahead of print].

Received: 25 September 2018; Accepted: 10 October 2018; Published: 12 October 2018.

doi: 10.21037/ales.2018.10.01

View this article at: <http://dx.doi.org/10.21037/ales.2018.10.01>

Minimally invasive approach advantages for colorectal resection has been reported in many studies (1). It is well known today that robotics in colorectal surgery provide a 3-dimensional vision, 4 degrees of intuitive movements and a stable vision disabling hands movements. However, experience is still limited and short and long-term outcomes of colorectal resection remain controversial, especially in the elderly patients (2). Among surgical community, it is believed that in this latter sub group of patient benefits of minimally invasive approach might be lower compared with the rest of the population. However, regarding this issue the literature is scarce.

Numerous retrospective and prospective studies have demonstrated the feasibility, safety and effectiveness of the robotic system over the laparoscopic approach (1-4).

But, in the current issue of the *Journal of Laparoendoscopic & Advanced Surgical Techniques*, de'Angelis *et al.* examined the potential advantages of the robotic colorectal resection of robotic over the laparoscopic approach in elderly patients.

In this study, the authors matched 43 patients which underwent robotic colorectal robotic resection aged more than 70 years old with a similar group of patients who underwent to laparoscopic approach.

Randomized controlled studies comparing robotic and laparoscopic approach for colorectal resection are very few and still very difficult to be settled and followed (5). Thus, matching of cases and controls, as the study herein analyzing, is frequently employed to control the effects of known potential confounding variables.

Obviously, it limits the applicability of these results, but it allows for the specific study of the impact of different

minimally invasive approaches over aged patients.

In this study, all surgeries have been performed by two senior surgeons in the same center, which eliminates some surgical bias. However, the total number of the population is too little to perform a sub group analysis of each surgical procedure, which would have been interesting to know. In fact, some authors believe that main benefits of the robotic approach rely especially in the rectal resection, where the narrow pelvic space difficult an adequate exposure by other approaches. This issue may be better clarified in at ongoing RESET trial (Rectal Surgery Evaluation Trial) which aim is to compare four techniques for rectal resection (open, laparoscopy, robot-assisted and trans anal surgery) (6).

Comparing the two groups, as expected, main per operative variables are similar, except for operative time, which was found to be significantly higher in the robotic group (214.54 *vs.* 300.58 min, $P=0.034$). As stated by the authors, operative time still represents an important issue every time robotic is compared with laparoscopic approach.

It is obvious that experience gained in the operative procedures decreases the time taken for robotic colorectal resection surgery. Mostly, in the studies, the operative surgical time count starts from the very first time including also the docking (1-4). The latest version of the da Vinci Xi may also contribute to a decrease in the operative time thanks to narrower arms and a more straightforward docking manoeuvre.

Clinicians may postulate that operative time may increase per operative complications, especially those related to the respiratory and cardiac system. But, concomitant with this study, in the literature there is not any study who found this

factor related to a poor short and long-term result. In my opinion, the operative time effect on patients underwent laparoscopic surgery is not the same of that of robotic. This is because of the reduced manipulation of tissue of the robotic instruments and the lower gas inflow required thanks to tension that the robotic trocars employ pushing up the abdominal cavity. However, further studies are required to back up this aspect.

Shorter operative time should not be considered as an end point of quality of a technique. In fact, laparoscopy is still showing longer operative time compared with the classical open approach, but with better outcomes.

Regardless the differences between laparoscopy and robotic, this study showed the non-inferiority of minimally invasive approach in the elderly, as the main results were acceptable and even better compared with those of the open traditional approach for colorectal resection.

The authors, even if in their article did not performed any cost analysis, discussed also the high costs of the robotic that may be decreased with longer experience. Robotic cost is still an issue, as showed in the final results of the ROLARR study (7). But, as reported recently, robotic rectal resection is financially comparable to laparoscopic resection (8). Nevertheless, the surplus cost of robotic resection seems to have reduced given the decrease of its hospitalisation costs. However, only a cost-effectiveness analysis, today still lacking, will be able to clarify this discussion.

We should remember that robotic system is a technology that will incorporate new devices and programs such as augmented reality and single port, thus enhancing operative results and facilitating surgical steps. In my opinion, comparison between 2 different surgical approaches are always welcome any time there is an advancement in the technology.

The laparoscopy itself is enormously evolved since incorporation of robotics. In fact, today, laparoscopy also includes 3-dimensional view as well as fluorescence and the optic can be manipulated by a robotic arm by means of laparoscopic instruments.

In conclusion, nevertheless the outcomes of robotic and laparoscopic colorectal resection are similar, also in the elderly, we must go for further future investigations along with the evolution of both laparoscopy and robotic system.

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.2018.10.01>). 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.

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doi: 10.21037/ales.2018.10.01

Cite this article as: Ielpo B, Silva J, Simó V, Arredondo J, Diago MV. Robotic and laparoscopic colorectal resection is safe in elderly patients. *Ann Laparosc Endosc Surg* 2018;3:81.