Editorial



# Robotic rectal cancer surgery: still waiting for evidence (or not)?

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It is always time to coming across sound scientific evidence regarding minimally invasive rectal cancer surgery. Especially regarding how much robotic surgery may benefit rectal cancer patients operated on by admittedly experienced surgeons. The fact that presently a robotic approach is more expensive and more time consuming is not particularly relevant. The same features may still be observed when comparing a laparoscopic to an open approach. Notwithstanding, it has been 10 years now that an audit of the proportion of colectomies performed laparoscopically in the United States identified that for 9,075 patients administratively identified, 50% of the cases were performed laparoscopically (1).

Out of the scenarios of expensive and time-consuming randomized multicenter trials, Crolla *et al.* (2) decided to obtain an X-ray of two surgeons single-institution practice and have reached three conclusions based on their personal experience with laparoscopic (lap) and robotic (rob) total mesorectal excision (TME). They have found that when experienced laparoscopic surgeons adopt robotic surgery for TME, conversion rates can be significantly reduced, in spite of spending more time in the OR. Moreover, there might be a reduced rate of immediate postoperative complications.

Not so fast. Let us come back in time and revisit essential information. LapTME does actually benefit patients with rectal cancer in the short-term recovery when compared to an open approach. Nevertheless, for obese male patients harboring anterior distal rectal cancers, there might be significant technical difficulty when performing specimen-oriented surgery using an exclusive laparoscopic approach. Even though, back in 2014, the same evidence package showed "moderate quality" regarding the oncologic safety of the laparoscopic approach (3).

But the year was 2015 when two international multicenter randomized controlled trials (4,5) revealed that laparoscopy was not non-inferior to the open approach when a composite outcome of immediate pathologic outcomes (distal and radial margins associated with the quality of TME) was considered. The next logic step seemed to be mitigating known limitations of lapTME by providing stable 3-dimensional high-definition view, articulating instruments, superior ergonomics and tremor-free surgery thorough robotic-assisted laparoscopic surgery.

The earliest report of a robotic approach for a minimally invasive colectomy was in 2002 (6). However, it was not until 2006 that the first report of robotic TME was published by Pigazzi *et al.* (7). Since then, many comparative studies between robTME and lapTME gave birth to a few systematic reviews and metanalyses (8-10) coming to slightly different findings. Despite the important limitations observed in comparative retrospective and prospective studies (like patient selection bias, small sample sizes and limited follow-up), significant lower conversion rates represent a common finding in all these studies and reviews favoring robTME. Therefore, it was highly unexpected when, in the ROLARR trial (11), the largest randomized clinical trial of robTME for curative resection of rectal cancer, there were no statistically significant differences in the rates of conversion to laparotomy (primary outcome of this trial) for robTME when compared with lapTME.

After ROLARR results went public, minimally invasive colorectal surgeons found themselves first confused, and then, passionately divided. Some decided to believe that the main limitation of the ROLARR trial (a much lower than anticipated conversion rate associated to robTME and lapTME) actually turned this important study into a flawed one. In other words, it could have happened that the anticipated conversion rate in the lapTME group (25%) was excessively high although it was based on the results of the MRC CLASICC Trial, the best available evidence at the time ROLARR was triggered.

Others chose to chase (and ultimately find) evidence of spin [reporting practices in the scientific literature that distort results interpretation and mislead results in a way that a way of reporting results in scientific publications that drives readers to accept the results in a more favourable light (12)] in several comparative studies of rob and lap colorectal surgery (13).

We have already addressed the important results found by Crolla and coworkers (2) in the paper entitled "Does robotic rectal cancer surgery improve the results of experienced laparoscopic surgeons? An observational single institution study comparing 168 robotic assisted with 184 laparoscopic rectal resections". In this study, between 2005 and 2015, 352 patients with rectal cancer underwent robTME (168 patients) with the DaVinci SI system or lapTME (184 patients) by two surgeons, meaning that approximately 1.46 minimally invasive TME operations were done per surgeon per month during the entire study period. In spite of a relatively low number of non-obese (mean BMI 26 for the series) operated on by each participating surgeon, the authors could demonstrate using logistic regression analysis, less conversions (OR 0.09, 95% CI, 0.03–0.32; P<0.0005) and less "complications other than anastomotic leak, deep or superficial SSI" (OR 0.32, 95% CI, 0.15–0.49; P=0.004) associated with robTME.

As observed in other comparative series, important confounder variables associated with the report should be noticed. First, it would be important to discuss if multivariate analysis is more important than case matching. Second, according to the authors, after 2014, all TMEs were robotic. Close to this date, a bundle of SSI prevention and oral antibiotic prophylaxis were also introduced for all cases. Third, for morbidity analysis, Clavien-Dindo or similar classification systems should be taken into account. Obviously, it is important to acknowledge limitations of such studies. Costs and functional evaluations demand sophisticated research tools and the absence of these data should not preclude the publication of independent practice of expert surgeons.

One would say that we are back from where we started (ACOSOG in 2008; ALaCaRT in 2010; and ROLARR in 2011—the first recruitment year of these trials). Probably not. It is crucial to understand that so-called every day practice reports alongside with collaborative registries and multicenter clinical trials will continue to come across and ultimately help understand the role of present and future robotic technologies for the surgical treatment of rectal cancer.

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## References

1. Fox J, Gross CP, Longo W, et al. Laparoscopic colectomy for the treatment of cancer has been widely adopted in the United States. Dis Colon Rectum 2012;55:501-8.
2. Crolla RMPH, Mulder PG, van der Schelling GP. Does

robotic rectal cancer surgery improve the results of experienced laparoscopic surgeons? An observational single institution study comparing 168 robotic assisted with 184 laparoscopic rectal resections. Surg Endosc 2018. [Epub ahead of print].
3. Vennix S, Pelzers L, Bouvy N, et al. Laparoscopic versus open total mesorectal excision for rectal cancer. Cochrane Database Syst Rev 2014;(4):CD005200.
4. Stevenson AR, Solomon MJ, Lumley JW, et al. Effect of Laparoscopic-Assisted Resection vs Open Resection on Pathological Outcomes in Rectal Cancer: The ALaCaRT Randomized Clinical Trial. JAMA 2015;3141356-63.
5. Fleshman J, Branda M, Sargent DJ, et al. Effect of Laparoscopic-Assisted Resection vs Open Resection of Stage II or III Rectal Cancer on Pathologic Outcomes: The ACOSOG Z6051 Randomized Clinical Trial. JAMA 2015;314:1346-55.
6. Weber PA, Merola S, Wasielewski A, et al. Telerobotic-assisted laparoscopic right and sigmoid colectomies for benign disease. Dis Colon Rectum 2002;45:1689-94; discussion 1695-6.
7. Pigazzi A, Ellenhorn JD, Ballantyne GH, et al. Robotic-assisted laparoscopic low anterior resection with total mesorectal excision for rectal cancer. Surg Endosc 2006;20:1521-5.
8. Araujo SE, Seid VE, Klajner S. Robotic surgery for rectal cancer: current immediate clinical and oncological outcomes. World J Gastroenterol 2014;20:14359-70.
9. Holmer C, Kreis ME. Systematic review of robotic low anterior resection for rectal cancer. Surg Endosc 2018;32:569-81.
10. Li X, Wang T, Yao L, et al. The safety and effectiveness of robot-assisted versus laparoscopic TME in patients with rectal cancer: A meta-analysis and systematic review. Medicine (Baltimore) 2017;96:e7585.
11. Jayne D, Pigazzi A, Marshall H, et al. Effect of Robotic-Assisted vs Conventional Laparoscopic Surgery on Risk of Conversion to Open Laparotomy Among Patients Undergoing Resection for Rectal Cancer: The ROLARR Randomized Clinical Trial. JAMA 2017;318:1569-80.
12. Chiu K, Grundy Q, Bero L. 'Spin' in published biomedical literature: A methodological systematic review. PLoS Biol 2017;15:e2002173.
13. Patel SV, Van Koughnett JA, Howe B, et al. Spin Is Common in Studies Assessing Robotic Colorectal Surgery: An Assessment of Reporting and Interpretation of Study Results. Dis Colon Rectum 2015;58:878-84.

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