



Laparoscopy-assisted vs. open surgery total mesorectal excision in low rectal cancer: commentary on the LASRE trial and review of current evidence

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Rectal cancer is currently the 5th most prevalent cancer worldwide, registering more than 700,000 new cases in 2021, accounting for more than 340,000 deaths per year (1). The introduction of total mesorectal excision (TME) greatly improved the outcome of surgery in these patients, not only in terms of survival, but also reducing surgical complications and improving the quality of life, due to the preservation of the pelvis autonomic nerves (2). Minimally invasive surgery (i.e., laparoscopic surgery) has also improved surgical outcomes, but still remains a challenge to achieve oncological outcomes equivalent to open surgery.

As stated in this article, the current evidence available from previous randomized clinical trials comparing laparoscopy-assisted *vs.* open surgery for TME in low rectal cancer have provided conflicting results.

The MRC CLASICC (3), ACOSOG Z6051 (4) and ALaCaRT (5) trials failed to establish non-inferiority of the laparoscopic *vs.* open approach, mainly due to an increased % of affected circumferential resection margin (CRM), whereas the COLOR II (6) and COREAN trials

both concluded that laparoscopy is safe in patients with low rectal cancer and pathological and oncologic outcomes are equivalent. Both the ACOSOG Z6051 (7) and the ALaCaRT trial (8) have published their long-term results, showing no differences in recurrence or survival rates.

In 2010, Sylla *et al.* proposed a technique which combines a transanal and abdominal approach for low rectal cancer, transanal TME (TaTME) (9), which was aimed to provide a solution to the anatomical challenges some patients present, such as obese male patients with a narrow pelvic inlet, but the evidence supporting its use has also shown conflicting results and the techniques have also arisen new complications, unseen (or rarely seen) in laparoscopic or open TME, such as CO₂ embolism, urethral injury in men, and purse-string failure leading to contamination (10,11). Results pointing to a higher local recurrence rate has led to a Norwegian moratorium on TaTME, although recent studies suggest the initial results may not reflect the real situation and that oncological outcomes may be similar to those of open or laparoscopic TME. The Ta-LaTME study

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has shown no differences in terms of affected margins, local or distant recurrences and disease-free and overall survival between laparoscopic TME and TaTME.

In recent years, a new approach has arisen to perform TME: the robotic TME. There is currently limited evidence to recommend this approach over open or laparoscopic, but some studies point to the improvements in complete TME with the robotic approach (12-14). Further studies are needed to provide more evidence about robotic TME.

The positive oncological results achieved by TME contrast with the high rates of surgical complications and alterations in quality of life (15). Thus, in recent years, many strategies have been developed to achieve rectal preservation while still maintaining the same oncological outcomes. Neoadjuvant chemoradiotherapy (CRT) followed by local excision (LE), or even CRT alone with intensive follow-up (known as *Watch and Wait strategy*) has been proposed as a feasible alternative to TME for some stages of rectal cancer; however, current evidence is insufficient to establish this strategy as an alternative, since few prospective, randomized, multicenter studies have been published in this strategy, and the ones available are of mixed designs and inclusion criteria. The TAU-TEM study reported a 44.3% of pathological complete response (pCR), with long-term oncological outcomes not yet available at the time of this publication.

It is against this backdrop that we should review the LASRE Randomized Clinical Trial (16), which included a total of 1,039 patients (685 laparoscopic *vs.* 354 open), with a non-inferior rate of complete mesorectal excision (85.3% *vs.* 85.8%, $P=0.78$), as well as the rate of negative circumferential and distal resection margins (98.2% *vs.* 99.7%, $P=0.09$ and 99.4% *vs.* 100%, $P=0.36$), concluding that a laparoscopic approach is a safe alternative to open surgery in patients with low rectal cancer in terms of pathologic outcomes with a higher rate of sphincter preservation (71.7% *vs.* 65.0%, $P=0.03$) and shorter duration of hospitalization (8.0 *vs.* 9.0 days, $P=0.008$).

Overall, the LASRE Randomized Clinical Trial (16) was a well-designed and executed trial, fulfilling its goal to provide quality, level 1 evidence for recommending laparoscopic TME as a safe alternative to open TME for low rectal cancer. It provides good, high-quality evidence of short-term outcomes in TME to recommend a laparoscopic approach; nevertheless, long-term outcomes are still needed to be able to establish laparoscopic TME as a definite alternative to open TME.

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