Editorial

Is it time for a paradigm shift: "laparoscopy is now the best approach for rectal cancer"?

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Abstract: Laparoscopic approach for colon cancer surgical management has now clearly demonstrated its short-term advantages over the open approach with similar long-term oncological outcomes. On the other hand, rectal cancer surgery is a more technically demanding procedure and the safety and efficacy of laparoscopic approach for such surgery was initially questioned. The CLASICC trial, published in 2005, was the first randomized controlled trial to report results of laparoscopic total mesorectal excision (TME) for cancer and initially suggested a high risk of conversion, associated with a high risk of postoperative morbidity and incomplete resection. Since, the COREAN trial and, more recently, the COLOR II studies reported excellent results of laparoscopic TME with low risk of conversion and improved short-term results as compared to the open approach, although no long-term data is available to date. However, the discrepancies observed between the results of early and recent studies might highlight the importance of the learning curve in laparoscopic rectal surgery, which might jeopardize both short-term and oncological outcomes.

Keywords: Rectal cancer; total mesorectal excision (TME); laparoscopy; learning curve; conversion; morbidity

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Since the first colonic resection performed in 1991, laparoscopic colorectal surgery has clearly demonstrated in several randomized studies (1-3) and meta-analyses (4,5) its well-known short-term advantages of lesser pain, faster recovery, lower postoperative morbidity, and shorter length of hospital stay, in comparison to open surgery. Besides these postoperative benefits, since the first randomized study of Lacy *et al.* from Barcelona published in 2002 (6), at least 3 large multicentric randomized trials [CLASICC (1), COST (2) and COLOR I (3) trials], and several meta-analyses (7) have also clearly demonstrated that laparoscopy offers the same long-term oncologic results than open surgery for colonic cancer (with the exclusion of T4 and transverse colonic cancer). Finally, we recently demonstrated, in a French national survey focusing on postoperative mortality following colorectal cancer surgery, that laparoscopic approach was an independent factor for significantly lower postoperative 30-day mortality (8). For all these reasons, there is now a large consensus in national guidelines, worldwide, to advocate laparoscopic approach as the best approach for elective colon cancer resection.

On the other hand, rectal cancer surgery is a more surgical demanding procedure than colonic resection and is associated with higher morbidity rate. Furthermore, despite the development of the total mesorectal excision (TME) concept (9), if surgery is not adequately performed (and sometimes even if it is the case!), patient is exposed not only to sexual problems and anastomotic leakage, but also to the risk of local recurrence, especially in case of R1 resection. For all these reasons, many authors recognized that TME might probably only be performed by experienced surgeons (10). This point may probably explain why laparoscopic TME development of has not reach the level of validation of laparoscopic colon cancer resection. Nowadays, if most of the authors agree that upper rectal cancer can safely be performed laparoscopically, thanks

to the results of the first randomized study on this topic published by Leung *et al.* in 2004 (11), the majority of the surgeons consider that laparoscopic TME for mid and low rectal cancer must only be performed by skilled surgeons and that definitive demonstration of the oncological safety and efficacy of laparoscopic approach for TME needs additional large multicentric studies.

Only three large multicentric randomized studies on rectal cancer surgery comparing open and laparoscopic approach have been reported so far (1,12,13). The first is the British CLASICC trial (1), which included 381 rectal cancer patients (128 operated by open and 252 by laparoscopy). This randomized study, published in 2005, followed by two other papers reporting 3-year (14) and 5-year (15) results demonstrated that laparoscopy is a satisfactory approach for TME… if conversion can be avoided! In other words, in case of conversion (34% in this study, which is very high, suggesting that some surgeons were not expert in the field), a mortality rate rising to 9% was observed as compared to only 1% in completed laparoscopy. This point led to a significantly higher postoperative morbidity and, although not significant, a higher rate R1 resection (12% of the cases versus only 6% after open anterior resection). However, despite these "bad" results, this study highlighted similar three-year survival and local recurrence rates. At five-year, the impact of conversion was illustrated by a lower overall survival rate in converted patients, as compared to both completed laparoscopy and open surgery. For the majority of the authors, the results of this study led to difficulties suggesting that laparoscopic TME might be considered as a good alternative to open TME. More recently, the COREAN trial (13), which included 340 patients, reported excellent results of laparoscopic TME, with only a 1.2% conversion rate, probably because of higher experienced investigating surgeons! In this latter study, postoperative morbidity was similar between open and laparoscopy, but postoperative results of the laparoscopic group were significantly improved in terms of time to bowel movements, pain, and length of hospital stay. More importantly, pathologic examinations of the TME specimens showed no difference between the two groups. We are however still waiting for the long-term results of this study. Finally, the very recent COLOR II study (16), published in 2013 included 1,103 rectal cancer patients (739 operated on by laparoscopy and 364 by open approach) among 30 centers in 8 countries, making it the largest study to date on laparoscopic TME. Similarly to the COREAN study, no long-term results are still available. However, postoperative results are again similar to those observed in this latter study.

What can we conclude from this COLOR II study? Is it time now to operate 100% of our rectal cancer patients through a laparoscopic approach? Authors of this editorial clearly want to answer "yes"… but only if you are a skilled surgeon! If not, you will expose your patient to postoperative and oncologic results similar as those observed in the CLASICC trial. The senior author of this editorial can share its own experience to illustrate that performing without any selection a laparoscopic TME for mid T3 rectal cancer in a male obese patient take many years… At the beginning of laparoscopic experience, only benign colorectal resections should be performed. Latter, colonic cancer might be regarded as a second step, but only in selected and easy patients. Finally, regarding laparoscopic TME, selection should start with females with T1-T2 high rectal cancer, followed by APR, and after some cases (100? more?), male patients and, finally, mid rectal cancer. Some authors suggested that after 30 open TME and 30 laparoscopic colonic resection for cancer, it is reasonable to perform a laparoscopic TME. From our point of view, it takes longer! And if today, we performed TME by laparoscopy in more than 95% of the cases, without any selection, this long process have required more than 100 benign colorectal resections, followed by more than 200 colonic resections for cancer, and finally more than 100 "selected" rectal cancer patients!

In conclusion, there is no doubt that laparoscopy will soon be the standard approach for TME. We only need to confirm this evidence with the long-term results of both COREAN and COLOR II studies. During this time, it is more than necessary than young surgeons increased their experience by doing laparoscopic colonic resection and rectal resection in selected "easy" cases. But they must keep in mind that "easy" laparoscopic TME is sometimes very difficult for the surgeon… and very bad for the patient!

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