



Minimally invasive surgery for maximally invasive tumors—pelvic exenterations for rectal cancers: are we prepared?

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Despite the public awareness of colorectal cancer screening with more and more early premalignant or malignant lesions detected, surgeons still face the challenges of operating for a patient suffering from locally advanced rectal carcinoma which required pelvic exenterations, and surgical outcomes mostly influenced by margin status, adjuvant chemotherapy, positive lymph nodes and liver metastasis, etc. Open pelvic exenteration has been the adopted approach in the past and laparoscopic surgery is another option in expert centers. A study in this issue of the *Journal of Minimally Invasive Surgery* demonstrated promising results of minimally invasive approaches for pelvic exenteration in patients with locally advanced rectal carcinoma, with overall complication rate of 28.2% with a 7.3% circumferential resection margin positivity and with no distal margin involvement, with local recurrence rate of 8.1% and overall survival of 85.2% by 2-year follow-up. We are expecting more results in the future to support the routine implementation of minimally invasive pelvic exenterations.

Keywords: Rectal neoplasms, Pelvic exenteration, Laparoscopy, Robotic surgical procedures, Minimally invasive surgical procedures

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With the increasing awareness and screening program launched for colorectal malignancy in recent decades, surgeons' daily routine transformed to operate on sessile colonic polyps which are not amendable to endoscopic treatment; early cancer which localization facilitated by the use of endo-markers and intraoperative colonoscopy [1]; advances in chemo-irradiation downstaged the rectal carcinoma at risk for local recurrence after total mesorectal excision; or surveillance for complete remission without the need of additional surgery by "watch and wait" approach [2]. On the other hand, it is not uncommon to encounter a locally advanced rectal carcinoma with invasion to nearby structures requiring radical resection with or without preoperative neoadjuvant treatment.

Pelvic exenteration has demonstrated no difference in survival for primary and relapse rectal cancer; however, survival was significantly influenced by margin status, adjuvant chemotherapy, positive lymph nodes, and liver metastasis [3]. Substantial case reports demonstrating feasibility of the adoption of minimally invasive approach in treating patients with locally advanced rectal cancer requiring pelvic exenterations in patients with primary [4] or recurrence after initial radical surgery [5]. On the other hand, technically feasible may not equivalent to beneficial to patients in terms of improvement of postoperative recovery and *en-bloc* clearance without compromising resection margins, postoperative complications, recurrence, or survival. Therefore, results from well-controlled clinical studies should be pooled for

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a rational application of minimally invasive surgery in locally advanced rectal cancer with exenterations as a routine service.

Kazi et al. [6] analyzed pooled data of 124 patients suffering from T4 rectal tumors operated by minimally invasive exenteration (laparoscopic/robotic) over the period from 2015 to 2022 in his institution. This is one of the largest series in the literature and evidence on the adoption of a minimally invasive approach for pelvic exenteration for advanced rectal cancer. In the authors' series, the average age of patients was relatively young (mean age of 47 years), and the majority (76.6%) by laparoscopic approach and 23.4% by robotic approach. They reported an overall complication rate of 28.2% with a 7.3% circumferential resection margin positivity and with no distal margin involvement, with local recurrence rate of 8.1% and overall survival of 85.2% by 2-year follow-up. The latest review by Dinger et al. [7] in 2022 on outcomes of locally invasive T4 rectal cancer in Australia and New Zealand reported an overall circumferential/distal margin positive rate of 24.1% and an overall complication rate of 31.2%, together with a variation in results of different locality in the region. This is partly explained by the heterogeneity of patients, operative approach, and practice in different centers and regions. Kusters et al. [8] reported their 95 patients' data from two tertiary centers in Sydney and Netherlands on pelvic exenteration for T4 tumor by open approach up to 2013, which the local recurrence rate of 17% and overall survival for patients with preoperative chemotherapy was 80% at the 5-year time. It demonstrated the result of minimally invasive approach for pelvic exenteration is comparable to open counterparts in the last decade under the care of expert hands and it is a feasible and practical option. This translates into, probably, less suffering and faster recovery for patients. With time, we have better optics, imaging systems, instruments, and introduction of robotic surgery, together with a more experienced team, we anticipated the overall R1 resection rate, local recurrence and disease-specific survival should be even more promising in subgroup analysis in the series if Kazi et al. [6] for patients operated in recent years; and we are expecting more data on comparison on laparoscopic versus robotic approach in pelvic exenteration for locally advanced rectal cancer, as there were only limited reports on the adoption of the robotic approach in exenteration [9,10]. The adoption of minimally invasive approach of pelvic exenteration to locally advanced rectal tumors requires a multidisciplinary approach. Merits also should be given to our urologists and gynecologists, who also master excellent skills in laparoscopic and robotic surgery, together with our oncologists, contributing to promising results for this group of patients.

NOTES

Conflict of interest

The author has no conflicts of interest to declare.

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