



Surgical Trends in the Management of Rectal Cancer

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Editorial

Despite advances in chemoradiotherapy, surgery remains the main modality for the treatment of resectable rectal cancer. The last decade has seen some significant technological advances and treatment developments including better diagnostics, development of new surgical tools, and in particular enhanced vision systems leading surgeons to the era of digital surgery.

“The surgeon” remains an important factor in the survival of rectal cancer patients. Good quality surgery as a result of sound surgical technique leads to reduced local recurrence and improved survival. The fundamental principles of Total Mesorectal Excision (TME) surgery postulated by Bill Heald were to perform surgery in the true embryological planes, removing the whole rectum and the intact mesorectum, enveloped by the mesorectal fascia [1]. This ensures that adequate lymphadenectomy is performed without any risk of spillage of tumour cells, and will also prevent collateral damage to pelvic organs including the neurovascular bundle.

The recent advances in technology and tools have allowed surgeons to potential apply minimal access surgery and the laparoscopy for TME surgery. This technique initially has been difficult to master, as it is associated with a longer learning curve, but surgeons with good experience and structured training have shown that good quality laparoscopic TME is possible. However, in a narrow pelvis, sometimes the dissection of the lower rectum can be difficult, and the exposure can be a problem and finally stapling on the rectum can be challenging as well. Some of the inherent difficulties of laparoscopic surgery such as 2D image, a fulcrum effect, limited access to marrow pelvis, and amplification of tremor has been overcome by the increased use of robotic technology for TME surgery [2]. Robots offer a 3D view, along with endowrist instruments and stability of the operating platform. Thus, this control allows surgeons to replicate the principles of open TME surgery in a minimal access fashion. There has been a significantly increased interest in the use of robotic in general surgery and nearly 12 new industry partners are now investing in developing and creating new systems to launch over the coming years. Apart from improvements in surgical navigation, and imaging overlay, there is hope to use artificial intelligence to a level where the surgeon may oversee the performance of robotic platforms like the use of autopilot in airline industry.

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These newer robotic technologies are not cheaper and the current systems are expensive to buy and run, as the cost of consumables remains high. Endoscopic surgeons have discovered that TME surgery can be performed from the anal route in almost a reverse fashion to the standard TME surgery. This “bottom up” approach or Trans anal TME (TaTME) has become very popular amongst surgeons as it allows overcoming the challenges of a difficult pelvis by operating in a retrograde fashion using the current laparoscopic tools. These newer adoptions amongst surgeons have resulted in almost a competition amongst different techniques. Surgical literature has been recently bombarded with abstracts and case series and studies with the objective to compare robotic, transanal and laparoscopic TME surgery. However, the technologies cannot fight one each other in order to prove that one is better than the other [3,4].

Some randomized control trials supported the laparoscopic approach, whilst others still recommended the open surgery [5-8]. A recent systematic review has shown that robotic procedures are comparable to open and laparoscopic ones concerning oncologic outcomes [9]. So, at the moment, no level I evidence exists which shows superiority of one technique over the other. A lot of effort may be cored in setting up randomized control trials to get evidence in terms of comparing these techniques but it does look very complicated to set-up a trial comparing open vs. laparoscopic vs. TaTME vs. robotic surgery in these situations. Rectal cancer surgeons must not forget that the most important thing, from the patient’s point of view, is the disease free survival and quality of life after surgery. In the absence of strong evidence no recommendations can be made for the superiority of one surgical approach over the other. One technique may produce excellent results in the hands of one surgeon while the other may be the best option for a different surgeon. Surgeons should play

to their strengths and the only focus should be to get good oncological outcomes with improved quality of life.

Depending on the circumstances, expertise and equipment availability, one technique may be preferable than the other. It's the decisions that are more important than the incisions; surgeons will choose to make in order to perform TME surgery. Good clinical outcomes will be attained as long as Heald's principles of TME surgery could be followed.

We believe that these techniques complement each other, rather than competing. There will be scenarios where perhaps two approaches could be combined together. After a robotic TME, if a low stapling is difficult or the tumour is very low, a transanal approach may be more appropriate to perform a single end-to-end anastomosis in those more challenging cases. In a laparoscopic TME the lower half of the TME could be done with transanal technique and may be the robot may prove to be a better tool for transanal TME.

A good knowledge of anatomy, sound surgical skills, following oncological principles should result in a good specimen, who should be continuously audited with the pathology and the clinical outcomes after wards. Heald's principles of TME surgery for rectal cancer still hold strong and should be the prime focus of any surgeon dealing with rectal cancer.

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