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A Back to the Bottom Story of Rectal Cancer Surgery

*Francis Seow-Choen**

Seow-Choen Colorectal Surgery Centre, Singapore

Introduction

In the early days rectal cancer surgeries were performed via the perineum [1]. Such surgery was fraught with danger, and surgical mortality was inevitably high. Abdominal perineal resection first described by Miles in 1908 [2] was associated with an operative mortality of up to 42%. Subsequent improvements in perioperative care brought this high mortality rate down considerably. Thereafter, abdominoperineal resection became the standard treatment for almost all rectal cancers until Dixon described anterior resection for proximal rectal cancers in 1939 [3]. Since that time numerous improvements in surgical technique had been described for resection of the rectum resulting in safer and more radical surgery.

Advances in Rectal Cancer Surgery

Two of the most important surgical innovations since that time were the understanding of the importance of total mesorectal excision (TME) proposed by Bill Heald in 1982 [4] for open rectal surgery and the explosion of minimal access approaches for resection of rectal cancer beginning from the 1990s.

The concept of TME taught surgeons the importance of respecting the embryonic and anatomical planes during rectal resection. TME or a complete and technically skilful resection of the rectum plus the entire enveloping mesorectal fascia ensures that the enclosed rectal cancer and all the potentially involved lymph nodes are completely removed. An incompletely performed TME runs the risk of leaving involved lymph nodes behind or else allow leaking lymphatic's to seed cancer cells into the pelvis leading to increased risk of local recurrence. Therefore when radical surgery for rectal cancer is contemplated, the TME technique should always be routinely performed.

Minimally Invasive Techniques

The advent of laparoscopy and robotic surgery in the management of rectal cancer is another very significant milestone in the management of rectal cancers. The initial reported increased incidence of wound or port site cancer implantation following laparoscopic techniques in rectal cancer had now been shown not to be an issue with this technique if properly performed [5].

Laparoscopic resection of rectal cancers is routine in many colorectal departments around the world. This is especially true of mid and high rectal cancers as these are usually mobilised and removed without too much difficulty via what is now known as traditional laparoscopic methods [6]. Very low rectal cancers however may not be so easily removed via laparoscopic methods especially in obese males with a very narrow pelvis.

The use of robotic techniques therefore in such patients may therefore bring great advantages due to the configuration of the robotic set-up and instrumentation [7]. The use of the robot in very low rectal cancers may enable the difficult mobilization of the last few centimetres of lower rectum to be performed with ease.

Nonetheless whichever method, open, laparoscopic or robotic methods are used to perform TME in a patient with a low rectal cancer; especially in a male obese patient with a largish cancer; the ability to get beyond the cancer may be a great challenge. Furthermore the adequacy of a clear distal margin beyond the cancer may sometimes be found compromised only after the distal rectum had been transected. This will make a difficult surgery even more challenging for the surgeon and may be disastrous for the patient by increasing the risk of local recurrence beyond what is present if this margin was clear.

Reverse or Transanal TME

This brings us to the next advancement in minimally invasive rectal cancer surgery. The use of the transrectal or transanal or reverse TME techniques [8] as it had been variously called had been

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Correspondence:
Francis Seow-Choen, Seow-Choen Colorectal Surgery Centre, 290 Orchard Road Paragon, #06-06 Singapore, E-mail: seowchoen@gmail.com

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attributed to Lacy in 2011. However it was actually first practised as the TATA or transabdominal transanal operation by Marks [9]. This technique enables the surgeon to secure the distal margin beyond a difficult large and low rectal cancer. The distal margin can be ascertained and after closure to prevent tumour cell seedling the distal resection margin ca n be made. Because this resection is done under direct vision, a clear distal margin can be assured unlike that during a totally abdominal approach. This is a logical and important innovation in enabling rectal surgeons to secure a cancer free distal margin and will help more patients to avoid a permanent stoma in low rectal cancers.

These minimally invasive techniques bring several advantages to patients including a dramatic decrease in post operative pain, hospital stay and improved return to normal activities of life. However there are surgeons who have attempted incision less surgery or natural orifice surgery with natural orifice specimen extraction for this low rectal cancer. They therefore perform ligation of the inferior mesenteric vessels as well as a complete TME via the anus. The future will tell if this technique brings added advantage to patients. For the moment it seems that all this latter technique does is make a simple transabdominal ligation of the inferior mesenteric vessels, mobilization of the left colon and splenic flexure as well as upper rectal and mesorectal mobilization much more difficult and dangerous. Most practitioners however, actually perform the so called reverse or transanal TME via two steps. Firstly via an abdominal minimally invasive approach via either laparoscopy or robotic techniques. Here the upper and middle rectum and mesorectum are fully mobilised transabdominally. Once the rectum is mobilized as inferiorly as possible, the operator proceeds to do the transanal mobilization of the inferior rectum and its mesorectum. It therefore is usually not really a transanal or reverse TME as such.

Conclusion

Reverse TME or transanal TME as usually performed should therefore not be called as such but a transanal assisted transabdominal TME.

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