

A new solution to some old problems: transanal TME

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Received: 23 January 2013 / Accepted: 27 January 2013 / Published online: 22 March 2013
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I predict that 2013 will be the year of endoscopic transanal approaches to radical low rectal dissection and anastomosis. The paper by Atallah et al. [1] and its video mirror the work of Lacy et al. [2] who recently presented in Barcelona and in Vienna the results of the first 40 cases of what he called abdomino-transanal TME. Last year, in this very journal, Zheng published the first case of transanal TME carried out entirely from below [3] shortly followed by Leroy et al. [4] who called it “no scar transanal TME”, both using many of the same principles. It was too soon to claim oncological superiority to conventional laparoscopic TME, but Lacy’s principal message was that the dissection from below is “much easier” than either minimally invasive or open surgery from above. What could be more important for the management of a common cancer which continues to challenge the most experienced colorectal surgeons?

You may never have heard of TAMIS TME which may or may not be the name finally attached by surgeons to the ideas in this paper—but these ideas are indeed of fundamental importance. The combination of the transanal approach, the use of a gas tight seal for anus or anorectum, and direct “holy plane” dissection around the mesorectum from below—these three together can revolutionise the practice of rectal cancer surgery. The authors of this paper describe the shortcomings of standard approaches from above—always particularly challenging in the obese male. They also describe the many problems of multi-stapling across the rectum which is almost entirely due to the obliquity of approach with straight instruments introduced

via the abdomen. In my opinion, as a frequent “voyeur” of demonstration laparoscopic surgery, it is common for these difficulties to place the anastomosis lower down and nearer to the pubo-rectal sling than some cancers require from the oncological point of view. There is no doubt that the function enjoyed by a patient with an anastomosis at 6 cm from the anal verge is superior to that with one at 3 cm i.e. true colo-anal [5].

We can envisage an early approach to the lower end which starts by defining exactly the appropriate amount of ano-rectum to be retained for optimal function, washes out thoroughly beyond a carefully sealed tumour segment, and then optimises TME dissection and preservation of the autonomic nerves by gas assisted endoscopic “holy plane” dissection via the anus. The initial response by industry to the massively important challenge of optimising appropriate access is a space to watch over the coming months. At present the only specifically designed platform for TAMIS is the gel point path. Already approaches vary from the use of triports originally designed for single incision MIS through to the use of externally located robots, imaginatively introduced flexible cameras and the use of surgical gloves to convey a variety of instruments into the extra mesorectal space. The challenges are enormous but there will be rich rewards indeed for the companies that facilitate the access in the best possible way. More science will be required to measure the impact on anal function of the various devices and also the feasibility and indications for transanal extraction of the TME specimen.

Whatever the instrumentation it seems probable that collaborative abdomino-transanal traction, counter-traction and peri-mesorectal dissection will achieve the major objectives better than our present reliance on the various trans-abdominal approaches.

These are perhaps the means to achieve the precision that has hitherto eluded us in some areas of operative

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technique. Posteriorly the surgeon will need to take special care to divide the recto-sacral fascia low down and to dissect anterior to the presacral fascia. Most challenging of all for the surgeon is the antero-lateral merging of fibres of the autonomic outflow of the inferior hypogastric plexus with large blood vessels from branches of the internal iliac vessels to form the “neurovascular bundles”. Occasionally a fascial layer envelopes these sufficiently to merit the term bundle given to them by Walsh. They comprise many sizeable unnamed veins that are interspersed with nerves and small arteries somewhat obscured by fatty tissue. They are particularly vulnerable to damage anterolateral to the specimen along the edges of Denonvilliers’ septum just above and just below the prostate. Using the new “push me—pull you” facility that synchronous endoscopic dissection will afford the crucial medial retraction of the mesorectum both from below and from above the point of adherence to the hypogastric plexus may be better effected than previously.

Thus improved visualisation of the pillars, plexuses and neurovascular bundles may secure sexual function far better in the future. If we can learn the detail of how to preserve these “bundles” we can probably, as our understanding of the anatomy improves, also eliminate the special dangers to erection inherent in abdomino-perineal excision as well as in ultra low sphincter preservation. This anatomical challenge is already a part of the teaching at Pelican and elsewhere of facedown extralevator APE where the improved exposure is one of the arguments for this operation in selected cases.

For the last 30 years, since the inception of TME, the concept of an embryologically determined midline envelope of tissue has assumed greater and greater importance. The predilection of the cancer to spread within and remain encapsulated inside this curious shaped monobloc re-asserts its primacy as the surgeon’s grasp of detail has progressed.

Cancer penetrating or threatening (<1 mm clear) this fascial envelope is the single most important prognostic indicator as in the follow up of the MERCURY Study (G. Brown, personal communication) [6]. Indeed it was far more significant on preoperative imaging than node positivity, which challenges the primacy of nodes in all rectal cancer staging systems—especially Dukes and AJCC. From the practical point of view the integrity of the

embryological block with MRI predicted clear margins can also select more patients who can be cured without adjuvants by surgery alone [7]. Any technical advance in the surgery itself that facilitates dissection in the more difficult areas of the “holy plane” outside the block will benefit patients substantially. Because of the fundamental separateness of the midline meso and its surrounding relations the understanding of MRI, embryological and surgical anatomy becomes more and more crucial—especially around the tapering distal mesorectum where this inserts into the puborectal sling. Endoscopic visualisation of this difficult anatomy from below is a truly exciting prospect for the future. When combined with a complete rethink about endoscopic ultra-low anastomosis and optimising all the necessary instrumentation these ideas do become very interesting indeed.

Conflict of interest None.

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