



Transanal total mesorectal excision: current updates and future challenges

Treatment of rectal cancer remains a significant challenge. Improvements in imaging, selective use of chemoradiation, and the standardisation of total mesorectal excision (TME) surgery have all helped to improve locoregional recurrence in affected patients (1-4). The safe adoption of minimally invasive surgery for rectal cancer surgery however has remained a challenge (5,6).

Transanal TME was introduced to overcome some of the difficulties inherent with difficult proctectomies. The fixed narrow bony pelvis in a male, the potential for a bulky mesorectum in obese patients and a bulky tumour all present their own technical challenges for the surgeon. Transection of the distal specimen in a precise manner can also be difficult in such cases, particularly where minimally invasive surgery techniques are sought. Even in the open era of colorectal surgery, the introduction of novel open techniques existed to deal with this problem. One such technique was the APPEAR technique which involved a perineal incision to facilitate more accurate low dissection and transection (7).

The evolution of transanal TME surgery has also been aided by technological advances. These specific improvements include improved platforms to perform transanal surgery, devices that maintain pneumo-insufflation as well as evacuate smoke in the confined pelvic cavity and improved instrumentation that allows for single port surgery.

Following cadaveric trials, Sylla and Lacey undertook the first human live transanal total mesorectal excision (taTME) in 2009 (8). This operation was a success and further cases were performed in Europe and the UK, USA which then filtered down to Australia, NZ and Asia at large. The adoption of the technique however has had many speed bumps, including a novel complication profile (9). These included but were not limited to a urethral injury, which in turn led to training courses being delivered around the world. This again was followed by standardised proctorship in many societies.

Transanal TME is at another speed bump, and this relates to its oncological safety. The aerolisation of tumor cells through the pelvic cavity could lead to a multifocal spread of cancer and higher local recurrence rates. Again, these findings mainly by European centres have led to careful evaluation of the technique and further modifications of the low distal pursestring, as well as updated guidelines on who and what cases are appropriate.

In this series, we have some of the best minimally invasive colorectal surgeons in the world contributing literature reviews, personal experiences and presenting clinical data related to transanal TME surgery. The articles look at the reasons for taTME as well as the arguments against taTME. The UK/European/North American and Australasian training programs are evaluated in detail (10-12). The pitfalls and challenges of the technique are discussed. Transanal TME's role in non-cancer IBD surgery is highlighted, while the complexities of taTME and its convergence with emerging robotic technologies are also discussed. In addition, a chapter is devoted to the role of false planes in taTME in performing beyond TME surgery. Finally, we have Antonio Lacey writing on taTME into the future.

The guest editors hope that you enjoy the series and believe that it could not have come at a better time in defining the role for taTME in rectal surgery. We hope that this body of work will help clarify the history, current place, and future direction of this specialised technique.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Annals of Laparoscopic and Endoscopic Surgery* for the series “taTME”. The article did not undergo external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/ales-2019-tatme-12>). The series “taTME” was commissioned by the editorial office without any funding or sponsorship.

SKW served as the unpaid Guest Editor of the series and serves as an unpaid editorial board member of *Annals of Laparoscopic and Endoscopic Surgery* from Jul 2019 to Aug 2021. AGH served as the unpaid Guest Editor of the series. SKW reports non-financial support from Intuitive Surgical Inc., during the conduct of the study; and Proctors for Intuitive Surgical Inc., and teaches and proctors taTME in Australia. The authors have no other conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. Berho M, Narang R, Van Koughnett JA, et al. Modern multidisciplinary perioperative management of rectal cancer. *JAMA Surg* 2015;150:260-6.
2. Burton S, Brown G, Daniels IR, et al. MRI directed multidisciplinary team preoperative treatment strategy: The way to eliminate positive circumferential margins? *Br J Cancer* 2006;94:351-7.
3. Taylor FGM, Quirke P, Heald RJ, et al. Preoperative Magnetic Resonance Imaging Assessment of Circumferential Resection Margin Predicts Disease-Free Survival and Local Recurrence: 5-Year Follow-Up Results of the MERCURY Study. *J Clin Oncol* 2014;32:34-43.
4. Heald RJ, Husband EM, Ryall RD. The mesorectum in rectal cancer surgery—the clue to pelvic recurrence? *Br J Surg* 1982;69:613-6.
5. Stevenson AR, Solomon MJ, Lumley JW, et al. Effect of laparoscopic-assisted resection vs open resection on pathological outcomes in rectal cancer: The ALaCaRT randomized clinical trial. *JAMA* 2015;314:1356-63.
6. Fleshman J, Branda M, Sargent DJ, et al. Effect of laparoscopic-assisted resection vs open resection of stage II or III rectal cancer on pathologic outcomes the ACOSOG Z6051 randomized clinical trial. *JAMA* 2015;314:1346-55.
7. El-Gendy KA, Murphy J, Kullar NS, et al. Anterior Perineal PlanE for Ultralow Anterior Resection of the Rectum (the APPEAR Technique): a video demonstration. *Ann Surg Oncol* 2010;17:1357-8.
8. Sylla P, Rattner DW, Delgado S, et al. NOTES transanal rectal cancer resection using transanal endoscopic microsurgery and laparoscopic assistance. *Surg Endosc* 2010;24:1205-10.
9. Sylla P, Knol JJ, D'Andrea AP, et al. Urethral Injury and Other Urologic Injuries During Transanal Total Mesorectal Excision. *Ann Surg* 2019. [Epub ahead of print].
10. Abbott SC, Stevenson ARL, Bell SW, et al. An assessment of an Australasian pathway for the introduction of transanal total mesorectal excision (taTME). *Colorectal Dis* 2018;20:O1-6.
11. Atallah SB, DuBose AC, Burke JP, et al. Uptake of transanal total mesorectal excision in North America: Initial assessment of a structured training program and the experience of delegate surgeons. *Dis Colon Rectum* 2017;60:1023-31.
12. Francis N, Penna M, Mackenzie H, et al. Consensus on structured training curriculum for transanal total mesorectal excision (TaTME). *Surg Endosc* 2017;31:2711-9.



Satish K. Warriar



Alexander G. Heriot

Satish K. Warriar, MS, MBBS, FRACS

(Email: satish96101@yahoo.com)

Alexander G. Heriot, MB BChir, MA, MD, MBA, FRACS, FRCS, FACS, FASCRS

(Email: alexander.heriot@petermac.org)

Peter MacCallum Cancer Centre, Alfred Health, Epworth Healthcare, Richmond, Victoria, Australia

Received: 31 March 2020; Accepted: 07 May 2020; Published: 20 July 2020.

doi: 10.21037/ales-2019-tatme-12

View this article at: <http://dx.doi.org/10.21037/ales-2019-tatme-12>

doi: 10.21037/ales-2019-tatme-12

Cite this article as: Warriar SK, Heriot AG. Transanal total mesorectal excision: current updates and future challenges. *Ann Laparosc Endosc Surg* 2020;5:22.