



Training and accreditation in transanal total mesorectal excision (taTME) (Australasia)

Stephen William Bell¹, Andrew Stevenson²

¹Department of Surgery, Cabrini Monash University, Melbourne, Victoria, Australia; ²Royal Brisbane and Women's Hospital, Brisbane, Queensland, Australia

Contributions: (I) Conception and design: All authors; (II) Administrative support: None; (III) Provision of study materials or patients: None; (IV) Collection and assembly of data: All authors; (V) Data analysis and interpretation: All authors; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Stephen William Bell. Department of Surgery, Cabrini Monash University, Suite 27, Cabrini Medical Centre, Isabella St., Malvern, 3144, Melbourne, Victoria, Australia. Email: SWBell@ccgroup.net.au.

Background: The procedure of transanal total mesorectal excision (taTME) has been developed by pioneers from America and Europe to address a technical need in the surgical management of rectal cancer. Since the pioneers disseminated the early experience a number of interested surgeons from around the world undertook initial training and expanded its use in a growing number of centres. In Australia and New Zealand this began in 2014. The geographic isolation of Australia and New Zealand means considerable time and cost for surgeons to travel overseas to attend workshops such as those being conducted in Europe and the USA. As such, an appropriate training pathway was created in Australia and New Zealand centred around live surgery and cadaveric workshops.

Methods: A review of the history and development of the taTME training pathway in Australia and New Zealand was undertaken.

Results: This paper describes the current training pathway offered for Australian and New Zealand surgeons, and recommends credentialing that hospitals may use for individual surgeons.

Conclusions: A measured and thorough approach to training of surgeons in Australia and New Zealand is described. It has resulted in the safe introduction of this complex but beneficial procedure. Continued effort is required to monitor the long-term effects of this novel approach to rectal cancer surgery.

Keywords: Transanal total mesorectal excision (taTME); rectal cancer; minimally invasive surgery; training

Received: 02 December 2019; Accepted: 04 February 2020; Published: 20 April 2020.

doi: 10.21037/ales.2020.02.03

View this article at: <http://dx.doi.org/10.21037/ales.2020.02.03>

Introduction

The procedure of transanal total mesorectal excision (taTME) has been developed by pioneers from America and Europe to address a technical need in the surgical management of rectal cancer. The extraperitoneal rectum can be difficult to dissect, particularly in men, in the obese, with a large tumour and/or large prostate gland, and after pelvic radiotherapy. Numerous factors can produce a situation where dissection to and below a rectal cancer via the abdominal cavity can be difficult. Having dissected distal to the cancer, it is then necessary to cross-staple and

divide the rectum with a clear margin distal to the tumour. These manoeuvres can be achieved abdominally, by open, laparoscopic or robotic approaches; however, in some patients restoration of bowel continuity is not possible and an abdominoperineal resection may become necessary. Alternatively, if cross-stapling is attempted a close or positive distal margin could compromise oncological safety. Also, when multiple firings of a linear stapler are used this can lead to a higher risk of anastomotic leakage (1).

The alternative approach of dissecting the extraperitoneal rectum via a trans-anal approach using a disposable trans-

anal platform and standard laparoscopic equipment was developed with the coalescence of a number of other techniques, including transabdominal transanal (TATA) surgery. TaTME is essentially a modern interpretation of TATA using a digital imaging endoscopic platform and insufflation transanal luminal surgery had been performed via both fixed [transanal endoscopic microsurgery (TEMS)] and flexible [transanal minimally invasive surgery (TAMIS)] platforms. These built on the advanced laparoscopic skills required to dissect deep in the pelvis via an abdominal approach. Increasing interest in natural orifice transluminal endoscopic surgery (NOTES) in the 2000's and developments in both platform and equipment (including advanced optics, 3D and flexible tip telescopes) led to more advanced procedures being trialed in cadaveric and porcine models (2,3). This preliminary work finally culminated in the first live taTME being performed by Antonio Lacy and Patricia Sylla in 2009 (4).

Methods

The authors have been involved in the inception of taTME in Australia, and the subsequent development of the training pathway. The authors have acted as faculty on every training workshop that has been run, and have actively recruited and developed the expanded faculty. They therefore are familiar with the history of the development of taTME training in Australia and New Zealand (ANZ). This manuscript has been written from this knowledge.

Results

The history of taTME training in ANZ

Since the pioneers of this procedure disseminated the early experience a number of interested surgeons from around the world undertook initial training and expanded its use in a growing number of centres. In ANZ this began in 2014, and the first formalised workshop was offered in 2015. Dr. Stevenson visited Leuven in 2013 after which he began selectively performing taTME, beginning with benign pathology. Drs Stevenson and Bell then attended a structured workshop in Barcelona in 2014, both to further progress the technique, and also to observe the structure and content of the workshop. The geographic isolation of ANZ means considerable time and cost for surgeons to travel overseas to attend workshops such as those being conducted in Europe and the USA. As such, to facilitate

a safe and structured introduction of this novel technique in the Antipodes, it was important to establish similar workshops closer to home. The first five workshops in ANZ were attended by overseas faculty from Europe and America to add much needed expertise and experience. These initial workshops were also designed as “train the trainer” workshops to generate the early local faculty. In the subsequent years an average of four courses were offered each year, and these have now trained over 130 delegates (approximately half of the Colorectal Surgical Society of ANZ membership). There are now two workshops per year offered as this service the need to train the ANZ post fellowship trainees in their second year of training. These advanced trainees are on the cusp of starting their consultant practice.

This paper describes the current training pathway offered for ANZ surgeons, and recommends credentialing that hospitals may use for individual surgeons.

Surgeon selection

It is well recognised that taTME is a technically challenging procedure with an unfamiliar approach and anatomical view. A series of international consensus and educational summits were held between 2013–2016 involving many of the early innovators and adopters, including representation from Australia, following the IDEAL framework (5). Amongst these recommendations for the safe introduction of new techniques/technology was surgeon selection and that appropriate training is undertaken prior to attempting these procedures (6,7). It is also recognised that certain minimum skills are required to begin training, and these relate to the skills required in the procedures that predated taTME. A sound understanding and experience in laparoscopic pelvic/rectal surgery is a prerequisite, along with skills and experience in transanal surgery. Equally, it is important to have an existing structure that will support the development of a new technique within the surgeon's hospital. It has recently been suggested that the learning curve for taTME may be in excess of 24 cases (8). As such, an adequate case volume load is required to work through the learning curve in a reasonable timeframe and to maintain skills on an ongoing basis. There is a benefit to having more than one surgeon at an institution progress through the learning curve together. Surgeons are required to submit an application documenting their experience with colon resections (open, laparoscopic and robotic), TME (laparoscopic and robotic), and transanal endoscopic

surgery [TEMS, transanal endoscopic operation (TEO), TAMIS]. Generally, it has been preferred that they are members of the Colorectal Surgical Society of Australia and New Zealand, or advanced trainees expecting to become CSSANZ members. Post-fellowship trainees now applying to the workshops also require a letter of recommendation from their current training supervisor. If they do not have adequate personal experience in TAMIS and preliminary TAMIS workshop is required prior to attending a taTME workshop.

The faculty

All members of the faculty of the training program have completed formal training themselves and demonstrated an ongoing commitment to the development of the procedure. This includes an adequate case load as well as publishing in the field of taTME. All faculty members have an ongoing commitment to submitting data to the international registry, along with monitoring and analysing the local results. The faculty has been drawn from surgeons in 4 (of 6) Australian states and New Zealand, with broad representation geographically.

Course structure

All courses are run with similar faculty and the structure remains relatively stable, albeit undergoing constant refinement. They have been held in Brisbane, Melbourne (three hospitals) and Auckland, but with the faculty travelling to each site for each course.

The delegates receive didactic presentations on the history and the rationale of taTME, case selection, the applied anatomy as it is seen from below, the technical steps of the operation, and numerous videos of the correct planes of dissection and intra-operative errors to highlight recognition of problems prior to major complications developing. They have the opportunity to see and trial the surgical instruments, including the AirSeal insufflator, and to practice endoscopic purse-string insertion on a simulator prior to repeating this on the cadaver. They then observe a live case both by live video feed and from within the operating theatre. Finally, each delegate completes a taTME on a human cadaver, from device insertion and purse-string insertion, through to completed anastomosis. Just prior to this session, a separate handport and single port workshop is held for separate group of surgeons who will laparoscopically mobilise the abdominal colon and

divide the vessels which then facilitates specimen extraction after taTME by the taTME workshop delegates. The coordinated consecutive workshops allow full utilisation of the cadaver model.

The ratio of delegate to faculty is 2:1, and the workshop is conducted in a very interactive manner. All delegates are encouraged to bring a theatre nurse from their hospital to improve the transition into performing cases early in the learning curve. Delegates receive a certificate of completion. They are then offered proctorship for up to three cases by a member of the faculty for cases to be performed in their own hospital. Funding for proctorship has been supported by industry, and forms part of each delegate's fees for attendance at the workshop.

Data collection

All surgeons attending the workshops are encouraged to join the international taTME registry and to enter data on all cases performed. The faculty have also collated data locally on the case series encompassing the period of introduction of taTME to ANZ. The first 133 cases representing the early adopters in ANZ were analysed, demonstrating high quality surgery and safety. The TME grade was complete or nearly complete in 98%, with all patients having a clear distal margin, and 2 (1.5%) having a positive circumferential resection margin. There was one technique-specific visceral (urethral) injury, occurring in a case performed prior to this surgeon attending a training workshop. This data was published 2018, and supports the assertion that the described training programme and introduction of taTME has been safe in these two countries (9). It is also worth noting that not all surgeons who attend the workshops go on to perform taTME in their own practice. However, a survey of all attendees at the ANZ workshops suggests that approximately 60% of surgeons have performed at least one taTME case in their own hospital (unpublished data).

Credentialing

In ANZ, surgical credentialing ultimately remains at the discretion of the individual hospitals. There is no governing body that oversees credentialing criteria. However, the local taTME faculty, along with the international faculty have made recommendations regarding credentialing to which hospitals can refer.

The St.Gallen consensus statement (10) on the safe introduction of taTME has supported all of the components

of the training pathway offered to ANZ surgeons. We believe that completion of this pathway, including successful completion of proctored cases in their own hospital should act as appropriate credentialing for a surgeon to operate independently. It is stressed however that part of the ongoing credentialing should include data collection on all cases (preferably through the international registry), with an early review of progress and outcomes after the first five cases, and an ongoing review as required.

Discussion

The technique of taTME has been disseminated around the world in a structured and controlled manner. One of the great strengths of this process has been a collegial and supportive approach by the pioneers and the early adopters to help maintain high standards and a safe approach. This has involved significant international faculty involvement in the early stages of introduction in ANZ, including an open and honest sharing of videos of early operative experience. This has allowed the development of a (small) significant library of intra-operative complications, which have been shared to assist the newer surgeons to avoid these complications.

It is clear that there remain some issues with this technique, with recent publications highlighting a higher than expected anastomotic complication rate (11), along with the well documented but rarer technique-specific complications such as urethral injury (12). There has also been a recent brief report of unusual patterns of local and multisite recurrences (13). However, more recent long-term oncological outcomes from two expert centres in the Netherlands has demonstrated excellent results (14). Throughout history, surgical innovation has occasionally been beset by concerns of safety. Recent examples of this include the early introduction of laparoscopic cholecystectomy was plagued with an unexpectedly high rate of bile duct injuries. Similarly, the early period of laparoscopic colectomy for cancer was also troubled by case reports of port site recurrences. In both of these examples the early issues were overcome, and the procedures have gone on to become the mainstay of surgical management in their respective areas. The safe introduction of new surgical techniques requires a robust framework to avoid widespread adoption before high-quality assessment and refinement has taken place. In turn, this process should facilitate avoidance of harm to the patient and provide protection for the surgeon.

With ongoing thorough analysis of this technique of taTME that it will become an important tool in the surgical management of rectal cancers where abdominal access is predicted to be difficult.

Conclusions

TaTME is a technically challenging operation that requires a structured training pathway and controlled introduction into any surgeon's practice and any new hospital system. There remains a technical need to improve the surgical access to the distal rectum in the more difficult cases, and this procedure does fulfil some of these requirements. A measured and thorough approach to training of surgeons in ANZ has resulted in the safe introduction of this complex but beneficial procedure. Continued effort is required to monitor the long-term effects of this novel approach to rectal cancer surgery.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the Guest Editors (Satish K. Warrier and Alexander G. Heriot) for the series "Transanal Total Mesorectal Excision (taTME)" published in *Annals of Laparoscopic and Endoscopic Surgery*. The article has undergone external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/ales.2020.02.03>). The series "Transanal Total Mesorectal Excision (taTME)" was commissioned by the editorial office without any funding or sponsorship. AS serves as an unpaid editorial board member of *Annals of Laparoscopic and Endoscopic Surgery* from Jan 2019 to Dec 2020. 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. No ethical approval was required or obtained for this work.

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doi: 10.21037/ales.2020.02.03

Cite this article as: Bell SW, Stevenson A. Training and accreditation in transanal total mesorectal excision (taTME) (Australasia). *Ann Laparosc Endosc Surg* 2020;5:11.