



# Nuances on assessment of transanal minimally invasive surgery learning curve for local excision of rectal neoplasms

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We read with great interest the recent article “Establishing the learning curve of transanal minimally invasive surgery for local excision of rectal neoplasms. *Surgical Endoscopy* February 2017.” by Lee and co-workers (1). We congratulate the authors on their excellent work in defining the learning curve for transanal minimally invasive surgery (TAMIS) and being the first to publish it. In addition, we feel that using TAMIS for the local excision of early rectal cancer is a technique that needs more emphasis especially since the introduction of national screening programs has led to the increase detection of stage I rectal cancer (2). Several authors have advocated that local excision for early rectal cancer, offers lower morbidity and mortality when compared to radical TME surgery (3) Meanwhile, several studies have suggested it may lead to oncologic and patient reported outcomes that seem to be fully comparable to accepted treatment protocols (4-6). Furthermore, TAMIS seems superior to transanal endoscopic microsurgery (TEMS) with less conversions required, a lower complication rate and use of less costly and more readily available equipment (3,6,7).

The authors report on a total of 254 TAMIS procedures that were performed at their high-volume tertiary referral centre between 2006 and 2016. Using a standardized technique that was described before (8).

The main proficiency outcome chosen by the authors in this study was the positive margin status (R1 resection) in combination with total procedure time. We agree with the authors on choosing an oncologic outcome parameter as their primary outcome measure. We firmly believe that

defining the learning curve on the basis of morbidity and mortality alone is outdated and too simplistic. The present study emphasizes the importance of using oncologic outcome measures in combination with operation duration and case complexity in modern-day literature on attaining competence for surgical oncological procedures. An interesting avenue for further research might be, adding patient reported outcome measures such as anorectal function and/or quality of life to future learning curve studies.

The authors pooled data on acceptable incomplete-resection rate and unacceptable incomplete-resection rates from literature on TEMS and TAE to determine the proficiency limits for their learning curves.

The procedures presented in this study were performed by a total of five surgeons. These surgeons were divided into three groups on the basis of their experience in transanal surgery and by means of training in TAMIS. This study identified that surgeons experienced in laparoscopic colorectal surgery but without any formal training in TAMIS (groups A and B) need around 20–24 cases to reach proficiency. The surgeons in group C received standardised fellowship training and needed only 14 TAMIS procedures to reach proficiency. The authors postulated that the shorter learning curve may be accounted to the fellowship training they received by surgeons that already mastered the technique which is a very plausible explanation. However, another factor that may play a role is the evolution of surgical instruments and new devices in

the accelerated learning curve as seen in group C. For example; barbed sutures for closing the defect, curved instruments in the narrow anal canal and the development of advanced insufflation devices that led to a more stable pneumorectum. These developments together with the proctorship will undoubtedly have made the procedures somewhat 'easier'.

When investigating the implementation of TAMIS at our own institute we saw a similar shorter learning curve for the surgeons that were proctored by experienced surgeons in this new technique. Therefore, we agree with the authors structured proctorship in combination with case selection in the early learning phase of a new technically demanding surgical technique is mandatory.

Unfortunately, the present study does not define a surgeon specific learning curve. Grouping multiple surgeons together may lead to inter surgeon and inter group heterogeneity. Also training in TaTME while simultaneously training in TAMIS could result in a biased learning curve for one of the procedures. It would be an interesting avenue for future research to describe the operating surgeon and assisting surgeon relation in more detail, and dwell on the total number of procedures or the level of teaching/mentoring that was provided. Nevertheless, we believe this study is of tremendous value as an addition to the already existing literature on TAMIS. We recommend this publication be read by all surgeons new to TAMIS, training in TAMIS or considering implementing this promising surgical procedure in their hospital. Furthermore, this study highlights the importance of using oncological outcome parameters for defining the learning curve and the effect of standardization and fellowship training for new technically demanding surgical techniques.

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