available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Platinum Priority – Editorial

Referring to the article published on pp. 253–256 of this issue

The Learning Curve for Robot-assisted Partial Nephrectomy: There is Much Beyond a Trifecta

Jens. J. Rassweiler* *, Marcel Fiedler-Hruza

Department of Urology, SLK Kliniken Heilbronn, University of Heidelberg, Heilbronn, Germany

In this issue of *European Urology*, Larcher and colleagues [1] report on the learning curve for robot-assisted partial nephrectomy (RAPN). The authors are to be congratulated for focusing for the first time on a more detailed analysis of the learning curve for this surgical technique. Using the statistical approach introduced by Vickers et al. [2] for urologic research, they found a nonlinear learning curve with respect to warm ischaemia time (WIT) with a plateau at 150 cases, and a linear learning curve in terms of the incidence of major complications (Clavien-Dindo grade >2). The rate of positive margins did not prove to be a significant parameter in describing the RAPN learning curve.

We were lucky to benefit from Andrew Vickers' knowledge when analysing the learning curve for laparoscopic and open radical prostatectomy [3,4]. Interestingly, we were able to use the rate of positive margins as a significant parameter, with a plateau occurring after 250 cases, whereas there was a negative linear correlation with respect to the rate of biochemical recurrence (BCR), even after 750 cases. This underlines the technical difficulty of both procedures. Use of the Da Vinci device may shorten the learning curve for laparoscopic radical prostatectomy (100 vs 300 cases to plateau) [5]. However, at least 150 RAPN cases were necessary to achieve a plateau for WIT [1].

However, we have to look beyond such an analysis. First, we have to define adequate parameters. Whereas a decrease in the positive margin rate may be useful for radical prostatectomy, it is not for PN, which is not surprising owing to the low incidence and minor clinical relevance. Vickers et al. [6] recently presented a feedback system for surgeon performance for radical prostatectomy that includes various endpoints, such as BCR, functional outcome, positive margin rate, operating room time, complication rate, and estimated blood loss. Such multimodal feedback may allow each surgeon to assess their personal performance status and the system should prompt undertaking of educational activities on an individual level. We think that this might be more useful rather than just focussing on the need for high-volume centres. Of course, as in the training and assessment of pilots, such outcome reporting has to be private to prevent the perception that feedback is punitive [7].

Apart from this, we should strive to better understand how surgeons improve in performance. It seems remarkable that we continue to spend billions of research dollars on looking at cancer cells on all levels but virtually nothing on looking at the surgeon's hands. Simulation, virtual reality training, and 3D-printed models might improve our understanding of patient anatomy and thus outcomes after surgery. It is interesting that most of the new tools are video-based and might not be applicable for open surgery [8].

Conflicts of interest: The authors have nothing to disclose.

References

[1] Larcher A, Muttin F, Peyronnet B, et al. The learning curve for robot-assisted partial nephrectomy: impact of surgical experience on perioperative outcomes. Eur Urol 2019;75:253–6.

[2] Vickers AJ, Bianco FJ, Serio AM, et al. The surgical learning curve for prostate cancer control after radical prostatectomy. J Natl Cancer Inst 2007;99:1171–7.

DOI of original article: https://doi.org/10.1016/j.eururo.2018.08.042.
* Corresponding author. Department of Urology, SLK Kliniken Heilbronn, Am Gesundbrunnen 20–26, 74078 Heilbronn, Germany.
Tel. +49 7131 492401; Fax: +49 7131 492429.
E-mail address: jens.rassweiler@slk-kliniken.de (Jens. J. Rassweiler).

https://doi.org/10.1016/j.eururo.2018.10.022

[3] Secin FP, Savage C, Abbou C, et al. The learning curve for laparoscopic radical prostatectomy: an international multicenter study. J Urol 2010;184:2291–6.
[4] Vickers AJ, Savage CJ, Hruza M, et al. The surgical learning curve for laparoscopic compared to open radical prostatectomy: a retrospective cohort study. Lancet Oncol 2009;10:475–80.
[5] Sivaraman A, Sanchez-Salas R, Prapotnich D, et al. Learning curve of minimally invasive radical prostatectomy: comprehensive evaluation and cumulative summation analysis of oncological outcomes. Urol Oncol 2017;35, 149.e1–6.
[6] Vickers AJ, Sjoberg D, Basch E, et al. How do you know if you are any good? A surgeon performance feedback system for the outcomes of radical prostatectomy. Eur Urol 2012;61:284–9.
[7] Rassweiler MC, Mamoulakis C, Kenngott HG, et al. Classification and detection of errors in minimally invasive surgery. J Endourol 2011;25:1713–21.
[8] Greco F, Cadeddu JA, Gill IS, et al. Current perspectives in the use of molecular imaging to target surgical treatments for genitourinary cancers. Eur Urol 2014;65:947–64.