

# Learning Curve in Spine Surgery—Too Many Techniques, Too Many Options—How Should Young Surgeons Deal with this Anxiety?

## *Curva de aprendizado em cirurgias de coluna—Muitas técnicas, muitas opções—Como jovens cirurgiões devem lidar com a ansiedade?*

Andrei F. Joaquim<sup>1</sup> Alexander R. Vaccaro<sup>2</sup>

<sup>1</sup>Division of Neurosurgery, Department of Neurology, Universidade Estadual de Campinas, Campinas, SP, Brazil

<sup>2</sup>Department of Orthopedic Surgery and Neurosurgery, Thomas Jefferson University, Philadelphia, PA, United States

Address for correspondence Andrei F. Joaquim, MD, PhD, Divisão de Neurocirurgia, Departamento de Neurologia, Universidade Estadual de Campinas, Rua Tessália Vieira de Camargo, 126, Cidade Universitária Zeferino Vaz, Campinas, SP 13083-970, Brazil (e-mail: andjoaquim@yahoo.com).

Arq Bras Neurocir 2019;38:40–41.

Spine surgeons have long years of training to get their licenses and start clinical practice. After a long medical school graduation and some years of neurosurgery or orthopedic residence, an additional fellowship is generally performed for 1, 2, or even 3 years. When the full license is obtained, young surgeons have to deal with another problem: the large amount of surgical options and techniques they have to learn. However, should we have to learn all surgical techniques?

Modern spine surgery is based on the understanding of the whole spinal alignment and also of the spinopelvic relationships, as well as on the understanding of the specific characteristics of the patients, such as bone quality, personal expectations, comorbidities, and others. Regarding degenerative lumbar spine surgeries, specifically, decompressive techniques are probably the most common procedures performed in the daily practice. For this, surgical options include open traditional laminectomies, lateral decompressions using paramedian approaches, pars decompression, tubular surgeries, endoscopic procedures (interlaminar or foraminal), among an infinitude of small variations described in the medical literature.<sup>1–4</sup> When we talk about spinal fusion, there is also a multitude of procedures available (posterior lumbar interbody fusion [PLIF], transforaminal lumbar interbody fusion [TLIF], anterior lumbar interbody fusion [ALIF], oblique lumbar interbody fusion [OLIF] and lateral lumbar interbody fusion [LLIF], among others), with specific advan-

tages and disadvantages. An entire career is necessary in order to achieve expertise in these procedures.<sup>5,6</sup>

Nevertheless, in our humble opinion, there is no surgeon who is able to perform all of the spine surgery procedures with the same level of mastery. Experience requires performing the same procedure for a long time, and even for experienced and large-volume surgeons, mastering all of the techniques is humanly impossible. The industry and their representative surgeons put on tremendous amount of pressure for young surgeons to learn these new procedures, most of which are much more expensive than the old ones (especially because they are not yet popularized) and without a clear and well demonstrated scientific superiority.

So, how can one deal with all this scientific noise? With this unbelievable amount of medical literature? In fact, the anxiety exists indeed. Personally, we do not know the answer, but we would recommend that surgeons focus on surgical indications and on understanding the nuances of the patient involved in the treatment (expectations, clinical conditions, and body habits, among others). The magic sauce is understanding who needs surgery and for what reasons, and then master a technique (new or old) that will accomplish your goals with the most cost-effective strategy. If you have a good surgical indication, perform the technique that you feel more comfortable with and whichever you have more experience in. Throughout the years, you will be able to understand what you should incorporate or not in your

received  
November 19, 2018  
accepted  
January 8, 2019  
published online  
February 6, 2019

DOI <https://doi.org/10.1055/s-0039-1678586>.  
ISSN 0103-5355.

Copyright © 2019 by Thieme Revinter Publicações Ltda, Rio de Janeiro, Brazil

License terms



practice. Always learning, but without anxiety. Then, slowly, you may differentiate clearly what is an economical market pressure in your practice from what is really better for your patients. Finally, do not feel guilty for not knowing everything. This happens to every surgeon, all the time.

#### Conflicts of Interest

The authors have no conflicts of interest to declare.

#### References

- 1 Park SM, Kim HJ, Kim GU, et al. Learning curve for lumbar decompressive laminectomy in biportal endoscopic spinal surgery (BESS) using the cumulative summation test for learning curve (LC-CUSUM). *World Neurosurgery*. <https://doi.org/10.1016/j.wneu.2018.10.197>
- 2 Ahmed SI, Javed G, Bareeqa SB, et al. Comparison of Decompression Alone Versus Decompression with Fusion for Stenotic Lumbar Spine: A Systematic Review and Meta-analysis. *Cureus* 2018;10(08):e3135
- 3 Youn MS, Shin JK, Goh TS, Son SM, Lee JS. Endoscopic posterior decompression under local anesthesia for degenerative lumbar spinal stenosis. *J Neurosurg Spine* 2018;29(06):661–666
- 4 Tender GC, Baratta RV, Voorhies RM. Unilateral removal of pars interarticularis. *J Neurosurg Spine* 2005;2(03):279–288
- 5 Mobbs RJ, Phan K, Malham G, Seex K, Rao PJ. Lumbar interbody fusion: techniques, indications and comparison of interbody fusion options including PLIF, TLIF, MI-TLIF, OLIF/ATP, LLIF and ALIF. *J Spine Surg* 2015;1(01):2–18
- 6 Teng I, Han J, Phan K, Mobbs R. A meta-analysis comparing ALIF, PLIF, TLIF and LLIF. *J Clin Neurosci* 2017;44:11–17