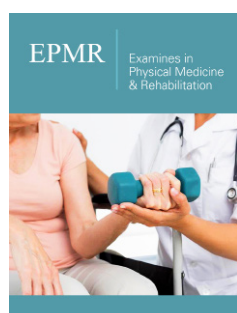


Innovations in Spinal Surgery: From the Open Approach to Endoscopic Surgery

Bergamaschi JPM* and Fernanda Wirth

Atualli Spine Care Clinic, Brazil

ISSN: 2637-7934



***Corresponding author:** João Paulo Machado Bergamaschi, Atualli Spine Care Clinic, 745 Alameda Santos, São Paulo, Brazil

Submission:  January 8, 2023

Published:  January 22, 2024

Volume 4 - Issue 5

How to cite this article: Bergamaschi JPM* and Fernanda Wirth. Innovations in Spinal Surgery: From the Open Approach to Endoscopic Surgery. *Examinar in Physical Medicine & Rehabilitation*. 4(5). EPMPR. 000597. 2024. DOI: [10.31031/EPMPR.2024.04.000597](https://doi.org/10.31031/EPMPR.2024.04.000597)

Copyright@ Bergamaschi JPM, This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use and redistribution provided that the original author and source are credited.

Opinion

Spine surgery is a constantly evolving field, driven by technological advances that have transformed traditional approaches into more advanced and less invasive methods [1]. In this article, we look at the evolution of spine surgery from open procedures to Endoscopic Spine Surgery (ESS), discussing the changes in surgeons' mindset, the need for specific and continuous training and the challenges in accepting these innovations. The history of spinal surgery goes back to more invasive procedures where open surgery was the norm. While these procedures were effective in many cases, they often resulted in long recovery times, significant morbidity and heavy scarring for patients. However, with advances in technology and surgical techniques, there has been a remarkable transition from open surgery to minimally invasive methods, with ESS emerging as a key innovation [2]. In contrast to conventional open surgery, ESS uses small incisions and the guidance of an endoscope to visualize and treat diseases of the spine. This innovative technique allows for faster recovery, less post-operative pain and reduced morbidity for patients. This development has been driven by the constant pursuit of better clinical outcomes and minimizing the impact on the patient during the procedure [3].

The transition from open to ESS not only brought about changes in the technique, but also in the mentality of the surgeons [4]. With the advent of ESS, surgeons have to be very careful when diagnosing and localizing the pain trigger to be treated during the surgical procedure. The procedure must be precise and this undoubtedly forces surgeons to perform a detailed physical examination of the patient. In the past, surgical approaches were often based on changes observed in imaging studies. If 2 or 3 levels showed abnormalities in an MRI (magnetic resonance imaging) study, such as degeneration, discs with reduced height or hypertrophied zygapophyseal joints, this was a reason for a comprehensive approach targeting all levels to try to resolve the patient's problems definitively. Over time, it became apparent that an approach based solely on MRI findings and spinal fusion was not always the final solution, but rather the beginning of new problems. The concept of „less is more“ has prevailed in many surgical techniques, and the spine is no exception. Contemporary literature favors isolated decompression (endoscopic or minimally invasive) for spinal compression syndromes without the need for fusion.

The introduction of ESS has made specific and continuous training of surgeons essential. This technique requires special technical skills, including the precise handling of the endoscope, the interpretation of endoscopic images and the performance of procedures under minimal visual guidance. Therefore, specific training programs have become essential to ensure that surgeons learn these critical skills [5]. The innovations in spinal surgery - from open to endoscopic procedures - represent a significant advance in the search for safer and more effective methods. The changing mindset of surgeons, the need for continuous education

and the challenges of accepting these innovations underline the complexity of this development. It is critical that the medical community recognizes the importance of professional humility and commitment to continuous learning to ensure that innovations fully benefit patients and promote excellence in spine surgery practice.

Rehabilitation has also improved its techniques over time, and if an ESS occurs, the patient can begin rehabilitation just a few days after the procedure. This leads to a faster return to work and daily activities, as postoperative rehabilitation in patients who have undergone ESS usually prioritizes the prevention of recurrent disc herniation and is also an accelerated protocol compared to open surgical protocols [3]. Physiotherapy usually prevents spine surgery [6], however, lifestyle is an important issue in spinal surgery because it is known that physically active people are usually less likely to undergo spinal surgery, and when they do, recovery is faster than in sedentary people [7].

References

1. Goldberg JL, Hussain I, Sommer F, Härtl R, Elowitz E (2022) The future of minimally invasive spinal surgery. *World Neurosurg* 163: 233-240.
2. Momin AA, Steinmetz MP (2020) Evolution of minimally invasive lumbar spine surgery. *World Neurosurg* 140: 622-626.
3. Bergamaschi JPM, Brito MBS, Lugão AF, Soares TQ, Depieri GV, et al. (2023) Perspectives of endoscopic spine surgery in athletes and practitioners of physical activity. In: Lv DX, Sun DZ, (eds.), *Frontiers in Spinal Neurosurgery*. Intech Open Publishers, UK.
4. Wirth F, Bergamaschi ECQA, Forti F da S, Bergamaschi JPM (2023) Development of indications for endoscopic spine surgery: An overview. *Int J Transl Med* 3(3): 321-333.
5. Ali R, Hagan MJ, Bajaj A, Gibson JNA, Hofstetter CP, et al. (2023) Impact of the learning curve of percutaneous endoscopic lumbar discectomy on clinical outcomes: A systematic review. *Interdiscip Neurosurg* 32: 101738.
6. Minetama M, Kawakami M, Teraguchi M, Enyo Y, Nakagawa M, et al. (2022) Supervised physical therapy versus surgery for patients with lumbar spinal stenosis: A propensity score-matched analysis. *BMC Musculoskelet Disord* 23(1): 658.
7. Schwartz CE, Stark RB, Balasubramaniam P, Shrikumar M, Wasim A, et al. (2021) Moving toward better health: Exercise practice is associated with improved outcomes after spine surgery in people with degenerative lumbar conditions. *Can J Surg* 64(4): E419-E427.