

## Suggestions for a Practical and Progressive Approach to Endoscopic Spine Surgery Training and Privileges

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### Abstract

Progress within the various surgical fields has been facilitated by the use of minimally invasive procedures to achieve the same clinical outcomes as traditional techniques. Spine surgery is no different, and endoscopic spine surgery continues to demonstrate extensive applications while minimizing collateral tissue damage. Endoscopic spine surgery blends skill sets, technology, and clinical applications from both surgical spine and interventional spine. Clinicians from these fields have adopted endoscopic spine surgery. This has created a dilemma: there are now physicians providing surgical care who have not had formal spine surgical training. Some interventional spine practitioners are able to offer safe and effective endoscopic spine surgery, but training standards and practice standards are necessary for the field to progress. This article provides suggestions for a pragmatic approach to endoscopic spine surgery training and credentialing for physicians who practice interventional spine.

**Keywords:** Endoscopic spine surgery; Academic training programs; Credentialing

### Introduction

Surgery continues to evolve toward minimally invasive procedures. Comparable outcomes, more rapid recovery, and patient demand continue to push spine surgery in the same direction around the world [1]. Endoscopic spinal surgery (ESS) is arguably the least invasive among the alternatives, with broad application in the treatment of multiple painful spinal conditions [2]. There is strong evidence for equivalent outcomes in the treatment of lumbar disc herniation [3-5], and potentially other surgical conditions such as lumbar lateral recess stenosis [6], lumbar foraminal stenosis [7,8], and cervical discectomy [9]. Accordingly, there has been a progressive increase in the interest among spine providers from many fields. Unfortunately, the lack of structured training opportunities, a challenging learning curve [10], and commercial pressures have limited the number of truly experienced endoscopic spine surgeons. This leaves the field and the public without a reference standard for accomplishment in endoscopic spine.

### Discussion

Traditional spine surgeons have not historically embraced the field, leading to interventional spine physicians (ISPs) starting to fill the vacuum. Many of the skills developed during training as an ISP translate directly to the practice of ESS. This creates a potential risk, since the principles of surgical spine care, complication recognition and management, and the biomechanics of the spine (especially relevant to resection of structural components of the spine) are not areas of focus in ISP training, nor are they included in currently available training workshops in ESS. The principles of surgical spine, complication recognition, and management are not areas of focus in Interventional fellowship training, nor are they included in current workshop training programs in ESS. These workshops are of short duration, without a goal-based curriculum, and formal assessment of clinical and technical skills. Formalized and standardized training should be required for all who wish to tackle this demanding field.

Recently, the University of New Mexico in Albuquerque has attempted to address this lack of consistent and quality training in endoscopic spine surgery. A fellowship program has been established by Anthony Yeung, MD of Desert Institute for Spine Care, a champion

of this technology for the past 27 years [11] and Howard Yonas MD, Chairman of the Department of Neurosurgery at the University of New Mexico; both of whom had the foresight to identify and address this dilemma. The goal was to create qualified endoscopic spinal surgeons capable of utilizing the technologies capabilities safely and effectively whether from surgical or ISP training programs. Predictably, this has created tension and debate about the appropriate scope of practice for intervention lists within the field. The arguments generally fall into the following categories: Complication management, training requirements, and market concerns.

### Complication management

The management of complications resulting from any procedure must be carefully considered and its avoidance planned. Complications are the generally result of patient factors, procedural approach, equipment, and technical prowess. Complications may arise with any operation, and the misjudgment leading to the complication is commonly recognized only in retrospect. These can be minimized through careful planning, sensible surgical approach, technical competence, accumulated experience, and extensive exposure to cases (often cases with complications), so that the surgeon is cognizant of the pitfalls inherent in every procedure. Nevertheless, it is not possible prevent all complications. Some complications cannot be reversed nor their effects mitigated. Other complications are treatable when recognized. Some believe that only those trained in the full surgical scope of spine care, who can immediately address treatable complications should perform ESS.

Surgical treatment of symptomatic conditions of the spine, however, may incur consequences that may need to be addressed by a trained surgeon or complemented by providers in other fields of medicine [1].

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All spine surgeons are aware that a complication from surgery may lead to consultation and treatment by an ISP, internal medicine, critical care, infectious disease, vascular surgery, etc. Likewise, all ISPs are aware that complications arising from a procedure could require a spine surgeon's timely intervention, or care from another consultant. While complications are inevitable, they may be avoided and minimized through proper training, and addressed with appropriate association with clinical partnerships. Spine care and all that it entails, including complication management, is a multidisciplinary field.

### Requisite education

Another argument against involving ISPs in ESS is the absence of formalized and peer reviewed training programs for evaluation of surgical skill and judgment. While neurosurgery and orthopedic spine surgery have a review process to ensure at least minimal performance standards, until now, ISPs do not. It is essential to be proactive and develop standardized high-quality training in ESS for all those interested. Weekend courses are usually not sufficient for most intervention lists as well as surgeons to obtain the expertise to safely and efficiently perform endoscopic spine at levels to not cause the demise of this intervention by over utilization in each specialty's focus to expand their practices for the sole purpose of income generation.

### Market concerns

A final argument against the involvement of ISPs in the field of ESS is that the cases they perform may reduce the number of cases that should be referred for open spine surgery. This is an argument that can be rejected as cynical. More invasive spine surgery will be required for many patients with varying spine conditions, but a rational staged approach to treatment including non-operative and endoscopic options when appropriate is in the best interest of patients and spine providers.

### Importance of pragmatism

Many spine procedures, which are surgical in nature, are already performed by ISPs. These procedures include implantation of epidural spinal cord stimulators, intrathecal pumps for medication delivery, percutaneous nucleotomy, ligamentum flavum debridement, and even interspinous process spacer devices. Further, the interventional procedure, radiofrequency neurotomy, should be understood in the context of its true nature—it is a percutaneous neurosurgical procedure that ablates a peripheral nerve. The lines between surgical and non-surgical treatment for spine conditions are perpetually blurred by technology and evolving practice patterns.

There are many ISPs already performing endoscopic visualized discectomy, foraminotomy, laminotomy, and rhizotomy helped by competent endoscopic surgeons. Some are very skilled and knowledgeable, and may be ranked among the most accomplished endoscopic surgeons. Still, there must be internal professional oversight to assure a minimal technical and clinical proficiency, and an expectation of feasible methods to address potentially harmful complications. There are no external limits to the scope of practice that a physician may provide. Generally, it falls on the professional societies to set guidelines and standards for medical practice. A practical position for certification and privileging must be considered and instigated to improve patient safety and allow access to successful techniques. Credentialing is dependent on each licensed facility and by organizations. The following proposals apply to any practitioner of

ESS: Despite the desire on the part of an ISP, This does not obfuscate that physician from obtaining proper and through on endoscopic spine surgery

### Proposals

- 1 Endoscopic spine surgeons must accrue technical and clinical expertise in training programs of adequate breadth and quality.
- 2 Endoscopic spine surgeons must demonstrate technical proficiency and expertise standardized and reviewed by peers.
- 3 Endoscopic spine surgeons must be able to manage potentially harmful complications, or have a relationship with a system of providers that will assist in the management of such complications.

In this context, any practitioner, who is provided adequate training, demonstration of proficiency, and a relationship with colleagues that can support it, may perform any ESS procedure. Privileging must therefore be a collaborative process by which the applicant and the institution discuss openly and frankly, qualifications for the performance of a procedure as well as the plan for management of its complications. If these qualifications and the plan are acceptable, ESS privileges can be granted.

### Conclusion

We believe the appropriate response to the first proposal is the development of formal training in ESS for ISPs, and recommend this occur within the auspices of a spine surgery-training program. We also believe that focused training in ESS is important for the future of neurosurgeons and orthopedic spine surgeons, and consider the training to be essential to the future of spinal surgery.

The second proposal is best addressed by creating and supporting a peer-review board for ESS, to uphold a minimum standard of surgical judgment and technical skill. We believe this should be developed and cultivated by a team of traditionally, endoscopically trained spine surgeons, and ISPs who are dedicated to the efficacy and safety of ESS to allow the best possible outcome.

The third proposal recognizes the importance of partnerships among physicians and between physicians and health systems, so that the best patient care can occur in each practice setting.

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