Spine Fellowship Education and Its Association with the Part-II Oral Certification Examination

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Candidates who are eligible for the Part-II oral examination of the American Board of Orthopaedic Surgery (ABOS) may select their specific subspecialty area for testing after fellowship training. Subspecialties are hand, spine, pediatrics, sports, adult reconstruction, trauma, oncology, and foot and ankle. Subspecialization means that the candidate commits at least 50% of his or her practice to that subspecialty. This would be declared and reflected in the list of cases managed during the collection period, defined as six consecutive months of operative cases, beginning July 1 of the year prior to the Part-II examination. Sixty-five to seventy orthopaedic surgeons who are part of the oral examination group review the case lists submitted by the applicant and select twelve cases for the oral examination of which two cases can be deleted by the candidate. For each case selected, the candidate must provide the following: (1) notes from the initial history and physical examination (the first visit), (2) notes on the operative procedure, (3) notes from an office visit made at a minimum of three months postoperatively, (4) the discharge summary as well as information on all relevant consultations obtained concerning the care of the patient, and (5) all relevant imaging studies made preoperatively, intraoperatively, and postoperatively. All records must be organized to allow examiners ready access to these materials.

In addition to the specialty case list, a candidate who selects a subspecialty designation will be examined by three sets of examiners with two examiners in each group. The ABOS guarantees that at least one examiner in each examination group will be a subspecialist in that designated area. This ensures a fair and knowledgeable exchange of information between the candidate and the examiner and ensures that the interactions will reflect the most up-to-date evidence-based information in that subspecialty.

Examiner Expectations
What is expected from the candidate by the examiners to successfully pass Part II of the examination? The ABOS has provided residency program directors and candidates with the rating scales used by examiners in evaluating the case lists and presentations (see Appendix). In essence, the candidate is judged both on the cases themselves and on the six skills with defined rating scales. This means that record-keeping, case mix, and complications are carefully evaluated to arrive at the case list score. The presentation of cases must include the candidate’s decision-making processes, indications, treatments (operative and nonoperative), a defense of his or her patient care based on the published literature, and, finally, the ability to discuss complications and adverse outcomes in a rational manner.

It is logical to assume that residency and fellowship training along with early practice experience factor heavily into the candidates’ ability to complete the Part-II examination successfully. Although this discussion applies to all of the subspecialty areas, the remaining comments are directed to those surgeons who have designated spine as their subspecialty.

Spine as a Specialty
The foundation of a comprehensive spine education begins in one’s residency program. During that period, an orthopaedic resident should gain the core knowledge related to the basic science of various spinal maladies; develop the ability to formulate differential diagnoses and manage common spinal problems in an office setting; and learn the indications, risks, benefits, results, outcomes, and complications of spinal disorders, including herniated and degenerative discs, spinal stenosis, sciatica, arthritis, deformity, tumor, infection, and trauma.

Residency Education
The core spine knowledge expected of a resident completing an orthopaedic residency program is listed in the Appendix.

A solid foundation laid during residency training prepares a resident to be successful as a spine fellow. Building on the knowledge and experience gained during residency, the fellow is able to gain further insight into the pathophysiology of the multiple abnormalities that affect the spinal column as well as the indications for surgical treatment.

Fellowship Education
The fellowship year is the time to acquire decision-making skills and to become thoroughly familiar with surgical techniques, which hopefully will be mastered in practice. That year should teach surgical indications, alternative nonoperative therapies, outcomes, and associated complications.

The educational and procedural elements in which an orthopaedic spine
surgery fellow should be competent on successful completion of the fellowship training program are presented in the Appendix.

It is recognized that programs have varied emphases such as degenerative disease, deformity, or trauma. No program will provide the full breadth of experience in all procedures. However, it is expected that an orthopaedic spine fellow should have mastered basic spinal surgery knowledge and surgical skills on completion of the program. Understanding how complications occur and how to manage them effectively separates an average surgeon from an excellent surgeon. The fellow must also learn expected results and outcomes and develop the confidence necessary to speak with patients and their families to provide them with an evidence-based informed choice (traditional informed consent).

Ethics and professionalism are rooted before residency begins but are fine-tuned during residency and fellowship training. The fellow (soon-to-be practitioner) interacts with industry should also be taught during the fellowship year.

In order to become a complete spine surgeon, the resident and, later, fellow must have the proper mentors who understand the educational process.

Spine fellowships offer a wide spectrum of training from those that focus on low-back pain to those that focus on deformity-based disease. Regardless of the fellowship focus, there are standards of education and training that should apply to each program and that are used in the fellowship accreditation process of the Accreditation Council for Graduate Medical Education (ACGME). There must be a commitment in training programs to education rather than to service. Research experience is also essential to help the fellow to develop the ability to critically evaluate practice patterns, surgical procedures, and the literature. Having regular conferences, journal clubs, and mortality and morbidity conferences provides the academic feedback necessary to improve one's performance and, therefore, to improve patient care. Fellowship programs that are accredited by the ACGME Residency Review Committee ensure that these principles of education and training are present. They ensure that the fellowship institutions provide the necessary resources that are necessary to support the fellows' education and training such as classrooms, libraries, research facilities, and educational materials. This information is outlined in detail in the Graduate Medical Education Directory (the Green Book).

Some fellowships, however, may be more service oriented than education oriented. This defeats the educational goals of the fellowship program and places the fellow candidate for the Part-II examination at a significant disadvantage. Without the necessary educational feedback and interaction, the candidate presenting his or her cases before the spine examiners may not be able to adequately explain the indications for a procedure, why he or she achieved a less than optimal result, or why an inordinate number of complications occurred. It is the responsibility of every potential fellowship candidate to make certain that the fellowship program that he or she selects fulfills the educational requirements to provide the training necessary to help to ensure the successful completion of the Part-II examination.

Table I presents the results on the Part-II examination for 2002 through 2005 for the spine candidates and compares them with the overall pass-fail rates for all candidates who took the examination.

The number of failures raises concerns for those electing to engage in spine fellowships. Are the fellows receiving sufficient education and procedural feedback to perform satisfactorily on the Part-II examination? Fellowship accreditation through the ACGME with a specific curriculum and educational goals may help to ensure the necessary resources for the fellow to be successful on the Part-II oral examination.

### Program and Accreditation

In a review of orthopaedic spine fellowship programs whose graduates completed the Part-II oral examination from 2002 to 2005, it was noted that eight programs had more than one candidate fail during the three-year review period. Of these eight programs, only one had accreditation through the ACGME. The review included forty-seven orthopaedic spine fellowship programs in the United States. Of the twelve accredited spine fellowships, only one program had more than one fellow who failed (8%), while fellows from nonaccredited programs failed at nearly three times the rate of those from accredited programs (20%).

It is not the function of the ABOS to mandate fellowship accreditation, but it is the function of the ABOS to test and to certify the candidates who success-

<table>
<thead>
<tr>
<th>Graduation Year</th>
<th>No. of Candidates</th>
<th>No. (%) Who Passed</th>
<th>No. (%) Who Failed</th>
<th>No. of Candidates</th>
<th>No. (%) Who Failed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>63</td>
<td>54 (86)</td>
<td>9 (14)</td>
<td>709</td>
<td>76 (11)</td>
</tr>
<tr>
<td>2003</td>
<td>64</td>
<td>47 (73)</td>
<td>17 (27)</td>
<td>615</td>
<td>52 (8)</td>
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<tr>
<td>2004</td>
<td>85</td>
<td>63 (74)</td>
<td>22 (26)</td>
<td>698</td>
<td>104 (15)</td>
</tr>
<tr>
<td>2005</td>
<td>93</td>
<td>80 (86)</td>
<td>13 (14)</td>
<td>697</td>
<td>52 (7)</td>
</tr>
</tbody>
</table>
fully complete the examinations. Fellowship accreditation in orthopaedics is granted by the Residency Review Committee in Orthopaedic Surgery, as an extension of the ACGME, on completion and review of the application initiated by the specific program seeking accreditation. Fellowship accreditation is treated in a similar manner to residency accreditation. It requires periodic site visit reviews by the Residency Review Committee, which submits a written program summary.

As has been stated, accreditation cannot be mandated, but the data strongly suggest that the programs with accreditation emphasizing education, and not just service, provide a fellow candidate a better chance of being successful on the Part-II examination.

**Nonaccredited Programs**

It should also be stated that nonaccredited programs can provide an educational framework along with facilities and resources that are similar to those of accredited programs. These programs do not, however, undergo periodic review; therefore, there is no assurance that such programs provide a similar educational environment. It is up to each fellowship applicant to inquire of prospective programs as to what educational clinical and research resources are available. It is also the fellowship applicant’s responsibility to inquire as to the pass-fail rate of prior fellows who graduated from that specific program, before making a decision on which program to attend.

**Subspecialty Certification**

One may ask whether the natural progression of this process is to require accreditation of all fellowships and, ultimately, to require subspecialty certification for orthopaedic spine surgery. Is spine surgery headed down the same path as hand surgery, which created subspecialty certification, the first Certificate of Added Qualification, in 1989? This may be best for our fellows and the public we serve. The main purpose of subspecialty certification is to establish a fund of knowledge within the field and, ultimately, to improve the quality of medicine being practiced within the subspecialty.

In an article in the American volume of *The Journal of Hand Surgery* in 1982, Smith elucidated five crucial elements in the consideration of subspecialty certification in hand surgery. 

1. The prevalence of upper extremity disorders.
2. Subspecialty certification could cause fragmentation of the parent boards (orthopaedic, plastic, and general surgery).
3. Hand surgery is a distinct body of knowledge.
4. Exclusivity and/or better care.
5. De facto certification already existed.

Without going into detail on each point, the field of spine surgery contains elements similar to those of hand surgery. The granting of the subspecialty certificate in hand surgery led to a mandating of fellowship accreditation before a candidate could sit for the hand surgery certification examination. In addition, the candidate had to perform 125 hand procedures per year and devote 75% of his or her practice to hand surgery.

There have been attempts by different organizations to pursue spinal certification. The Scoliosis Research Society submitted an application to the ABOS several years ago for a subspecialty certification in spinal deformity; however, the Society has not continued to pursue this goal at this present time.

The exigency at this time is to see that our candidates for the Part-II examination receive the appropriate education and have the necessary resources to prepare them to be successful on the examination. More importantly, it is our public duty and responsibility to train the best clinicians in their area of subspecialty interest. In times of limited resources and pay-for-performance initiatives by the federal government, we cannot afford to train fellows in any area without specific measurable educational goals and objectives.

**Appendix**

The grading system used for the American Board of Orthopaedic Surgery Part-II oral examination, the core knowledge requirements in spine for orthopaedic residents, and the educational guidelines for fellowship training in spine surgery are available with the electronic versions of this article, on our web site at jbjs.org (go to the article citation and click on “Supplementary Material”) and on our quarterly CD-ROM (call our subscription department, at 781-449-9780, to order the CD-ROM).

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**References**