

## Brief Communication

# Why Are Orthopedic Residents Reluctant to Participate in Spinal Surgeries Teaching Programs?

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(Received: 3 Dec 2014 Accepted: 26 May 2015)

## Abstract

Nowadays there are a few postgraduate orthopedic surgeons who wish to enter a spinal fellowship program. The purpose of this study is to determine the current trainees' perceptions of competency in the spine fellowship education in Mashhad University of Medical Sciences and evaluating their suggestion to overcome the problem. In this cross sectional study, a self-made questionnaire was developed by the Department of Spine Surgery, Orthopedics Group and completed by 21 orthopedics residents. The questionnaire contained background and analytic questions about spine surgery educational programs. Statistical analysis was performed using SPSS ver. 16 (SPSS Inc., Chicago, IL, USA). Mean age of the subjects was 31.4±3.5 years old. Absence of spinal trauma emergency department, complexity and difficulty of these procedures were the strongest reasons for orthopedics residents' decreased interest in spinal teaching programs. Their most important proposals included more surgeries carried out by them independently and considering a rotational course especial for spine surgeries.

**Keywords:** Orthopedic surgery, Residency, Spine, Education

Citation: Omidi-Kashani F, Baradaran A, Hasanabadi P. Why are orthopedic residents reluctant to participate in spinal surgeries teaching programs? *Educ Res Med Sci.* 2015; 4(1): 36-39.

## Introduction

Fellowship training in spinal surgery provides an opportunity to gather scientific and practical experience for appropriate treatment of a wide variety of spinal disorders (1). Despite these facts, currently there are a few postgraduate orthopedic surgeons who wish to enter a spinal fellowship program, and there is scant real impetus for choosing a spine fellowship course (2-5). In Iran, there are no accurate statistics on the number of orthopedic spine fellowships, but it seems that the number of them is less than 1% of general orthopedic surgeons, which is not fair for this busy subspecialty. The purpose of this study is to

determine current trainees' perceptions of competency in spine education in Mashhad University of Medical Sciences and their interest to conduct spinal surgeries. This research may be able to determine the underlying causes of low boom of spinal surgeries' teaching programs and suggest appropriate solutions to overcome the present problem.

## Methods

After local institutional review board approval (code 921076), a self made 3-page, paper/pencil questionnaire

was developed by the sectional study was carried out through cooperation of 21 orthopedic residents at Mashhad University of Medical Sciences. Respondents were provided with an envelope within which Department of Spine Surgery, Orthopedics Group, Mashhad University of Medical Sciences considering status of spine surgery training programs during the educational year 2012-2013. This cross they sealed their completed surveys to ensure confidentiality of responses. Those who had a history of less than three months of residency in orthopedic surgery were excluded.

The questionnaire contained five background and nineteen analytic questions. Background questions were constructed to characterize the self-assessment of each participant from their willingness to spine surgery, future chance for becoming a spine surgeon, and whether they will perform these procedures themselves in the future. Factors contributing to lack of enthusiasm of orthopedic residents to spine surgeries and therapeutic strategies were evaluated by analytic questions. The answer to each question was graded on a 5-point scale (coded 1 to 5) as "significant impact", "important", "moderately important", "a little", or "no impact". The scores were recorded as absolute values and means. Raw data were entered directly from the returned surveys into a database, then cross checked and verified. Statistical Analysis was performed using SPSS 16.

## Results

Twenty one (3 first-year, 7 second-year, 5 third-year, and 6 fourth-year) orthopedics assistants completed the questionnaires. Male to female ratio was 20 to 1, with a mean age of  $31.4 \pm 3.5$  (ranged; 26-41) years old. The severity of interest in the field of spine surgery was graded as great in 3 (14.3%), good in 8 (38.1%), moderate in 8 (38.1%), poor in 1 (4.8%), and averse in 1 (4.8%) participant. More than two-thirds of the participants believed that these operations would contribute to less than 10% of the total orthopedic surgeries they will perform in the future professional occupation.

Willingness of the participants to pass a spine surgery exam and become a spine surgeon was great in 6 (28.6%), good in 5 (23.8%), fair in 9 (42.9%), and averse in 1 (4.8%). Half of them (10; 47.6%) believed that their chance to pass this exam would be less than 10%. According to the questionnaire, lack of willingness of orthopedics residents to participate in spinal surgeries' teaching programs stemmed from several factors that are summarized in Table 1.

Table 1. Various factors affecting decreased interest of orthopedic residents to spinal teaching programs

Index	Importance	Very Important(%)	Important(%)	Mid-importance(%)	Little Importance(%)	Unimportant(%)
1. Lack of qualified trainers		1 (4.8)	6 (28.6)	5 (23.8)	4 (19.0)	5 (23.8)
2. Short training time		4 (19)	8 (38.1)	8 (38.1)	1 (4.8)	0
3- Little intrinsic attractions		3 (14.3)	6 (28.6)	8 (38.1)	3 (14.3)	1 (4.8)
4. Rarity of successful orthopedists in spine surgeries		6 (28.6)	7 (33.3)	6 (28.6)	2 (9.5)	0
5. Slow learning curve		3 (14.3)	8 (38.1)	6 (28.6)	2 (9.5)	2 (9.5)
6. High complication rate		3 (14.3)	7 (33.3)	7 (33.3)	3 (14.3)	1 (4.8)
7. Presence of numerous other orthopedic procedures with better clinical outcomes and fewer complications		3 (14.3)	6 (28.6)	8 (38.1)	4 (19)	0
8. Low income regarding to their difficulties		4 (19.0)	5 (23.8)	6 (28.6)	4 (19.0)	2 (9.5)
9. Excessive x-ray exposure		1 (4.8)	2 (9.5)	8 (38.1)	6 (28.6)	4 (19.0)
10. Long and tedious operations		2 (9.5)	3 (14.3)	12 (57.1)	3 (14.3)	1 (4.8)
11. Absence of spinal trauma emergency department		8 (38.1)	9 (42.9)	3 (14.3)	1 (4.8)	0
12. Complexity and difficulty of these procedures		5 (23.8)	8 (38.1)	5 (23.8)	3 (14.3)	0
13. Absence of safety equipment to perform these procedures		4 (19.0)	8 (38.1)	8 (38.1)	1 (4.8)	0

At the last section of the questionnaire, practical strategies for problem solving were investigated. Table 2 shows a summary of the proposed solutions' significance.

**Table 2. The importance of proposed strategies from the perspective of residents**

Strategy	Importance	Very Important(%)	Important(%)	Mid-importance(%)	Little Importance(%)	Unimportant(%)
1. Increase in number of trainers		3(14.3)	5(23.8)	6(28.6)	6(28.6)	1(4.8)
2. Increase in number of surgeries		2(9.5)	9(42.9)	8(38.1)	2(9.5)	0
3. Increase in variety of spinal surgeries		7(33.3)	7(33.3)	5(23.8)	2(9.5)	0
4. Increase delegation of authority to the orthopedic residents to perform these procedures independently		10(47.6)	9(42.9)	2(9.5)	0	0
5. Emergency spine trauma equally divided between orthopedic and neurosurgery departments		2(9.5)	6(28.6)	7(33.3)	5(23.8)	1(4.8)
6. Specific rotations for spinal surgeries considered		9(42.9)	7(33.3)	4(19.0)	1(4.8)	0

## Discussion

Our study was a comprehensive research on orthopedics residents to find out the reasons for their low participation rate in spinal surgery's teaching programs. This study revealed that although orthopedics residents have an internal desire to participate in these programs, due to low probability of performing these procedures by themselves in the future, they are reluctant to participate in these educational courses.

Among the variety of factors affecting decreased interest of orthopedic residents to spinal teaching programs, absence of spinal trauma emergency department, complexity and difficulty of these procedures, and scarcity of successful orthopedists in this especial field were the most prominent reasons. Accordingly, the most important solution strategies proposed by them comprised of increasing delegation of the spinal surgical authority to the orthopedics residents in order to perform these procedures independently, considering specific spinal rotational courses for spine, and increasing the variety of spinal surgeries.

Orthopedics is a field of surgery with great work and experience on handling bone and joint with appropriate knowledge of biomechanics and principles of instrumentation (6). Most of the spinal surgeries need careful manipulation on bone (decortications, osteotomy, bone resection, or drilling) and joint (facetomy, discectomy, and disc replacement) associated with proper application of instrumentation. Minority of spine surgeries including spinal cord tumor, spinal cord tethering or its variable anomalies really need spinal cord handling. Despite this fact and surprisingly, nowadays most of the spinal surgeries are carried out by the professionals who are not skilled enough to work on spinal bones and joints (5, 7).

It may appear that one of the main reasons for less participation of orthopedic residents in various spinal surgeries is fear of creating grave complications in these sensitive and high risk surgeries. Two independent studies carried out by Auerbach and Lonner could not verify the negative effect of the presence of teaching residents on surgical outcome of spine surgeries (8, 9). Therefore, there are not such powerful logical reasons to deprive orthopedic residents of participating in these surgeries.

Unwillingness of orthopedic residents to the field of spine surgery is not unique to our country (3, 10). In fact, spine surgery is a mutual field between orthopedics and neurosurgery (3, 5). As the human nature always tends to do easier and safer activities, neurosurgeons gradually shifted from difficult and complicated brain surgeries to easier and more lucrative spine surgeries, while orthopedic surgeons chose limb over spine operations. A short time arthroscopic surgery on an otherwise healthy patient with its low morbidity, short learning curve, and excellent results is certainly preferred to long time two-staged spinal surgeries on a patient with neuromuscular scoliosis.

## Conclusion

Absence of spinal trauma emergency department, complexity and difficulty of these procedures were the strongest reasons for orthopedic residents' decreased interest in spinal teaching programs. Their most important proposals included more surgeries carried out by them independently and considering a rotational course especial for spine surgeries.

## Acknowledgments

We thank The Research Council of Mashhad University of Medical Sciences for providing the fund of this study. The results described in this paper were part of a medical student thesis (Payam Hasanabadi).

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