



## ORIGINAL ARTICLE

# Multispecialty and multilanguage training in spine surgery: A Latin-American experience<sup>☆</sup>



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Received 22 March 2016; accepted 23 March 2016

Available online 30 April 2016

### KEYWORDS

Spine;  
Minimally invasive  
surgery;  
Training;  
Simulation;  
Discectomy;  
Surgical skills

### Abstract

**Objective:** To report the experience of minimally invasive spine surgery (MISS) training course in different languages and specialties for Latin American spine surgeons, and on their level of satisfaction with the curriculum.

**Methods:** A total of 29 hands-on training workshops were conducted over a period of 6 years, on using a MISS technique for degenerative disk disease. The participants completed two questionnaires aimed at evaluating the activities including the methodology, objectives, suitability of facilities, and instruments provided, as well as general satisfaction. Statistical analysis was performed using R 3.1.1 for Windows. Demographic and descriptive statistics were employed.

**Results:** A total of 366 specialists took part and included neurosurgeons, orthopaedists, and anaesthesiologists. The questionnaire was answered by 249 medical doctors from 12 Latin American countries, 98% of which professed to be satisfied with the training activity.

**Conclusions:** The use of educational tools, such as surgical simulators contributes to the new learning process techniques and adds confidence to the surgeons. The implementation of workshops conducted using strict planning leads to a high level of satisfaction among the participants, thus minimizing the differences between specialties or languages.

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<sup>☆</sup> Research presented as e-poster on Fifth World Congress of Minimally Invasive Spine Surgery & Techniques 2016.

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**PALABRAS CLAVE**

Columna;  
 Cirugía de mínima  
 invasión;  
 Entrenamiento;  
 Simulación;  
 Discectomía;  
 Habilidades  
 quirúrgicas

## Entrenamiento en cirugía de columna en diferentes idiomas y especialidades. Experiencia latinoamericana

**Resumen**

**Objetivo:** Presentar la experiencia lograda en el entrenamiento en técnicas mínimamente invasivas de columna para cirujanos de toda Latinoamérica con diferentes especialidades e idiomas, y reportar el grado de satisfacción con el currículo implementado.

**Métodos:** Se realizaron un total de 29 entrenamientos durante 6 años en una técnica mínimamente invasiva de columna para el tratamiento de discopatía degenerativa. Los participantes respondieron 2 encuestas con el fin de evaluar el contenido curricular general de la actividad de entrenamiento. Se analizaron las encuestas empleando el programa R 3.1.1 para Windows.

**Resultados:** Un total de 366 especialistas realizaron el entrenamiento. Las especialidades entre los participantes fueron: neurocirujanos, ortopedas y anestesiólogos. Las encuestas fueron contestadas por un total de 249 médicos de 12 países de América Latina. El 98% de los encuestados avaló el modelo educativo y el currículo en general.

**Conclusiones:** El uso de herramientas educativas, como la simulación quirúrgica, contribuye a los procesos de entrenamiento de nuevas técnicas quirúrgicas y permite a los cirujanos lograr confianza para el momento en que tengan que realizarlas. La implementación de talleres de entrenamiento conducidos bajo un plan curricular permite un alto grado de satisfacción en los participantes, y minimiza las diferencias entre especialidades e idiomas.

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**Introduction**

The minimally invasive spine surgery (MISS) has offered new alternatives for the treatment of lumbar pain caused by discopathy, facet joint pain, stenosis and instability, showing effectiveness and safety when compared to the conventional surgery.<sup>1-4</sup> This type of techniques has been gaining relevance in the spine surgeons practice around the world. The growth in number of surgical centers joining these techniques is evidenced in the increase of publications in specialized journals, from 14 articles published in 2000 to 5533 in 2016.<sup>5</sup>

MISS benefits and optimal results are highly related to factors such as an adequate choice of patient and a trained surgeon.<sup>6</sup> Therefore, the technical ability and certainly the training of the surgeon play a key role in the clinical results. Skill development for implementing these surgical techniques demands time, patience, and perseverance from the surgeon.<sup>7</sup> Notwithstanding its high importance, some aspects of the medical training are still carried out via obsolete processes; therefore, the percentage of training in patients remains high.

The urgent need to implement effective and efficient training processes has been identified; which do not import risks to patients, can be conducted away from the operation rooms (with their high associated costs), and are replicable and applicable to surgeons in different stages of their learning curve. Evidence of this need emerged from a study published in the late 20th century by the US Institute of Medicine, where close to 98,000 annual deaths were associated with medical errors.<sup>8</sup> This statistic was summarized in an estimation indicating that the probability of dying at a hospital is ten times the probability of dying in a plane,<sup>9</sup> this issue adds to the financial factor that estimated for 1997 a

cost of USD 53 million related to the training of residents in surgical specializations in the US.<sup>10</sup> These figures prove that Halsted's training method of "see one, do one, teach one" needs a previous complement by a series of teaching tools.

Animal and human cadaver specimens are highly effective tools in training processes,<sup>11,12</sup> considered the gold standard for surgical skill development.<sup>13,14</sup> The use of these instruments can become key to reducing the times in a learning curve and to improving the surgical competences in surgeons,<sup>15</sup> and they should be used systematically before performing the procedures in patients. Taking into account their limited availability, cadavers can be complemented with easily accessible tools such as mechanical dry simulators, and thus the training activity effectiveness is maximized.

The purpose of this article is to show the six-year experience in a multispecialty learning processes that employ biological and mechanical simulators for the development of resident and non-resident spine surgeons' surgical skills in a percutaneous technique of minimally invasive discectomy for the treatment of degenerative discopathies, and to show the participants' degree of satisfaction with the method used.

**Methods****Participants**

During March 2008 and March 2014, 29 hands-on workshops were held for training in a percutaneous technique of mechanical and thermal discectomy for discogenic lumbar pain treatment using the Disk Fx<sup>®</sup> system (Elliquence LLC,

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