



ORIGINAL ARTICLE

Urology residents training in laparoscopic surgery. Development of a virtual reality model[☆]



J.L. Gutiérrez-Baños^{a,d,*}, R. Ballester-Diego^{a,d}, D. Truan-Cacho^{a,d},
C. Aguilera-Tubet^{a,d}, A. Villanueva-Peña^{b,d}, J.C. Manuel-Palazuelos^{c,d}

^a Servicio de Urología, Hospital Universitario Valdecilla, Santander, Spain

^b Servicio de Urología, Hospital Comarcal de Laredo, Santander, Spain

^c Servicio de Cirugía General, Hospital Universitario Valdecilla, Santander, Spain

^d Instructor Hospital Virtual Valdecilla, Santander, Spain

Received 26 April 2015; accepted 27 April 2015

Available online 21 October 2015

KEYWORDS

Simulation;
Virtual reality;
Laparoscopy;
Training

Abstract

Introduction: The training and learning of residents in laparoscopic surgery has legal, financial and technological limitations. Simulation is an essential tool in the training of residents as a supplement to their training in laparoscopic surgery. The training should be structured in an appropriate environment, with previously established and clear objectives, taught by professionals with clinical and teaching experience in simulation. The training should be conducted with realistic models using animals and ex vivo tissue from animals. It is essential to incorporate mechanisms to assess the objectives during the residents' training progress.

Objective: We present the training model for laparoscopic surgery for urology residents at the University Hospital Valdecilla. The training is conducted at the Virtual Hospital Valdecilla, which is associated with the Center for Medical Simulation in Boston and is accredited by the American College of Surgeons.

Material and method: The model is designed in 3 blocks, basic for R1, intermediate for R2–3 and advanced for R4–5, with 9 training modules. The training is conducted in 4-h sessions for 4 afternoons, for 3 weeks per year of residence. Residents therefore perform 240 h of simulated laparoscopic training by the end of the course. For each module, we use structured objective assessments to measure each resident's training progress.

Results: Since 2003, 9 urology residents have been trained, in addition to the 5 who are currently in training. The model has undergone changes according to the needs expressed in the student feedback. The acquisition of skills in a virtual reality model has enabled the safe transfer of those skills to actual practice.

[☆] Please cite this article as: Gutiérrez-Baños JL, Ballester-Diego R, Truan-Cacho D, Aguilera-Tubet C, Villanueva-Peña A, Manuel-Palazuelos JC. La formación del residente de urología en cirugía laparoscópica. Elaboración de un modelo de realidad virtual. Actas Urol Esp. 2015;39:564–572.

* Corresponding author.

E-mail addresses: urogbj@humv.es, jlgb@ono.com (J.L. Gutiérrez-Baños).

PALABRAS CLAVE

Simulación;
Realidad virtual;
Laparoscopia;
Entrenamiento

Conclusiones: A laparoscopic surgery training program designed in structured blocks and with progressive complexity provides appropriate training for transferring the skills acquired using this model to an actual scenario while maintaining patient safety.

© 2015 AEU. Published by Elsevier España, S.L.U. All rights reserved.

La formación del residente de urología en cirugía laparoscópica. Elaboración de un modelo de realidad virtual

Resumen

Introducción: El entrenamiento y aprendizaje de los residentes en la cirugía laparoscópica tiene limitaciones legales, económicas y tecnológicas. La simulación es una herramienta imprescindible en la formación de los mismos como complemento a su formación en la cirugía laparoscópica. Dicha formación debe estar estructurada en un ambiente adecuado, con objetivos claros determinados previamente, tutelada por profesionales con experiencia en clínica y docencia en simulación y con modelos realísticos, usando tanto animales como tejidos *ex-vivo* de los mismos. Es imprescindible incorporar mecanismos de evaluación objetivos en el progreso formativo del residente.

Objetivo: Presentamos el modelo de entrenamiento en cirugía laparoscópica para los residentes de urología en el Hospital Universitario Valdecilla, que se realiza en el Hospital Virtual Valdecilla, centro asociado al *Center for Medical Simulation* de Boston y acreditado por el Colegio Americano de Cirujanos.

Material y método: El modelo está diseñado en 3 bloques, básico para R1, intermedio para R2-3 y avanzado para R4-5, con 9 módulos a entrenar. El entrenamiento se realiza en programas de 4 h en 4 tardes, a razón de 3 semanas por año de residencia, lo que conlleva que al final de la misma hayan realizado 240 h de formación laparoscópica en simulación. Para cada módulo utilizamos como medida de progresión formativa del residente evaluaciones objetivas estructuradas.

Resultados: Desde 2003 se han formado 9 residentes de urología más los 5 que están actualmente en formación. El modelo se ha ido modificando y adecuando según las necesidades que el *feedback* con los alumnos nos transmitía. La adquisición de las habilidades en un modelo de realidad virtual ha permitido la transferencia a la práctica real con seguridad.

Conclusiones: El diseño de un programa formativo en cirugía laparoscópica, en bloques estructurados y de progresiva complejidad, permite alcanzar una formación adecuada para transferir las habilidades adquiridas mediante este modelo a un escenario real con seguridad para el paciente.

© 2015 AEU. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

Introduction

Since the first description of a laparoscopic nephrectomy, performed by Clayman in 1991, its practice has been increasing day by day to make laparoscopic surgery the gold standard in many of the urological surgical procedures. This importance in usual clinical practice raises important debates on teaching it, since the classical model of teaching by Halsted (observes-assists-performs) in the operating room is not enough to learn these skills, because of the reduction of hours of training for surgical residents and the lack of time of surgeons to properly teach techniques. On the other hand, the learning curve along laparoscopic procedures, with the risk of serious complications when performed in inexperienced hands, is preventing rapid learning of minimally invasive techniques. The surgery costs have risen sharply and technology has complicated the surgical environment. The surgeon does not learn on their own any longer, they depend on a strong and engrossed team that has to be trained. As a result, surgical training models are being developed to serve as a complement to standard teaching in

the operating room of laparoscopic surgery. In urology, the lack of an adequate volume of high prevalence disease of easy implementation and low risks is added, as with cholecystectomy, which means that many residents do not feel competent with these procedures at the end of their training period^{1,2}; in various surveys of residents in the United States and Europe less than 50% had the perception of having received adequate training in laparoscopic surgery during their residency.^{3,4}

The aim of this paper is to present the curricular model in laparoscopic training for the urology resident that we have developed since 2003 at the University Hospital Valdecilla, in conjunction with the Virtual Hospital Valdecilla. This training is adapted progressively with the year of residency of the resident.

Material and method

The development of the curricular model in laparoscopic training is carried out in a training center (Virtual Hospital

Download English Version:

<https://daneshyari.com/en/article/3845263>

Download Persian Version:

<https://daneshyari.com/article/3845263>

[Daneshyari.com](https://daneshyari.com)