

E-Learning and Multimedia Contents for Minimally Invasive Surgery Learning: A Questionnaire Survey

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ABSTRACT

Background: Minimally Invasive Surgery has revolutionized the surgical practice for the last years but it presents specific training processes. At the same time, e-Learning platforms and multimedia contents are now having great success within teaching processes in different fields. Purpose: to determine perception of surgeons towards e-MIS: e-Learning and multimedia contents for minimally invasive surgery. Methods: A 19-item online survey was sent. Statistical and descriptive analyses were performed. Results: 307 surgeons responded to the survey. 99% of participants agree to include new technologies in surgical learning and 99.3% consider surgical videos as a good training tool. Conclusion: The widespread use and capabilities of e-Learning together with the use of surgical videos within the surgical learning process makes possible creating new technological systems and tools that address current problems in surgical training derived from time constraints and patient safety concerns.

Keywords: *E-Learning, Information Technology, Internet Based Learning, Multimedia Contents, Surgical Videos*

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INTRODUCTION

Minimally Invasive Surgery (MIS) has revolutionized the surgical practice for the last years and has become a gold standard in many surgical procedures. This is mainly thanks to the multiple advantages for patients, such as a shorter recovery time or lower morbidity rates; as well as a reduction of costs for the Health system (da Luz Moreira et al., 2010; Wang, Cummock, Yu, & Trivedi, 2010).

With the evolution of MIS, residents and surgeons in practice need to acquire and review current technical advances. Furthermore, some deficiencies in knowledge of basic principles have been detected (Menezes et al., 2011) and residents feel that they will not acquire sufficient laparoscopic skills during their training (Qureshi et al., 2011). The optimal approach for continuing education in MIS is not determined yet but it is likely to be a combination of teaching interventions, including courses, mentoring relationships and the application of new technologies (Wallace & Bird, 2007).

Especially in early stages, training in MIS can be divided in two main parts (Kahol, Vankipuram, & Smith, 2009): cognitive training and psychomotor training. Cognitive training includes the acquisition of knowledge related to the surgical procedure and psychomotor training comprises the acquisition of surgical skills required to accomplish a minimally invasive surgical procedure. Currently, cognitive training is mainly based on assisting to specialized lectures or congresses; mentoring and consulting books and multimedia guides in CD-ROM or DVD. Besides that, it is also usual to acquire both cognitive and psychomotor trainings at the same time by assisting to in-person courses in specialized training centres which already include advances in surgical technology in their training programs (Usón, Sánchez, Pascual, & Climent, 2010). For example, the 3rd stage in the Jesús Usón Minimally Invasive Surgery Centre (JUMISC) pyramidal training model includes the use of new technologies such as videoconferences or robotic surgery.

Since the moment an invention comes up determines the interest level from general

community, technology availability and cost-effectiveness (Riskin, Longaker, Gertner, & Krummel, 2006); it is now when e-Learning platforms arise with great success. e-Learning uses information technologies such as the Internet to deliver multimedia learning materials to remote users from a central site. Its success is thanks to the wide penetration and use of the Internet and to their advantages: no time-constraints as users can study without fixed timetables; no spatial-constraints since users can access to formative contents everywhere; and no costs-constraints because travelling expenses are avoided (Ruiz, Mintzer, & Leipzig, 2006). Nowadays, there are several e-Learning platforms related to medical education (Conroy, Kingston, Sproule, & McCormack, 2007; Corrigan, Reardon, Shields, & Redmon, 2008; "e-Learning for Healthcare", n.d.; "MEDTING Medical Exchange", n.d.; Su M.J. et al, 2010) which are mainly for basic science but very few are focused on advanced surgery ("SurgTec B.V", n.d.). Specifically for minimally invasive surgery, the use of web platforms based on surgical videos is pretty common ("e-Learning for Healthcare", n.d.; Mutter et al., 2011; "SurgTec B.V", n.d.).

Medical education and training in minimally invasive surgery have to include new advances in technology in order to keep up with times and advances in educational science and technologies. Surgeons know clinical needs and may anticipate future advances and opportunities (Riskin et al., 2006) so they play an essential role when determining the importance and viability of new technologies in this field (Stafinski, Topfer, Zakariasen, & Menon, 2010). Therefore, it is important to know their opinion on e-MIS, i.e. new technologies such as e-Learning platforms and surgical videos that can be applied to cognitive training in MIS (Sánchez-Peralta et al., 2010). To collect information, online surveys are a powerful tool for evaluation within the medical community and have already been used in other studies to identify the opinions of surgeons about different issues (Chan, Martel, Poulin, Mammazza, & Boushey, 2010; Grover, Kothari, Kallies, & Mathiason, 2009).

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