

## Laparoscopic Surgical Education

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Nowadays, surgeons are attempting to perform the procedures of minimally invasive surgeries. Conceptually the laparoscopic approach is intended to minimize the post-operative pain and speed up recovery times along with maintaining an enhanced visual field for surgeons. Due to improved outcomes in the last two decades, laparoscopic surgery has been adopted by various surgical sub-specialties. However, restricted vision, difficulty in handling of the instruments (new hand-eye coordination skills are needed), lack of tactile perception and limited working area are factors added to the technical complexity of this surgical approach. For these reasons, additional laparoscopic surgery training is recommended (1). The classic apprenticeship model for surgical training takes place under the strict coordination of a senior surgeon. The skills needed for minimally invasive surgery aren't easily obtained using classical apprenticeship model due to the ethical, medico-legal and economic considerations (2). The question of how to teach new surgical techniques to practicing surgeons was not answered completely (3).

The training which uses animal models as well as the new virtual reality simulators and augmented reality offers the possibility of getting knowledge-based behavior. The crash course for medical education with the aim of training new surgical techniques should be established. At present, crash courses offer a means of introducing technical innovation especially in developing countries such as Iran. Some training and educational facts should be considered by those who are responsible for developing and accrediting the courses (4). The issues like the assessment, length of the program, homogeneity of the participants and type of educational sessions need to be considered. Participants who are trained in the same practice setting for more than one day interactive programs seem to be more competent. In order to decrease the complication rate, regarding the concept of learning curve is essential. An optimal course should improve the surgeon's performance with the aim of increasing experiences and reducing errors which ultimately lead to decreasing the rate of conversion and less operative time. Some recom-

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Due to improved patient outcomes, in the last two decades, laparoscopic surgery has been adopted by various surgical sub-specialties. However, the restricted vision, the difficulty in handling of the instruments (new hand-eye coordination skills are needed), the lack of tactile perception and the limited working area are factors which add to the technical complexity of this surgical approach. For these reasons, additional laparoscopic surgery training is recommended.

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mendations to the individual surgeon participating in workshops or crash courses and tutors responsible for the instruction will be useful to build up dexterity and proficiency in laparoscopic surgery (5):

- The course should provide objectives and a description of the assessment methodology
- The faculty should be qualified.
- The participants should possess the appropriate fundamental knowledge, skills, and clinical experience.
- The facility should be adequate.

The curriculum should include educational materials which reduce the time of the course and enhance the learning experience. Videotapes of the procedure should be sent to participants before starting the course. This would make them rehearse the procedure mentally before the actual practice period (6).

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