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Acquiring minimally invasive surgical skills

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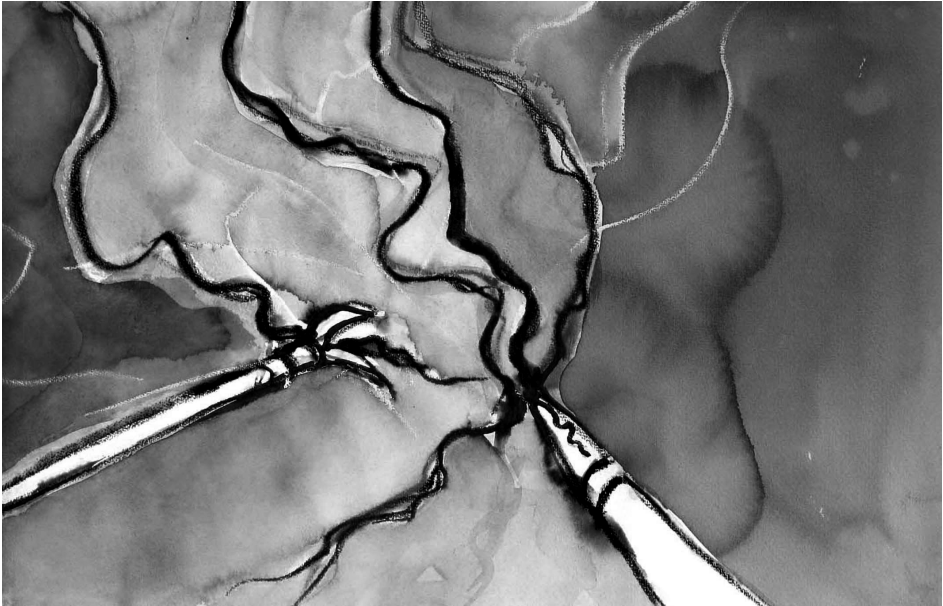
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CHAPTER 12
CONCLUSIONS AND RECOMMENDATIONS



CONCLUSIONS AND RECOMMENDATIONS

From literature search and based on the results of this thesis the following is recommended:

Training facilities outside of the OR

- » Acquiring the manual dexterity for successful MIS has a marked learning curve and should be done before starting to operate on an actual patient.
- » For training basic laparoscopic skills a physical box trainer is an appropriate and cheap solution. The skills acquired on that trainer are transferable to the OR setting and tissue handling can be trained using real laparoscopic instruments. The camera setup in the box trainer can be either a fixed or a navigated system.
- » Path length, motion in depth and motion smoothness are motion analysis parameters that have been validated for the clinically relevant knot tying task. These parameters can be retrieved in a box trainer equipped with a tracking device. The use of an expert standard based on motion analysis fuels motivation, because it serves a training goal. Furthermore, it potentiates the refinement of psychomotor skillfulness. Finally, assessment using forces applied to the tissue is potentially worthwhile. This topic requires further exploration.
- » Skills training should be embedded in a curriculum in which residents should be obliged to practice until a predefined level of skills has been met, prior to performing surgery on a living patient. A yearly retention of skills measurement should be included.

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The minimally requested items for a MIS skills laboratory are listed in table 1.

Table 1. Minimally requested items for a MIS skills laboratory and curriculum.

availability financial resources
presence of a box trainer
presence of a curriculum director (a laparoscopic expert)
training sessions are supervised by a laparoscopic expert
training is mandatory
residents are not allowed to perform surgery if predefined skills level is not reached
presence of a structured skills curriculum
time is dedicated for skills training
maintenance of training is embedded in the curriculum
progress in laparoscopic skills is incorporated in yearly evaluation of resident

Assessment using OSATS

- » The OSATS is a valid, reliable and feasible instrument for the evaluation of intraoperative surgical skills for both MIS and conventional surgery. However, concerns have arisen about its objectivity to measure skillfulness.
- » The total OSATS score correlates with the finding that a resident can perform a procedure autonomously. Though, OSATS should not be the only tool used for authorization.
- » After a proper preparation in a skills laboratory, MIS procedures are not harder to acquire than conventional surgical procedures
- » Although many residents claim they would like to be assessed with an OSATS after every procedure, this frequency is not necessary to express a learning curve or to indicate the average technical skillfulness of an individual resident.
- » The steps required for the implementation of the OSATS in the residency curriculum are listed in table 2 and is adapted from the Dutch Journal for Medical Education[Hiemstra et al., 2010].
- » Assessment with OSATS meets the societal demand for transparency in medical care. Structured feedback has the potential to aid the proficiency gaining curve. However, whether OSATS will lead to technically better surgeons is uncertain and might be subject of future research.

Table 2. Stepwise implementation of the OSATS.

Step 1	Decide with (cluster of) teaching hospital(s) which procedures should be assessed with an OSATS
Step 2	Inform, instruct and motivate resident and supervisor. Only instruction needed is "assess irrespective the training level".
Step 3	Guarantee access to the assessment forms (e.g. electronically)
Step 4	Benefit from the possibilities incorporated in assessment with OSATS

