Assessment of Surgical Skills and Competency

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KEYWORDS

• Assessment • Surgical skills • Simulation • Competency • OSATS
• Formative feedback

KEY POINTS

- Objective Structured Assessment of Technical Skills (OSATS) is presently considered the "gold standard" for skills evaluation.
- Otolaryngology-specific OSATS have been developed and validated for many key index procedures.
- Faculty training through focused orientation sessions is critical for meaningful objective assessment.
- Timeliness of assessment and provision of formative feedback to residents enhance educational value of assessment systems.
- Crowd-sourced evaluations and mobile App technology are promising new methods that provide timely feedback with the potential to capture data across institutions.

Although operative skills represent only a part of the qualities needed to become a competent surgeon, the acquisition and assessment of these skills plays a central role in any surgical residency program. Over the past 2 decades, surgical educators have expressed concern over the perceived lack of confidence and competence among the graduating residents. This has led to increased interest in developing and using valid and reliable assessment systems, especially for measuring surgical competency.

Nevertheless, implementation of these systems into the day-to-day environment of surgical residency programs has been extremely difficult. Limited duty hours, restricted intraoperative autonomy, medico-legal and patient safety issues in addition to ever-increasing pressure on physicians' productivity are some of the leading challenges to training competent surgeons able to practice independently. Advocacy for more operative autonomy during residency is further complicated by the recent controversy over concurrent surgery in academic medical centers.

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Lack of faculty development programs for teaching faculty resulting in limited buy-in from them is another major impediment in implementing these assessment systems. The residency program directors have lamented about limited time, lukewarm support from the institutional leadership, and financial constraints as "missing pieces of the puzzle" in switching to competency-based medical education.

Residency programs are therefore seeking to create evaluation systems and to inculcate the culture changes needed to provide specific, timely, and consistent performance feedback to trainees to accelerate their progression toward operative competency and independent practice.

Defining Surgical Competency

Surgical competency may be defined as the ability to perform a task successfully producing desired results. Hall and colleagues[1] described surgical competence as an ability to successfully apply professional knowledge, skills, and attitudes to new situations as well as to familiar tasks.

Competency, as defined by Benner[2] in 1982, is a hierarchy that begins from novice, and goes through advanced beginner, competent, proficient, and finally to expert. Dreyfus and Dreyfus[3,4] also defined competency as a 5-stage model distributed into novice, competence, proficiency, expertise, and mastery. Although surgical competency can be defined in innumerable ways, it encompasses both technical and nontechnical skills.[5] Although the need for competence in technical skills for surgeons is self-evident, competence in nontechnical skills is increasingly being recognized as an important prerequisite for a safe surgeon. Hence, to attain competence, surgeons must develop not only technical skills but also nontechnical skills. The assessment systems used to measure surgical competence, therefore, need to incorporate tools to evaluate both technical and nontechnical skills explicitly, as well as implicitly.

Technical skills refers to psychomotor actions acquired via practice and learning related to the particular craft or field.[5] The collective term *nontechnical skills* has been used to describe behaviors encompassing situational awareness, decision making, team work, communication, and leadership. The association between nontechnical and teamwork skills and technical performance in the operating room is strong.[6–8] A vast majority of surgical errors, however, consists of technical mistakes, with more than half occurring due to a lack of competence.[9,10]

Assessing Surgical Competency

The introduction of the Modernizing Medical Careers framework in the United Kingdom along with the European Working Time Directive has significantly reduced the time allocated to train junior surgeons. A similar but less widely publicized situation exists in the General Surgery Residency environment in the United States. Before these changes went into action, a surgical trainee would log up to 30,000 working hours before becoming a consultant in the National Health Service. The Royal College of Surgeons estimated that these hours decreased significantly to 8000 hours and even further to 6000 hours with the implementation of Calman's proposal.[11] Therefore, there is a real need for these trainees to demonstrate their competency in operative skills to their faculty/peers by the end of their training programs. Similarly, in the United States, the Accreditation Council of Graduate Medical Education (ACGME) mandates that all surgeons graduating from residency training are competent to practice their surgical craft independently.

Recognizing the need to improve resident preparation for unsupervised practice, the ACGME, in collaboration with the American Board of Medical Specialties, launched the Outcomes Project in 2001.[12] The development of 6 core competencies