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# Standardized and quality-assured video-recorded examination in undergraduate education: informed consent prior to surgery☆

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ABSTRACT

*Background:* Communication skills combined with specialized knowledge are fundamental to the doctor–patient relationship in surgery. During a single-station video-recorded objective structured clinical examination (VOSCE), students were tasked with obtaining informed consent. Our aim was to develop a standardized and quality-assured assessment method in undergraduate education.

*Methods:* One hundred fifty-five students in their fifth year of medical school (78 videos) participated in a summative VOSCE within the framework of the teaching module "Operative Medicine." They prepared for three clinical scenarios and the surgical procedures involved. The examination comprised participants having to obtain informed consent from simulated patients, video recording their performance. Students were assessed by two independent raters, the background of one of whom was nonsurgical. Results were statistically tested using SPSS.

*Results:* Students' scores were all beyond the pass mark of 70%, averaging 91.0% (±4.0%), 88.4% (±4.4%), and 87.0% (±4.7%) for the appendectomy, cholecystectomy, and inguinal hernia repair checklist, respectively. Most items (68%–89% of the checklists) were found to have fair to excellent discrimination values. Cronbach's $\alpha$ values ranged between 0.565 and 0.605 for the individual checklists. Interrater agreement was strong (Pearson correlation coefficient = 0.80, $P < 0.01$; intraclass correlation coefficient 2.1 = 0.78).

*Conclusions:* The VOSCE is both feasible and reliable as a method of assessing student communication skills and the application of clinical knowledge while obtaining informed



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consent in surgery. This method is efficient (flexible rating outside normal working hours possible with reductions in administrative load) and may be used for high-stakes evaluation of student performance.



## 1. Introduction

Communication skills are considered to be a core proficiency and are crucial to professionalism in medical practice, including successful outcomes in patient care [1]. Most medical schools include communication skills training in their undergraduate curricula. However, training alone does not guarantee better learning. One way of further enhancing study is to organize summative assessments because these are known to "drive learning" [2]. To assess students' skills, reliable and valid assessment procedures are needed that are suited to the stage of training. In this context, the objective structured clinical examination (OSCE) has become popular in the assessment of clinical performance in a wide range of settings [3,4].

Only a few studies within the OSCE literature have focused on how best to teach and assess communication skills with respect to surgical education in undergraduates. Published examples typically focus on delivering "bad news" to patients [5]. Indeed, a surgery-specific communication OSCE was established in the context of end-of-life communication training during surgical clerkship [6] or in the context of formative assessment of postgraduate clinical training involving six surgical scenarios for common communication tasks and interpersonal skills [4]. However, there are no satisfactory reports describing how to implement a quality-assured OSCE centered on undergraduates obtaining informed consent. For medical students in particular, this competency is often regarded as multifaceted and complex, as a properly conducted surgical informed consent process needs to provide patients with the means to authorize an invasive procedure with full comprehension of the relevant information including involved risks. Thus, obtaining informed consent comprises a multitude of educational objectives (the third level of Miller's pyramid, "shows how" [7]): cognitive and communication skills, as well as professionalism focusing on the specific needs of the patient [8]. Of note, medical students need to practice relevant clinical skills up to a routine level under supervision. In this context, the OSCE format appears the most suitable to assess the multitude of combined learning objectives associated with the task of obtaining informed consent. The OSCE provides important elements of quality assurance (metrics), as both examiners and simulated patients (SPs) can be trained and virtual clinical scenarios enable reproducibility [9,10].

The educational environment in surgery is known to be plagued by interfering clinical duties (e.g., theatre schedules, emergencies). Therefore, a video-recorded OSCE (VOSCE) with time-shifted rating may prove to be an efficient substitute for real-time live assessment. Of course, filming is not an entirely novel concept in this context. Vivekananda-Schmidt *et al.* [11] implemented a VOSCE to assess musculoskeletal examination skills in undergraduate students. Video recording of a communication session was recently reported as a means of assessing students during the preclinical phase [12,13].

In our study, we considered the filming element of the VOSCE as being indispensable to the appraisal of an entire semester cohort. Our aim was to develop and implement a single-station VOSCE during the fifth year of a German medical school centered on obtaining informed consent. Our study outlines the feasibility of the VOSCE in undergraduate education in surgery and comments on the benefits of time-shifted rating by means of video. The format of an OSCE was used for high-stakes testing, as it was essential to demonstrate quality assurance allowing fair and rigorous decision making with respect to candidates. In particular, we compared student performance in the three scenarios and analyzed the reliability and internal consistency of the checklists. For further improvements in quality, we investigated the extent of agreement between two trained raters, the background of one of whom lay outside the field of surgery.

## 2. Methods

### 2.1. *Setting and participants*

We designed a cross-sectional study with data acquisition from a summative examination. The study ran during the 5 weeks teaching module "Operative Medicine" during the summer semester of the fifth year (academic year 2010/2011) of the degree of human medicine at the University Medical Centre Goettingen, Germany (UMG). Like most German medical schools, the UMG offers a 6 years curriculum comprising two preclinical and three clinical years, followed by a practical year. The clinical curriculum is modular in structure; the sequence of modules is identical for all students. During the module Operative Medicine, knowledge and skills are recapitulated in various surgical specialties (visceral, orthopedic/trauma, and thorax/heart/lung) through emphasis on clinical decision making and patient management. In preparation (longitudinal curriculum), students are required to take a course in communication skills (with SPs) at the beginning of the third year. Furthermore, they also attend a 1 week clinical skills in surgery block during the fourth year, which includes teaching during patient encounters on the ward.

All 155 students enrolled in the teaching module participated. The average age was 25.7 $\pm$ 2.1 years. A total of 53.8% of the participating students were females and 46.2% were males. Following consultation with the University Ethics Committee, approval was not required for this type of educational study. Written consent was obtained from the students for the filming and for use of the data within the framework of the current study.

Students were requested to form pairs with a partner of their choice to prepare for and undergo the examination. Following a specific introductory lecture on the legal aspects of informed consent, as well as on the specific content and course of events, students prepared with information on all