

Introduction of Craniomaxillofacial Surgery as a Component of Medical Student Training in General Surgery

Florian Schuebel, MD, DMD,* Sebastian H. Höfer, MD, DMD,† Miriam Rüsseler, MD,‡
Felix Walcher, MD, PhD,§ Robert Sader, MD, DMD, PhD,||
and Constantin Landes, MD, DMD, PhD¶

Purpose: This study provides an overview of the objective structured clinical examination (OSCE) in concept, determination of task difficulty, execution, and evaluation by students and examiners.

Methods: During a 4-semester study period, 507 medical students completed a practical skills training (PST) course and subsequently participated in a 16-station OSCE, which contained 2 craniomaxillofacial surgical (CMS) stations covering the following key tasks: craniofacial examination and facial trauma fracture management. The students were rated using dedicated checklists. The students subjectively evaluated the PST and the OSCE using anonymous evaluation forms.

Results: Students rated the PST and OSCE as “very positive.” The CMS OSCE stations were rated as having good task difficulty ($74.05 \pm 1.78\%$ average task fulfillment for the examination and $74.45 \pm 3.40\%$ for the management station). With no changes to the examination station, no significant improvement of performance occurred over the entire investigation period ($P = .787$). In contrast, students improved slightly at the management station ($P = .308$). The CMS stations showed high selectivity and were representative in the overall context of the OSCE; improvement of selectivity increased from 0.259 ± 0.088 to 0.465 ± 0.109 .

Conclusion: CMS was successfully implemented in the general surgical training for medical students, with an initial PST and a final OSCE concordant with the literature. The CMS implementation effectively trained and fairly evaluated clinical skills. Although an OSCE consumes time and resources, this addition proved feasible and valuable, even with large numbers of students, and students expressed a high level of satisfaction with the training.

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J Oral Maxillofac Surg 72:2318.e1-2318.e6, 2014

In the 1990s, criticism about the lack of instruction focused on practical skills by medical schools was raised.¹ The main emphasis was on the prevalence of multiple-choice item-related theoretical knowledge, and few opportunities were available to help medical students acquire practical skills and experience in

direct patient contact. Therefore, new licensing regulations for physicians in Germany (German Medical Licensure Act²) were established. These regulations put practice in the foreground in an effort to better prepare medical students for their future as responsible and independent physicians.

Received from the Goethe University Medical Center Frankfurt, Frankfurt, Germany.

*Consultant, Department of Oral, Craniomaxillofacial, and Facial Plastic Surgery.

†Resident, Department of Oral, Craniomaxillofacial, and Facial Plastic Surgery.

‡Resident, Department of Trauma, Hand, and Reconstructive Surgery.

§Professor, Department of Trauma, Hand, and Reconstructive Surgery.

||Professor and Chair, Department of Oral, Craniomaxillofacial, and Facial Plastic Surgery.

¶Professor and Vice-Chair, Department of Oral, Craniomaxillofacial, and Facial Plastic Surgery.

Address correspondence and reprint requests to Dr Höfer: Department of Oral, Craniomaxillofacial, and Facial Plastic Surgery, Goethe University Medical Center Frankfurt, Theodor-Stern-Kai 7, 60590 Frankfurt, Germany; e-mail: shoefer@em.uni-frankfurt.de

Received September 5 2013

Accepted May 6 2014

© 2014 American Association of Oral and Maxillofacial Surgeons
0278-2391/14/00551-5\$36.00/0

<http://dx.doi.org/10.1016/j.joms.2014.05.006>

To comply with the new German Medical Licensure Act, the entire teaching system used in the center of surgery at the authors' university hospital was changed to adapt to the new regulations. A modern system of teaching and practical skills training (PST) was implemented. More specifically, PST was combined with a training module in a given context and before a specially designed course. Within PST, a faculty member teaches the training content using talk-and-chalk settings, prerecorded videos, practical hands-on training, and the interactive repetition of practical tasks. The foundation of the new system is based primarily on the belief that practical skills and patient-centered communication must be at the forefront of medical education and the profession.³ Every future physician in all possible chosen disciplines should have basic surgical skills, including examination of the abdomen, the use of a musculoskeletal apparatus, and the performance of a systematic craniofacial examination.⁴⁻⁶ Moreover, students independently have assessed surgical skills and the understanding of surgical principles as very important for their future medical activity.⁷

To develop the special craniomaxillofacial surgical (CMS) module within the PST, the authors focused on the department's learning objectives catalog. In this catalog, several skills were defined as level 3a, which means that students should be able to master these skills on their own under supervision at the end of their clinical term. The skills are to perform a systematic craniofacial examination and to manage midface and mandible trauma. By rating the objectives to level 3a, the teaching team of the department was convinced that every future physician should be able to perform an examination of the head, decide whether radiologic treatment is necessary, and manage (know about life-threatening complications and general needs and to whom the patient should be referred) a patient with craniofacial trauma.

In combination with the introduction of the new teaching concept, a new examination format, the objective structured clinical examination (OSCE), was implemented, which was first described by Harden et al.⁸ Since 1993, an OSCE has been a part of the Canadian medical examination (Medical Council of Canada Qualifying Examination II), and since 2004, the United States Medical Licensing Examination Step II has involved an OSCE.

The OSCE consists of a course of several stations at which certain specified tasks are tested. The students are given a fixed period at each station to accomplish the task under the observation of 1 examiner. At each station, the student receives a short and precise written instruction. After a defined period, the student moves to the next station. At each station, simulation patients (SPs), dolls or dummies, images, and clinical

findings provide the context for the student to assess.^{9,10} In a previous study, an OSCE was found to be a reliable predictor of future clinical skills when combined with a written examination.¹¹

When assessing student performance through observation by physicians, clear assessment guidelines that delineate "satisfactory" from "unsatisfactory" should be developed. This can be performed with the use of checklists that consist of part "A," in which the practical skills are evaluated, and part "B," in which communicative skills (eg, questioning techniques and "bedside manner") are evaluated.

The final step of the evaluation is the global assessment, which is a separate evaluation and should reflect the overall performance with a rating on a 5-point Likert scale from 1 (very good) to 5 (unsatisfactory). The assessment of the clinical competence of students should be performed in a comprehensive, consistent, and structured manner to ensure objectivity.¹²

The overall objective of this study was to report on the introduction of CMS PST into general surgical training for medical students and evaluate the success based on student and faculty satisfaction. More specifically, this study involved the integration of 2 CMS stations into a 16-station general surgical OSCE as a means to potentially increase young physicians' competence in treating craniofacial trauma.

Materials and Methods

The ethics board at the Goethe University Medical Center Frankfurt (Frankfurt, Germany) stated that ethical approval was not required for this study. The authors analyzed the first 4 OSCEs (summer semester [SS] 2007, winter semester [WS] 2007, SS 2008, and WS 2008) conducted at their institution.

The OSCEs were intended to be representative for all surgical disciplines. The following surgical disciplines participated, followed by their listed tasks: 1) craniomaxillofacial surgery with craniofacial examination and craniofacial trauma management; 2) general surgery with abdominal and rectal examinations, history taking, and 1 procedure (ie, insertion of a nasogastric tube); 3) thoracic surgery with case management and history taking; 4) trauma surgery with examination, management, history taking, 1 procedure, and resuscitation; and 5) vascular surgery with 1 procedure and examination and history taking.

At each station, each student was required to read an exact description of the required task before beginning. The student was given 5 minutes to finish each station and 1 minute to move to the next station and read the next description. No support was given by the examiners, and the student received no performance comments at the end of each station.

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