II ВОЕННАЯ И ЭКСТРЕМАЛЬНАЯ МЕДИЦИНА: ПРОБЛЕМЫ ПРЕПОДАВАНИЯ В УЧРЕЖДЕНИЯХ ВЫСШЕГО ОБРАЗОВАНИЯ

ENDOSURGICAL SKILLS AT OSCE: WHAT IS AN OBJECTIVE ASSESSMENT?

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Introduction

The professional development of a surgeon requires an objective assessment of acquired skills at each stage of the educational process. Before choosing an assessment method, several important questions need to be answered. What needs to be assessed? What is the purpose of the assessment? Is the assessment tool valid and reliable? Is it applicable in specific conditions? Among the wide range of assessment methods currently available, the Objective Structured Clinical Examination (OSCE) has been shown to be effective in assessing technical and non-technical skills [1].

Goal

To systematize approaches to an objective assessment of endosurgical skills.

Materials and methods

Analysis of systematic reviews from 2011 to 2021 for the keywords «OSCE», «objective assessment», «endosurgical skills», «OSCE» in the Google Scholar and PubMed databases.

Results and discussion

Endosurgical skills in the literature are most often referred to as laparoscopic skills [2]. However, training in the field of minimally invasive surgery includes, in addition to laparoscopic interventions, several other areas, such as intraluminal endoscopy and arthroscopy. In this paper, the term «endosurgical skills» is used because describes the subject of the study. There are basic endosurgical skills (basic laparoscopic skills) and advanced (advanced laparoscopic skills), both groups are technical skills. Non-technical skills (soft skills) are also practiced in simulation trainings, but they are not considered within the framework of this study.

Advanced laparoscopic skills are more often mentioned in the context of specific interventions, such as laparoscopic hysterectomy, transesophageal laparoendoscopy, and so on. Basic endosurgical skills include visual perception of space, tactile perception, navigation with a laparoscope, hand-eye coordination, bimanual coordination, grasping and moving objects, cutting and dissection of tissues, intra- and extracorporeal suture, clipping, endo-loop application, clip applying. Endosuture is the most difficult task because it combines other basic skills. It should be noted that among researchers there are some discrepancies in the question of what is considered as skill, exercise and procedure [1, 3–5].

An analysis of systematic reviews of the literature on the topic of this work showed that two groups of methods are used in the OSCE. The first group combines attestation methods with the participation of an examiner. Features of this approach are presented in Table 1.

The vast majority of studies devoted to expert assessment of skills were conducted on classic box trainers. Only a few articles describe the certification process directly in the operating room [1].

The second group includes methods using technologies for automatic registration and analysis of the student's actions. The technologies that are most significant for improving the objectivity of the assessment are systematized in Table 2.

Table 1 — Objective assessment of endosurgical skills with the participation of the examiner.

OSCE terms affecting the objectivity of the assessment	Options and forms	Characteristics
Simultaneity of the exercise and its evaluation	Live view or live video feed	Assessment is carried out in parallel with the actions of the students, the results can be announced immediately after the task is completed
	Video rating	The examiner analyzes the video recording of the tasks and can review the necessary fragments
Number of examiners	One	It is easier to prepare one examiner for work at a particular OSCE station, there is no need to process several assessment sheets
	More than one	Assessment sheets are filled by several examiners, the assessment is formed after processing all the sheets, if necessary, the coefficient of consistency of the examiners' opinions is calculated
«Blinding» the examiner	The examiner sees the student and can identify him/her	Direct observation of the student does not require organizational and technical solutions, while the influence of the student's personality on the examiner's decision is not excluded
	The examiner sees only the execution environment of the exercise	The examiner can be in a separate room and see the actions of the trainee in the operating field on the monitor
Assessment priority in a skill	Results	If it is more important to evaluate the result in a skill, it is advisable to use a checklist
	Process	If the process of execution is important in the skill, it is advisable to evaluate it on a rating scale
	Result and process	If the skill requires evaluation of both the execution process and the result, the checklist may contain the column «partially performed (with errors)» with a multiplier of 0.5
Score sheet type	Checklist	Must be compiled for each skill separately, changes in the conditions of the OSCE station (simulation equipment, procedure for performing actions) require changes in the checklist
	Rating scale	You can use ready-made scales, including specialized ones (GOALS, OSA-LS, etc.), changes in the conditions for performing exercises do not require transformations of the rating scale

Table 2 — Objective assessment of endosurgical skills without the participation of the examiner

Simulation equipment	Applied technologies	Characteristics
VR simulator	VR	In the process of performing tasks in a virtual environment, indicators of the operator's real movements are measured: the length of the trajectory of the left and right tools, the amplitude of the angular deviation of the tools, angular velocity, acceleration, etc.
	VR + simulated haptic feedback	Equipping VR simulators with a module for simulating haptic feedback increases, first of all, the realism of the simulation, objectivity increases indirectly
Box trainer	Human Motion Tracking	Tracking the movements of the trainee on the classic box trainer made it possible to use it for certification without involving the examiner, while maintaining the important advantage of the box trainer — work with real tools
	Force measuring	Measuring the parameters of the force of mechanical action on tissues expands the capabilities of the box trainer for an objective assessment of complex skills, such as intracorporeal suture
	Human Motion Tracking + force measuring	The combination of the two previous technologies in one device increases its discriminant validity, that is, the ability to reliably distinguish between a professional, a beginner and an average specialist

Conclusion

Considering the methods and technologies of modern medical education, two processes should be distinguished: training and certification. Some technologies may be ideal for the first and be of little use for the second. Virtual and augmented reality are successfully used in training and certification, they have advantages according to some criteria, but they also have their drawbacks. Virtual simulators have worked well for the OSCE, but they cannot be used as the sole means of training if there is no haptic feedback.

Box trainers equipped with path tracking and force measurement systems demonstrate constructive and discriminant validity. This makes it expedient to use them at OSCE surgical stations. An objective assessment of endosurgical skills is achieved by a reasonable approach to the choice of certification instruments, mandatory preliminary training of examiners, testing of the developed rating scales and checklists.

LITERATURE

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ИСПОЛЬЗОВАНИЕ СТАНДАРТИЗИРОВАННЫХ И РЕАЛЬНЫХ ПАЦИЕНТОВ ДЛЯ УЛУЧШЕНИЯ И ЗАКРЕПЛЕНИЯ НАВЫКОВ МАНИПУЛЯЦИОННЫХ ТЕХНИК

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Введение

Обучаясь в университете, студенты получают навыки, необходимые им для будущей профессии. От качества обучения и усилий, приложенных самими студентами, будет зависеть уровень профессионализма будущих специалистов. Особенно важен этап обучения для студентов медицинского университета. Ведь по окончании университета, они имеют дело со здоровьем и даже жизнью огромного количества людей.

Проведение медицинских манипуляций является неотъемлемой частью навыков, которыми должен обладать каждый медицинский работник. В Гомельском государственном медицинском университете данным навыкам обучают в учебном центре практической подготовки и симуляционного обучения. В данной работе будут рассмотрены преимущества такого обучения манипуляционным техникам, а также предложены некоторые идеи по усовершенствованию владения манипуляционными техниками студентов Гомельского государственного медицинского университета [1].

Цель

Предложить использование стандартизированных и реальных пациентов для улучшения и закрепления навыков манипуляционных техник.

Результаты исследования и их обсуждение

Обучение студентов ГомГМУ манипуляционным техникам состоит из нескольких этапов: