

UČENJE S SIMULATORJI – NOVO OBDOBJE V IZOBRAŽEVANJU KIRURGOV

Z odprtjem nove stavbe Medicinske fakultete Univerze v Mariboru s sodobnim simulacijskim centrom so bile v septembru 2013 dane popolnoma nove možnosti za izobraževanje specializantov s simulatorji.

Sodobni kirurški posegi so tehnično vedno zahtevnejši, kar vodi do potrebe po učenju izven operacijske sobe. Za kirurga je pomembno obvladovanje psihičnega pritiska med operacijo. Na številnih področjih medicine se pri učenju študentov, specializantov in zdravnikov uporabljajo simulatorji. Navidezno resnični simulatorji predstavljajo najvišjo stopnjo učenja kirurških veščin.

Številne dosedanje raziskave so potrdile, da ima kirurški model učenja s simulatorji ugoden učinek na delo specializantov, na natančnost operativnega posega in s tem posredno na varnost v operacijski dvorani.

Kirurški posegi na simulatorju kirurgu omogočajo urjenje določene kirurške veščine brez strahu, hkrati pa mu dajejo povratno informacijo o izboljšanju njegove spretnosti med učenjem. Veščino lahko ponavlja v navidezno realnem okolju, simulirano okolje pa mu omogoča povratno informacijo o doseganju kirurškega cilja, kirurške uspešnosti in kirurških napak.

Učenje na simulatorjih v okviru sodobnega kirurškega izobraževanja je potrebno za izboljšanje bolnikove varnosti med kirurškimi posegi. Vsebinsko določen program simulacijskega učenja mora biti vključen v izobraževanje specializantov. Program učenja določene kirurške veščine mora vsebovati osnovne spretnosti, ki se preko srednje težkih stopnjujejo vse do naprednih tehnik v zahtevnih primerih.

Vsak tečaj vsebuje učenje osnovnih veščin določene kirurške spretnost znotraj vsebinsko določenega programa in tako učenca postopoma vodi k zahtevnejšim posegom.

Organizacija in izvedba takšnih programov učenja sta težavni. Potrebno je točno določiti pristop h kirurškemu učenju na različnih področjih kirurgije. Samo s skupnim

VIRTUAL REALITY SIMULATOR TRAINING – A NEW ERA IN SURGICAL EDUCATION PROGRAM

With the opening of a new building of the Faculty of Medicine, University of Maribor in September 2013 with all the modern simulator equipment for surgical teaching a completely new opportunity was achieved, including several novel aspects of surgical simulation in resident education.

The technical difficulties involved in modern surgical procedures have increased the need to perform training outside the operating theatre. Surgeons must learn to control the psychological stress during surgery. Several medical fields use simulation techniques in training of students, residents and practicing physicians and Virtual reality (VR) simulators represent a satisfactory response to this need.

The results from previous studies demonstrated that VR surgical teaching model has a positive impact on residence performance, the precision of surgical techniques and potentially on safety in an operating theatre.

Virtual reality surgery allows surgeons in training to practice their surgical techniques free of anxiety and provides them with a feedback as their skills improve. VR surgical simulators provide trainee surgeons with repeated measurements of standardized surgical tasks to be performed in a virtual environment. It also provides feedback on the achievement of surgical goals, surgical efficiency and surgical errors.

Simulation technology must be used to improve patient safety for several surgical procedures in modern surgical education. The structured curriculum including the VR training program must be added to the residence education program. A procedure-based training curriculum for specific surgery must begin by teaching the basic skills followed by moderate and advanced techniques and challenging cases.

Each course combines training of basic skills with training of actual surgical procedures in a structured course design, leading students in a step-by-step to expert performance. As

pristopom bo možno prekiniti s starim modelom učenja na resničnih bolnikih. Z vodenim vsebinsko določenim simulacijskim učenjem lahko to dosežemo.

Simulacijska tehnologija mora v bodoče postati obveza pri kirurških programih učenja. To lahko prispeva k varnosti bolnikov med operacijami. Navidezni simulatorji resnično predstavljajo nov način učenja kirurgov. Rezultati raziskav so po tovrstnem učenju potrdili izboljšanje kirurških spretnosti v operacijski dvorani. Vsebinsko določen program z osnovnimi veščinami na simulatorju mora biti prva stopnja pri kirurškem učenju. Učenje s simulatorji ima številne prednosti, izvaja se lahko vedno, kjerkoli in ne zahteva dodatne oskrbe ali živalskega tkiva. Je idealna oblika učenja.

Številne raziskave so potrdile, da je vsebinsko določen in voden simulacijski program učenja pomemben za izboljšanje izobraževanja kirurgov in skrajšanje dobe učenja. Če hočemo izboljšati varnost bolnikov, je potrebno vključiti simulatorsko obliko učenja k dosedanjemu izobraževanju.

*Virtutes discere est vitia dediscere -
Z učenjem vrlin se odvajamo napak.*

*Prof. dr. Dušica Pahor, dr. med.,
odgovorna urednica*

the training progresses, the surgeon moves to new levels where the task becomes increasingly difficult.

The organization of a multifaceted training program can be difficult to be organized and to be made possible. A standardized approach to surgical training in different fields of surgery is needed. Only with integrated approach it will be possible to deviate from the old apprenticeship model of practising on real patients. A very significant level of skills transfer can be achieved with training through a structured supervised simulation syllabus.

Simulation technology should become a standard feature of surgical training programs. It can improve patient safety for surgical procedures in modern surgical education. Virtual reality simulation offers a new approach for surgical training. Results of previous studies revealed a positive transfer of skills from the simulation environment to initial operating room procedures. A structured curriculum with a virtual reality training program, teaching the basic skill, should be the first step in a procedure-based surgical training curriculum. Virtual reality simulation can be made available to trainees anytime and anyplace and does not require any additional supplies or animal tissue. It is the ideal training tool.

Many studies confirmed that structured supervised surgical simulation training program contributes to improvement in surgical education and accelerates trainee learning. Virtual reality surgical teaching should be implemented as a training tool for more traditional education to improve patient safety.

*Virtutes discere est vitia dediscere -
By learning competencies we make less mistakes.*

*Prof. Dušica Pahor, MD, PhD,
Editor-in-Chief*