

A Microanastomosis Simulation Curriculum Improves Resident Knowledge And Technical Skills: Results Of A Microanastomosis Simulation Course At The 2012 Annual Meeting Of The Congress Of Neurological Surgeons

Bernard R. Bendok MD, FACS; Salah G. Aoun MD; Tarek Youssef El Ahmadih; Najib EL Tecle; Allan Nanney; James S. Harrop MD, FACS; H. Hunt Batjer MD



NORTHWESTERN UNIVERSITY

Introduction

Validated simulation curricula have not yet been established in Neurosurgery. To this aim, we used our validated microanastomosis grading scale (Northwestern Objective Microanastomosis Assessment Tool – NOMAT) and pre/post lecture questions to evaluate the effects of a microanastomosis simulation curriculum on resident technical skills and microanastomosis related knowledge at the 2012 Congress of Neurological Surgeons annual meeting.

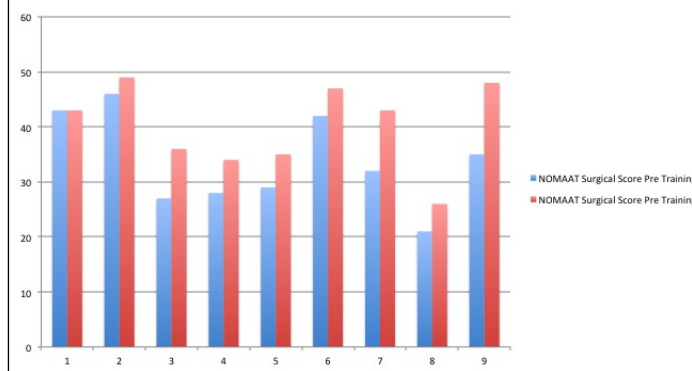
Microanastomosis simulation module at the CNS 2012 meeting



Methods

A microanastomosis module consisting of surgical microscopes, 3 mm silicon vessels and 8-0 nylon sutures was replicated in the simulation-based neurosurgical training course that was held at the 2012 Congress of Neurological Surgeons (CNS) annual meeting. The experiment was divided into three phases: (1) a cognitive and practical pre-testing phase, (2) a didactic lecture (3) a cognitive and practical post-testing phase. We compared data collected from the cognitive and practical pre-testing with data collected from the cognitive and practical post-testing.

Results of practical performance as assessed by NOMAT per and post intervention



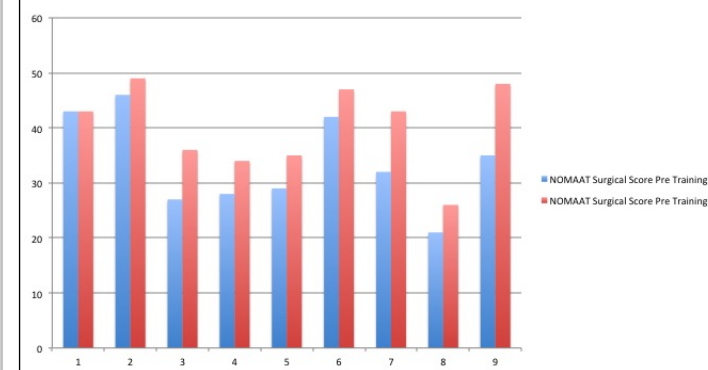
Results

One neurosurgeon and seven neurosurgery residents from six countries participated in the study. None of the participants had significant previous experience in microvascular surgery. None of the participants was able to complete the anastomosis within the allocated 20 minutes. However, the number of completed microanastomoses at the end of each procedure was significantly higher for all subjects in the post-testing phase ($p = 0.03$). The average score for subjects on the practical pre-test and post-test, as measured by the NOMAT scale, was 32.50 (range: 21 – 46) and 39.75 (range: 26 – 49), respectively. This increase was found to be statistically significant ($p = 0.0005$). Similarly, the average score for subjects on the cognitive post-test (average = 12.75, range: 10 – 15) was significantly better than that on the cognitive pre-test (average = 8.38, range: 6 – 12) ($p = 0.0008$).

Learning Objectives

An educational curriculum consisting of didactic and hands on components can enhance knowledge and technical skill in microsurgery.

Results of Cognitive performance before and after intervention



Conclusions

An educational curriculum consisting of didactic and hands on components can enhance knowledge and technical skill in microsurgery.