A New Clinical Study Provides Evidence That Patient-Specific, Virtual Reality Based Preoperative Surgical Simulation Improves Surgical Efficiency for Neurovascular Surgery, Published in Journal of Neurosurgery

May 17, 2016 06:00 AM Eastern Daylight Time

CLEVELAND--(BUSINESS WIRE)--Surgical Theater, a world-leader in next-generation medical virtual reality, announces the first clinical research study examining the effects of their technology is now published in one of the leading peer-reviewed journals in the field of neurosurgery, the Journal of Neurosurgery (2016 May 13:1-7, epub ahead of print). The study reports that the utilization of Surgical Theater’s surgical rehearsal platform (SRP) has the potential to increase efficiency and safety in aneurysm microsurgery as demonstrated by significantly decreased time per aneurysm clip and strong trends toward decreased overall operative times and fewer clip application attempts. Every minute in the operating room is critical as the patient is under general anesthesia facing any number of risks. In addition, operating room time is incredibly resource-intensive for the hospital. Thus, any opportunity to shorten OR time is beneficial on multiple fronts.

“It is with great pride, we share the first in a series of clinical research studies demonstrating the surgical, clinical and economic advantages that Surgical Theater’s enterprise-wide solution is providing to surgeons and their patients from the clinic to the operating room,” said Jim Breidenstein, President and COO of Surgical Theater, SNAP Division.

The single-blinded research study entitled, “Surgical Rehearsal Platform Use Improvement Measures in Aneurysm Clipping: A Prospective, Randomized Trial,” examined preoperative utilization of the SRP with patient-specific anatomic imaging for aneurysm clipping microsurgery, which is one of the most complex brain surgeries. The aneurysm is like an enlarged blister on the wall of a blood vessel in the brain that can rupture at any time causing severe uncontrollable bleeding and subsequent brain damage and potential long-term disability. The study group that utilized preoperative surgical rehearsal demonstrated significantly reduced OR time per clip by an average of over 6 minutes (p=0.05) when compared to the control group that did not preoperatively use the SRP. In addition, the ratio of clip attempts to clips used and the total surgical time for the virtual reality based rehearsal group trended towards clinical significance. Every aneurysm is unique in terms of size and location, and the SRP has different surgical clip options available for the surgeon to select, rehearse and perfect before entering the operating room.

“I could clearly see the surgical rehearsal platform made a difference in shortening surgical time when navigating deep in the brain to locate the aneurysm and clip it,” said Nicholas Bambakidis, M.D., Director of the Neurological Institute at University Hospitals, Case Medical Center. Dr. Bambakidis is the principal investigator on the study and reports no conflict of interest with Surgical Theater.
“There really is no margin for error when you’re performing this brain surgery, it’s a game of millimeters,” Dr. Bambakidis said. “Being able to review the anatomy in great detail from the view you actually have in surgery and then try out different clip configurations to see what they look like proved to be very helpful during the study in pre-op simulation and also during the surgery. It provides you with a good idea of what you’ll be faced with in the operating room on a real patient because it does use the patient-specific anatomy to create the images.”

Neurosurgeons, like pilots, can now “fly through” their patients’ anatomy and perform complex operations in virtual reality before making the first incision. Surgical Theater has developed a VR-based visualization platform that combines leading-edge jet fighter flight simulation technology with the patient’s own anatomical scans, using medical imaging such as MRI and CT, to create a VR reconstruction of the individual patient anatomy. Surgical Theater’s visualization platform is integrated within a family of products and subsequently in the treatment continuum for patient engagement, surgical rehearsal and planning, and intra-operative navigation. This technology is game changing for neurosurgeons because no brain is the same, especially when facing neurological disorders and cerebrovascular diseases.

“The study is just the tip of the iceberg in adding to a growing body of important literature that does say surgeons can rehearse the surgery before stepping into the operating room,” said Dr. Bambakidis. “And that the Surgical Rehearsal Platform does have the potential to positively shorten surgical times, make the procedure safer, and potentially benefit patients. Since the completion of this study, we are also using Surgical Theater’s patient-specific enhanced imaging not just for rehearsal, but also in the OR to aid in navigation during the cases as well as in the clinic to educate and engage the patients. In addition, we now routinely use the technology in the treatment of other pathologies, including a variety of brain tumors.”

Surgical Theater enterprise-wide visualization platform is being used at some of the top academic hospitals, including UCLA, Stanford University, New York University, University Hospitals Case Medical Center, Mayo Clinic, and Mount Sinai.

About Surgical Theater
Surgical Theater is committed to providing virtual reality based healthcare services that bring enterprise-wide value to its partners. Surgical Theater integrates cutting-edge fighter jet flight simulation skill sets to redefine medical imaging and visualization capabilities that empower both patients and physicians throughout the treatment continuum. Surgical Theater’s innovative visualization platform combines and enhances multiple imaging modalities to create a comprehensive, virtual reconstruction for various levels of interaction and immersion facilitating a virtual tour inside the patients’ own anatomy.

Contacts
Surgical Theater
Denise Carson, 310-890-8360
denisecarson@gmail.com