

New tool to measure outcomes could help improve arm surgery for devastating nerve injury

May 20 2011

The way that clinicians report outcomes of surgery for a traumatic nerve injury involving the arm is not standardized, and it is thus difficult to compare the efficacy of different surgical treatments, according to a study by researchers at Hospital for Special Surgery (HSS) in New York. In a second HSS study, investigators say they have developed a tool to measure outcomes that they hope can be refined and used worldwide. Both studies will be presented at the International Symposium on Brachial Plexus Surgery, which will be held in Lisbon, Portugal, May 19-21.

"There is a great deal of discrepancy in how the results of brachial plexus surgery are reported. This makes it hard to compare and contrast studies and understand outcomes of brachial plexus surgeries across centers and across continents. From this work, we have determined that there is a need for a standardized outcomes measurement system or tool," said Steve K. Lee, M.D., who will be joining HSS in August to help launch the Hospital for Special Surgery Center for Brachial Plexus and Complex [Nerve Injury](#) and will serve as the center's research director.

"To advance the science, you can only compare what we are doing here and what others are doing in other countries if we are all speaking the same outcomes language and using the same tool," noted Dr. Lee, who is currently an associate professor in the Department of [Orthopedic](#)

[Surgery](#) at New York University Hospital for Joint Diseases. He points out that many of the studies are conducted in Thailand and Brazil, where brachial plexus injury is common because of the popularity of mopeds and motorcycles.

Injuries to the brachial plexus, the nerves that conduct signals to the shoulder, arm, and hand, can have devastating consequences, including loss of function and [chronic pain](#). These nerves originate at the [spinal cord](#) and correspond to four [neck vertebrae](#) and one thoracic (upper back) vertebrae. Symptoms include partial or complete inability to move the arm. The injury most frequently occurs from high-energy impact activities such as motor vehicle or motorcycle accidents, falls from significant heights, and high impact sporting injuries. In recent years, clinicians have made great strides in improving the surgery to treat this condition. After surveying the literature, however, HSS investigators began to discern that studies that reported outcomes of this surgery were not looking at the same characteristics.

To investigate this further, they conducted a search of Medline, the National Library of Medicine's premier bibliographic database, using the keywords brachial plexus, surgery, and outcomes. The search identified 660 articles on adult brachial plexus injuries over the past three years. After excluding articles that did not discuss surgical outcomes for this condition, they identified 49 articles that qualified for the final analysis. Drs. Lee, Scott W. Wolfe and Rohit Garg analyzed the type of brachial plexus outcome parameters and the consistency of outcomes-reporting between authors and centers. They found that reporting was very inconsistent.

Muscle strength, the most commonly reported outcome, was discussed in 84 percent of articles. Range of motion, however, was reported in less than half of the papers. No papers measured motion of the entire upper extremity and only 14 percent of papers detailed how the motion was

measured. Functional outcome scores were recorded in only 12 percent and scores were recorded using different tools, so comparing studies was difficult. Functional outcome scores were recorded using a variety of different tools, including the DASH (Disabilities of the Arm, Shoulder, and Hand measure), a 30-item, self-report questionnaire designed to measure physical function and symptoms, as well as other tools such as the Constant Score for Shoulder Function, VAS functional score, or institution-specific questionnaires. Only 27 percent of papers measured sensation and only 8 percent recorded assessments of pain. No article reported all five outcome measurements: strength, range of motion, functional scores, sensibility, and pain. The maximum number of outcomes a paper reported was three (14 percent of papers), and the remaining articles reported only one or two outcomes.

In a second study, the same investigators describe a first draft of a tool that they hope clinicians can use so that the reporting of outcomes is standardized. "What we are doing is presenting this to the international community to get buy in on the concept," said Scott W. Wolfe, M.D., hand and upper extremity surgeon and director of the soon-to-open Hospital for Special [Surgery Center](#) for Brachial Plexus and Complex Nerve Injury. "This is a first iteration and we hope the group will respond favorably, but we'd like to get researchers and plexus surgeons from the Far East, Europe, the States and South America to work together to design a system that we all feel will function effectively for our patients."

Dr. Wolfe said they had looked at different tools that doctors were using to see if they could come up with one that would work for brachial plexus surgery, but none of them were adequate and inclusive. "We had to take elements of different instruments as well as elements that we designed to derive a complete system," Dr. Wolfe said. "We're studying an injury of several critical nerves, an injury that affects the arm in a way that is very different from that of a fracture or degenerative disease.

We needed to design an innovative way to analyze and report outcomes, because we're simultaneously assessing nerve, muscle and joint recovery. By way of example, although a patient's nerves could recover beautifully in a particular case, if their shoulder is frozen or their hand atrophied, the patient may not have a functional recovery; unless all elements are assessed, the analysis is incomplete."

The key elements of the instrument are measurements of motion, strength and function for seven critical domains of the upper extremity: shoulder elevation, shoulder external rotation, elbow flexion, elbow extension, wrist extension, finger flexion and intrinsics (the distance the fingers can be spread apart). The tool involves assessing tasks such as touching the back of your head, touching your mouth and holding a utensil.

The researchers hope that with help from the international community, the tool can be refined and outcomes can be standardized across research centers and across continents.

Provided by Hospital for Special Surgery

Citation: New tool to measure outcomes could help improve arm surgery for devastating nerve injury (2011, May 20) retrieved 26 April 2024 from <https://medicalxpress.com/news/2011-05-tool-outcomes-arm-surgery-devastating.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.