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First Hand EXPERIENCE

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Regional anesthesiology is a blind specialty. And in the land of the blind, the one-eyed man is king. – *Dr. Grant*

Dr. Stuart Grant first viewed hand-carried ultrasound only as a useful training tool. He quickly realized that ultrasound imaging has indispensable benefits for his everyday clinical practice.

Dr. Grant is a leader in the burgeoning field of regional anesthesiology and expert in its use for post-operative acute pain management. He and his colleagues have placed several thousand nerve blocks, ambulatory regional blocks and peripheral nerve catheters with hand-carried ultrasound since it adopted the technology in 2002. He expects that using hand-carried ultrasound will become the standard of care for these procedures within the next five years.

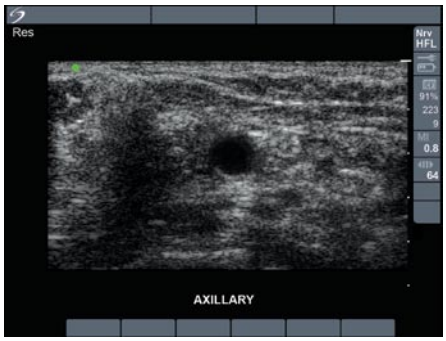
According to Dr. Grant, the evolution towards more widespread use of regional anesthesia has accompanied the growth of same day surgery. In the United States, 80% of all surgeries are now ambulatory. And as surgery techniques advance, more complex and painful procedures such as shoulder replacements, anterior and posterior cruciate ligament reconstruction and ankle surgeries are being performed on an outpatient basis.

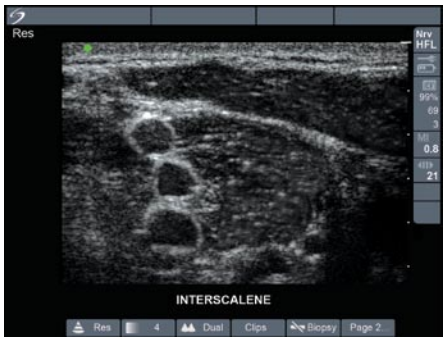
The advantages of regional anesthesia versus general anesthesia for appropriate surgical procedures are well documented; used appropriately, nerve blocks reduce the requirements for general and other analgesic medicines, allowing the most effective pain control with diminished post-operative complications, such as nausea and vomiting.

But failure in outpatient surgery, notes Dr. Grant, is usually due to acute post-operative pain. The affects of a nerve block wear off roughly 12 hours after it is placed. For patients who undergo surgery mid-day, then, acute pain resumes most often in the middle of the night, disrupting much needed rest and obviating the prescription of morphine and other opiates, which can cause nausea, vomiting, and other unpleasant side effects. For a more successful outcome, and to give patients a greater sense of well being, acute pain must be managed as well after the procedure as it is during.

So in addition to using nerve blocks as an alternative to general and other analgesics, Dr. Grant and his colleagues at Duke University Medical Center are applying regional anesthetics to post-operative acute pain management with great results.

For instance, Dr. Grant places continuous peripheral nerve catheters, fine plastic tubes placed, like needles, near targeted nerve structures, that can deliver analgesics to a targeted region post-operatively for up to seven days. Dr. Grant points to the growing body of evidence based medicine supporting peripheral catheters as providing a better quality of care than the systemic application of morphine and other opiates.





Ambulatory regional nerve blocks are based on the same principal, Dr. Grant points out, but allow a patient to move freely, receiving pain medication from a small disposable pump worn in a fanny pack. Placed properly, ambulatory blocks can deaden post-operative pain while minimizing muscle weakness, a by-product of anesthesia, and therefore minimizing limits on a patient's post-operative mobility, an important quality of life issue.

continued

The Benefits of Ultrasound Guidance

Placing ambulatory nerve blocks and continuous nerve catheters involves is similar to placing nerve blocks, and benefits from visualization in the same ways. Imaging permits faster, more accurate needle or catheter placement, closer monitoring of applied anesthesia, clear visualization of hard to reach or compromised structures, and heightened patient satisfaction.

Dr. Grant also specifically noted the following advantages to ultrasound imaging:

> Ultrasound imaging has made the advantages of regional anesthesia available to children. In smaller patients, nerve structures are not as deep as they are in adults. Ultrasound imaging improves the physician's confidence that she will locate the targeted nerve successfully and without causing undue distress or harm to the young patient.

> Local anesthetic can be toxic if it enters the bloodstream' this toxicity can cause seizures and cardiac arrhythmias that can lead to cardiac arrest. By using HCU, one can more effectively manage the flow of anesthesia and keep it out of the bloodstream, improving the procedure's safety margin.

> Placing blocks and catheters must be mastered by the anesthesiologist; while the old medical adage requires 50 procedures to be competent and 500 to be a master, a growing body of clinical evidence demonstrates that the use of hand-carried ultrasound can significantly reduce the time to competence for placing blocks and catheters.

"Any technology that can make a procedure better, safer and faster for the patient and the doctor is tremendously significant and should be widely adopted," said Dr. Grant. For hand-carried ultrasound, Dr. Grant has the zeal of a convert. All regional anesthesiologists at Duke are trained in the use of hand-carried ultrasound, and Dr. Grant teaches courses for practicing anesthesiologists at annual clinical meetings.

Why the MicroMaxx™ System?

Most anesthesiologists work in confined spaces, and are responsible for patients in various locations far-flung within a medical center. Duke has 50 operating centers spread through all areas of the hospital, and its preoperative block rooms accommodate as many as four to five beds at a given time, with just a few feet between them – not a workable environment for a large, cart-based ultrasound system.

At eight pounds and the size of a notebook, the MicroMaxx system allows Dr. Grant to "grab and go" and to move from the ICU to the operating room to post-anesthesia care with ease. Whereas he had previously viewed hand-carried ultrasound strictly as a novel tool to assist residency training, MicroMaxx's combination of small size, high image quality and compelling price point has made hand-carried ultrasound very practical and is now an indispensable, every day clinical tool.

SonoSite MicroMaxx with an HFL38/13-6 MHz transducer.

Medical Citations

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