FACT SHEET

The StealthStation® Treatment Guidance System

The StealthStation® treatment guidance system, from Medtronic Surgical Navigation Technologies (SNT), is the most accepted image-guided surgery system in the world, with more than 650 of the systems currently in use around the world (as of July 2001).

The StealthStation® treatment guidance system has revolutionized neurosurgery because it provides surgeons with a way to navigate through the body using 3D images as their guide. This next-generation technology takes images from a variety of traditional imaging sources — X-ray, computerized tomography (CT) scan, magnetic resonance imaging (MRI) and ultrasound — then transforms them into precise 3D images. Those images can be changed, manipulated and merged to provide the exact view the surgeon needs — both before the operation takes place as well as in the operating room. The precision provided by the StealthStation® system allows surgeons to focus on the exact location they need to reach during surgery, without compromising nearby muscle, tissue, nerves or blood vessels.  

The StealthStation® TREON™ treatment guidance system is the newest innovation in image-guided surgery systems from Medtronic. It was designed with input from neurosurgeons around the world for use in brain, spinal, and ear/nose/throat operations.

The StealthStation® ION™ fluoroscopic navigation system is primarily used for spinal surgery. The ION System uses the FluoroNav™ virtual fluoroscopy system — software that provides detailed images of the spinal and cranial cavities, but with reduced radiation exposure compared to traditional intra-operative fluoroscopy. Medtronic was the first company to offer a commercially available fluoroscopic image guidance system in the United States.

The StealthStation® ION™ system allows surgeons to visualize the microscopic nuances of a patient’s spinal anatomy and plan, for example, the best screw placement and direction within millimeters to optimize patient mobility and recovery.
How the StealthStation® Systems work

The StealthStation® system works by analyzing pre-operative diagnostic scans of the patient — usually CT images or MRI. Once loaded into the StealthStation® system, advanced computer technology translates this information into precise 3D images that help surgeons map the safest, least invasive path to the target site in the patient’s body.

Next, the StealthStation® system assists the surgeon in the operating suite, where it produces three-dimensional, real-time images of the procedure in progress. The StealthStation® system can even merge images from multiple sources and manipulate the pictures, allowing physicians to view them from any angle. In effect, surgeons literally “see” behind delicate or hard-to-reach areas of the patient’s unique anatomy without disturbing the surrounding tissue.

Unlike earlier forms of image-guided surgery, the StealthStation® system incorporates standard surgical instruments. Images of the instruments are seamlessly rendered within the images of the patient’s anatomy, allowing the surgeon to see the exact location of the instruments, in 3D and in real time, on the monitor. This allows surgeons to track instruments during the surgery, including the position of the instrument and the angle at which it is entering the body — side to side, up and down and back and forth — with tremendous precision.

Virtually endless capabilities

Medtronic Surgical Navigation Technologies has developed versatile software applications that are used on the StealthStation® system for brain, spinal, orthopaedic and ear/nose/throat surgeries. The StealthStation® system can also be transformed into an image-viewing platform that allows instant access to the patient’s imaging history. During a procedure, for example, the surgeon can review the patient’s complete imaging history archived within the healthcare system — be it a CT, MRI, or any other scan — and use it to assist in making treatment decisions.

The Medtronic SNT StealthStation® treatment guidance system provides surgeons with advanced and easy features to use, allowing them to focus on the patient, not their medical equipment. With the StealthStation® system, the physician can more easily shorten operating times, decrease the size of the patient’s incision and reduce the procedure’s invasiveness — all of which can lead to better patient outcomes and faster recoveries.