

Since the dawn of medicine, physicians have been in search of ways to better visualize the anatomy of the human body in order to diagnose and treat patients. Clear vision of the surgical site and the surrounding anatomy is vital to a surgeon. Over the years, science and technology have delivered on providing this improved vision. For example, the discovery of X-rays in the 1890s paved the way, making it possible to see and examine internal structures without the need to make an incision. The field of medical imaging continues to answer the call for enhanced visualization and has brought forth digital imaging modalities such as CT (computed tomography), MRI (magnetic resonance imaging), ultrasound and PET (positron emission tomography). Today, computers are taking visualization in the operating room to a new frontier...the world of computer-assisted surgery (CAS).

Computer-assisted surgery employs computer technology to aid in pre-operative planning and intra-operative guidance of surgical instrumentation. Stryker's technology combines computer software, tracking devices and wireless, "smart" instruments to analyze and monitor in real time the position of surgical instruments in relation to the patient's anatomy. The general premise behind CAS is the computer's software creates a three-dimensional model of the patient's anatomy, essentially a digital roadmap for the surgeon to follow. During the procedure, the surgeon matches the patient's anatomy to the computer's virtual model, in a process called registration. Much like a GPS system in an automobile, this allows for the surgeon to track in real time the position of surgical instruments (as well as implants during some procedures) in relation to the patient's anatomy. For this reason, CAS is also referred to as surgical navigation. This technology is designed to optimize the surgeon's visualization, help guide surgical instruments and deliver surgical precision.

Surgical navigation is evolving and was first introduced in the 1980s for use in neurosurgical procedures. Medical device companies, like Stryker, continue to revolutionize the field of computer assisted surgery and expand its applications. Today, surgical navigation is used in the fields of orthopaedics, spine, trauma, neuro and ENT surgeries. With CAS in the OR, surgeons are truly seeing surgery differently.