

less IS more

Minimally invasive surgery is a broad field encompassing many now common procedures such as laparoscopic cholecystectomy (gall bladder excisions) and angioplasty (the widening of narrowed or obstructed blood vessels). It refers to general procedures that avoid long cuts by entering the body by way of a small entry incision, through which surgeons use long-handled instruments to operate on tissue within the body.

There are many advantages of minimally invasive surgery over conventional open surgery techniques, including faster patient recovery time, less trauma, lower chance of infection, shorter procedures, faster transfer of patients from operating theatre to recovery, and ultimately a reduction in cost. These have made it an attractive option in almost all areas of surgery. For example, advances in minimally invasive cardiac surgery have produced huge benefits for the patient, eliminating the need both for traumatic open heart surgery and the use of a heart-lung bypass machine. That said, there are many obstacles still to be overcome, including articulation, miniaturisation, accuracy, suturing, tactile feedback, ventricular pacing, and disorientation, to name just a few.

Advances in robotic surgery are helping to address some of these. For example, the integration of robotics with X-ray and MRI scanners is revolutionising surgery, particularly in neurology and orthopaedics where the advantages are easily seen.

In orthopaedics, the ability to improve the accuracy of drilling into the femur for a hip transplant not only allows the surgeon to reduce access to the hip joint and improve recovery time, but also extends the life of the hip replacement. Considering that \$4.5bn is spent on secondary hip replacements every year, the financial benefits of a robotic approach are obvious.

However, the high cost of leading-edge robotic technology means that it is only within the reach of a few elite hospitals. What the development of these top-end systems has done, however, is create demand for smaller, less sophisticated equipment with a lower price tag. Given this, there are surprisingly few robotic systems currently on the market. There has even been a delay in the appearance of master slave manipulators – ‘semi-robotic’ devices which help surgeons circumnavigate a number of the safety issues of conventional robots. But what are the reasons for this delay?

Traditionally the healthcare sector has been slow to transfer new technologies – like robotics – in from industry. The main reason for this is the relative lack of collaboration between innovators (engineers and scientists) and clinicians. While small start-up innovation companies are excellent at creating these interfaces with clinicians, larger companies – which tend to grow by acquisition rather than through real breakthrough development – find it more difficult. Some are turning to innovative partners for help, benefiting from the energy and fresh insight that an experienced consultancy can provide. But however they choose to approach it, few healthcare companies can afford to ignore the significant new markets for innovative minimally invasive surgical technologies.

David.Gale@CambridgeConsultants.com

