sydney neurospine

Navigation in Instrumented Spine Surgery

A Guide for Patients

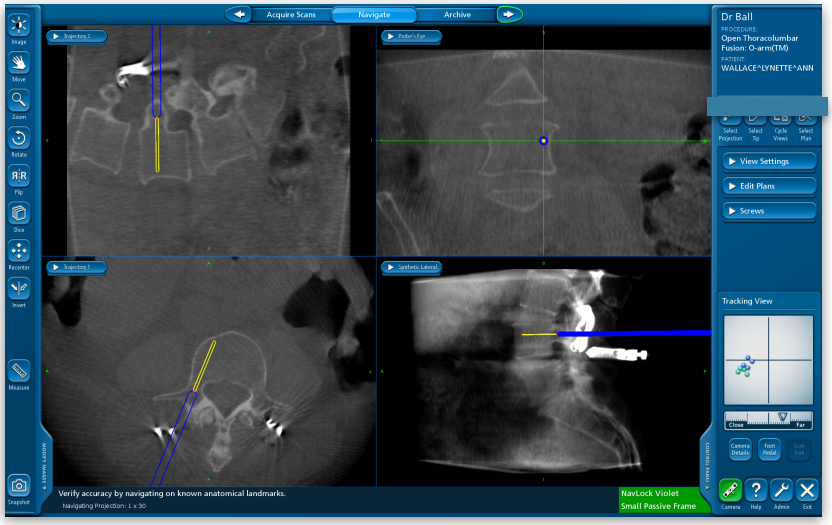
Your spine surgery may involve the placement of screws or other implants in the spine. Traditionally, these are placed freehand or with X-ray guidance. Despite careful technique, there is a chance of implants being placed in an inaccurate position - posing a risk to the spinal cord, spinal nerves or other structures.

Spinal navigation uses modern computer technology to increase the **accuracy of placement - increasing safety**. There are 2 main systems that Dr Ball can use for your surgery - the O-arm/Stealth system or the Renaissance system. The choice of system depends primarily on the type of surgery required. Both have demonstrated **high rates of accuracy**.

O-arm™ with Stealth™ (Medtronic™)

The O-arm™ is an intra-operative 'CT scanner' which is used to take a scan of the patients spine. This scan provides a 'map' of the patients spine and is transferred to the Stealth™ navigation system.

The instruments used in the surgery are visible to the Stealth™ Station which shows the location and direction of the instruments on the 3D scan to guide the surgery.

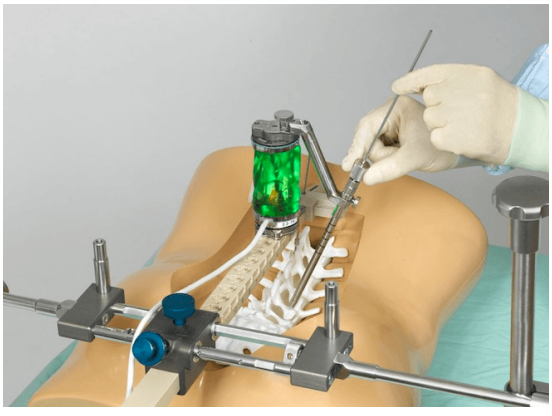


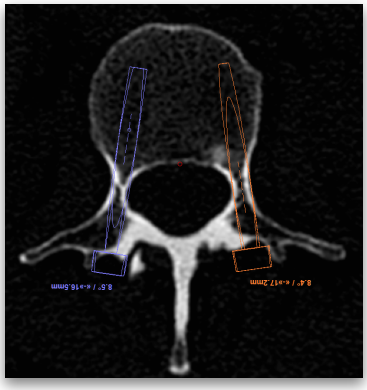
The O-arm™ (far left) and Stealth™ Station (left). The image (above) demonstrates the Stealth™ Station indicating the location of the instruments on the scan.

Renaissance™ (Mazor™ Robotics)

Using the Renaissance™ Robotic system, the surgeon plans the surgery on a pre-operative CT scan. This provides a template for the surgery.

The robot positions the instruments so that screws are placed along the pre-planned trajectory.





The Renaissance™ Robot (far left) guides the surgical instruments to a pre-planned trajectory, so that screws are placed (above right) according to the pre-operative plan (above left).

Risks in Spinal Navigation

All surgery carries risks. Spinal navigation aims to increase accuracy and decrease the risk of surgery. However, it cannot eliminate all risks.

In addition to the risks specific to your spinal surgery, navigation can be associated with the following risks :

- **misplaced hardware** : with damage to spinal cord, spinal nerves, major blood vessels or abdominal or chest structures.

- **radiation risks** : xray and CT imaging poses a small risk

Dr Ball & Spinal Navigation

Dr Ball believes in spinal navigation as an important part of spinal surgery. Using navigation technology increases the **accuracy of surgery** - and therefore, **patient safety**.

Dr Ball has extensive experience in spinal navigation and has been asked to present his experience in both O-arm and Renaissance technologies at national and international spine meetings.

He was the first neurosurgeon in the Southern Hemisphere to utilise Renaissance robotic technology in spine surgery.

Dr Ball has unique access to both technologies and will choose the technology appropriate for your surgery.

Sydney Neurospine®

Sydney Neurospine® is the practice of Dr Jonathon Ball, an Australian neurosurgeon specializing in surgery of the spine.

Dr Ball is a fellow of the Royal Australasian College of Surgeons and a member of the Neurosurgical Society of Australasia, Australian Medical Association and AO Spine. He has completed studies at the University of Newcastle and the University of NSW, Australia.

As well as training in neurosurgery, he has completed further specialised training in spine surgery with a surgical fellowship at the University of Calgary in Canada.

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