

Patients at a private hospital in Carmarthenshire are the first in Wales to benefit from revolutionary technology when it comes to knee surgery



**H**ave you ever thought of having your knee replaced with surgery carried out by a robot?

It may sound like something from science fiction but robotics in surgery is a reality and making a difference to the precision and accuracy of operations as well as patients' lives once they return home.

Thousands of people across the UK have had robotic-assisted knee procedures over recent years and now patients at BMI Werndale hospital on the outskirts of Carmarthenshire can as well.

Surgeons at the hospital are using a robotic-assisted tool known as the Navio Surgical System which is proving to be a game changer, not only for those having the knee operation but for medics at the helm too.

It has been in use at the hospital, located in the village of Bancryfelin, since early October, with around a dozen patients having undergone the robotic-assisted surgery.

Developed by Watford-based medical equipment manufacturing firm Smith & Nephew, the Navio Surgical System is designed to make surgery more precise and results in less impact on tissue surrounding the knee.

Navio does away with the need for patients to undergo a CT scan ahead of the surgery – only a preliminary x-ray. Instead it creates a 3D model of the patient's cartilage and bone – captured through direct surface mapping.

The 3D modelling also allows a much more patient-specific planning process, meaning their needs can be met meticulously depending on the scale of surgery needed, whether a full or partial knee replacement.

It literally places robotic-assisted surgery in the hands of the surgeon at BMI Werndale, which is Rhodri Lywelyn Williams and his team. Mr Williams is a consultant orthopaedic surgeon with specialist expertise in all aspects of routine, complex and revision hip and knee replacement surgery.

The Navio system works in tandem with a surgeon's skilled hands to achieve a precise positioning of the knee implant with extra planning, accuracy and precision.

Tracking data of the patient's knee is used to help the surgeon to remove only damaged bone and assist with positioning the implant with greater precision, while balancing the knee joint.

Every Navio procedure has an individual plan based on each patient's unique anatomy – every operation is tailored for a specific patient.

Ultimately, for the patient the end result is hopefully a more natural-feeling implant and clinical studies into recovery and success rates will continue with a clearer picture emerging over coming years.

Mr Williams, who has a background in

# Robotic knee surgery – a first for patients in Wales

robotics and undertook a dissertation on the use of robotics in training surgeons at London's Imperial College explained: "It's about making very good surgeons even better and offering a level of precision and accuracy.

The Navio tool feels like a natural extension to myself when carrying out surgery.

"It doesn't replace the need for a surgeon, we are still in the driving seat, but this is very much the future in the palm of our hands.

We are very proud to be spearheading this in Werndale and Wales."

Of course there is no doubt that the future of robotics in surgery will only advance further, with more refinement as research and new methods are explored.

Mr Williams said potentially the Navio tool will reduce the need for patients to undergo follow-up operations once a knee or part of a knee is replaced, adding that this would be a significant cost saving.

Peter Cruddle, consultant orthopaedic and trauma specialist at Werndale, said the Navio tool is proving to be an incredible asset during surgery.

He said: "I have done two surgeries using the Navio and what it means for patients in the short-term is less pain after the operation and also a quicker recovery time.

"That's what literature tells us, but it is early days here for the technology in Werndale. "It's definitely part of the future as we go

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forward, the operating times can be longer using the Navio but the outcomes for the patients outweigh that as the tool offers greater precision.

Both Mr Williams and Mr Cruddle use driving analogies to explain the tool's effectiveness.

Mr Williams said: "Lewis Hamilton can get his F1 car around a race track without using a computer, but the computer helps him get a more efficient completion of it and that's how I look at the Navio tool."

While Mr Cruddle said: "It's like driving a car – a few years ago we were asking do we all need satellite navigation?"

"Of course, you can drive a car without it, but it certainly helps and it's the same with the knee surgery. This tool helps."

Already across the UK and the world, recovering times for patients have decreased thanks to the use of robotics in the operating theatre.

It is not unforeseeable to think that in years to come knee surgery could be no more than a day in hospital for patients.

Pain reduction has also been seen

during recovery for patients who have had robotic-assisted surgery.

Follow consultant orthopaedic surgeon Mohamed Yagoub said the aim is to restore as much of a natural knee function as possible within a patient.

He added: "With the Navio being tailored to each patient's anatomy and soft tissue structure it means the replacement knee will last longer – that's the aim.

"The system also provides a point out of all the detail involved in the surgery which we can then share with a patient.

"That for me is fantastic, being able to go through exactly what the operation entailed, how the computer aided it and for me I think it gives a greater peace of mind for a patient in the end.

The fact that Werndale has this technology is fantastic and we are just starting to use it.

"Across the UK I think there are no more than eight or nine hospitals with it and here in Wales Carmarthenshire has it before Swansea and Cardiff."

Dean Locking, Physiotherapy Manager, has already seen a number of patients at Werndale Hospital following Navio knee Replacement.

He has found that these patients are reporting a decrease in post-operative pain which enables them to move and exercise more frequently with less discomfort.

Ultimately this will mean a speedier return to normal life.



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