

# Would you have your knee replacement surgery carried out by a robot?



**KAREN PRINS**  
Chief Executive Officer,  
BMI Healthcare

Would you have your knee replacement surgery carried out by a robot? Thousands of people have done so over the last few years, and now patients at BMI The Clementine Churchill Hospital in West London, BMI The Alexandra Hospital near Manchester and BMI Werndale Hospital in Carmarthen can too.

The three hospitals have robotic-assisted systems, which are designed to make the surgery more precise, resulting in less impact on soft surrounding tissues of the knee and a straight-forward recovery.

"The use of robots in surgery is not new, so patients can feel reassured that the use of them in surgery has been tested thoroughly," says BMI's Chief Executive Dr Karen Prins. "The availability of robotic-assisted surgery gives patients the option for a bespoke operation."

### 3D modelling to ensure a precise fit

The robot uses 3D modelling to assess the extent of diseased bone and surface mapping to capture the patient's individual joint profile. A tracking mechanism turns off the system if the surgeon attempts to remove healthy bone during the operation, ensuring that only diseased bone is removed prior to being replaced with the desired implant.

Consultant Orthopaedic Surgeon, Mr Winston Kim, of BMI The Alexandra Hospital, said: "The robotic assisted procedure allows for a more precise and accurate knee replacement implant, tailored to the patient's anatomy and alignment. In comparison to traditional methods, the system has the potential to increase the likelihood of a more natural-feeling knee after surgery."

### Research shows reduced pain after robotic-assisted surgery

Research studies indicate that total joint arthroplasties performed under robotic-assisted surgery are associated with reduced pain, improved recovery and reduced length of hospital stay compared with conventional job-based operations. ■

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## The robotic revolution in knee replacement surgery

A Q&A with leading surgeon: Robotic-assisted knee replacement operations could be a game-changer for patients, improving accuracy and shortening recovery times.



**WINSTON KIM, FRCS(ORTH)**  
Consultant Orthopaedic Surgeon,  
Specialist in Knee and Hip Surgery,  
BMI The Alexandra Hospital

Mr Winston Kim, Consultant Orthopaedic Surgeon, performed the first robotic-assisted knee replacement and partial knee replacement in the north of England, and has

the largest series in the North-West. His patients include former professional footballer and CEO of the Professional Footballers' Association, Gordon Taylor.

### What are the benefits of robotic-assisted knee surgery?

"Quite rightly, knee replacement patients want and expect their new knees to feel as natural as possible. Unfortunately, knee replacement surgery – unlike hip replacement surgery – has a patient dissatisfaction rate associated with it, and it's usually because the new knee has not been implanted in exactly the right position.

"The knee is a sophisticated joint and there isn't a 'one replacement fits all' solution. Everyone has a

different shaped knee with different soft tissue tension – and so, in a conventional operation, a surgeon must use a certain amount of judgement when positioning an implant. Get it slightly out of alignment and the results can feel a bit stiff.

"This is why some people say robotic-assisted knee surgery is a game-changer. The benefit is that it implants the knee replacement in exactly the right alignment and position, every time. In essence, it offers a bespoke implantation technique to individual patients."

### Is robotic-assisted surgery also available to patients who only need a partial knee replacement?

"Yes. One of the other benefits of robotic-assisted surgery is that

surgeons who would always opt to perform a full knee replacement – simply because they do them more frequently – are given the confidence to perform a partial knee replacement instead. Obviously, the advantage of a partial replacement for the patient is that only the affected part of the knee is replaced, preserving most of the knee joint. That means a smaller incision, less cut muscle, less blood loss, and consequently less pain, quicker recovery, quicker return to day-to-day function and return to work."

### Are there any pre-op requirements for patients undergoing robotic-assisted knee surgery?

"Standard X-rays are the starting point, but no further imaging is necessary because the system maps the patient's anatomy at the start of surgery. No CT scans means no radiation.

"During surgery, pins will be put into the patient's shin bone and thigh bone – and these pins have sensors on them which communicate with the robot. This is partly why robotic-assisted surgery takes

about 20-30 minutes longer than conventional surgery."

### What can patients expect with regards to recovery times?

"After any knee replacement surgery, there will be a recovery period, which can vary from three to six months to two years. With robotic-assisted knee surgery, we've seen remarkable, pain-free outcomes with very quick recovery times. Gordon Taylor, the professional footballer, had his knee replaced using this technology. His wife had it done, too, and both were very happy with it."

### How long has this type of technology been available?

"For around five years. From the surgeon's point of view, the technology does cost more but, because the knee is implanted more precisely and the patient is happier with the final result, the risks of revision surgery (repeat surgery) will potentially be lower and the long-term savings will be greater. And, of course, robotic-assisted surgery technology will become further

refined over time with constant innovation and improvement."

### What do you hope robotic-assisted knee surgery will ultimately achieve?

"If you've had a robotic-assisted knee replacement, you can be confident that your surgery was fully optimised – and you have real-time evidence that your replacement knee was implanted accurately.

"People are reassured by this technology and it allows patients to focus on the necessary rehabilitation after surgery. That's key because, as surgeons, we need to perform knee replacements that meet the expectations and requirements of today's patients who want the best possible function, in as short a time as possible." ■

WRITTEN BY:  
TONY GREENWAY

Read more at [healthawareness.co.uk](http://healthawareness.co.uk)

## Robotic knee surgery: better, faster results for patients

Patients who have robotic-assisted knee surgery can expect better experiences before, during and after their operation. The technology may even allow them to be treated as day cases in the future.



**MR MATTHEW BARTLETT**  
Consultant Orthopaedic Surgeon,  
London North West University  
Healthcare NHS Trust and  
Clementine Churchill Hospital

"I rarely perform knee replacement surgery without robotic assistance these days," says Mr Matthew Bartlett, Consultant Orthopaedic Surgeon at London North West University Healthcare NHS Trust and BMI The Clementine Churchill Hospital.

"I tell patients that I prefer robotic-assisted surgery because of the increased accuracy it affords," he says. He explains that with conventional surgery, a rod is inserted through the femur to guide alignment. This is not necessary in robotic-assisted operations, which makes them less invasive and gives better control of bleeding.

Mr Bartlett and his team have been using robotics for over a year.

He believes knee surgery patients are recuperating faster and mobilising more quickly as a result. "We're working towards decreasing the length of post-operative in-patient stay," he says. "In America, knee patients can be treated as day cases with use of robotics. That's our ambition, too, eventually."

### Quicker mobility for patients

Most patients are positive and relaxed about use of robotics in surgery, explains Mr Bartlett, "particularly when they are reassured that it's just a tool I use to perform the operation." After all, if technology can improve the patient experience then it makes complete sense to use it.

"As surgeons we can't rest on our laurels," says Mr Bartlett. "My view is that unless I'm constantly advancing then I'm failing in my responsibility to my patients. Once we get to the point where there are no complications and 100% of patients are completely satisfied with their knee surgery, then maybe we can take a step back. I don't think we'll ever get to that point – but we have to keep trying." ■

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TONY GREENWAY

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