WALTER SCOTT

Robotic surgery's next frontier

Campbell Roxburgh, professor and consultant surgeon

Key takeaways

- Robotic surgery delivers proven benefits in precision, recovery times and overall healthcare system efficiency
- Data, AI and feedback systems are driving incremental improvements in outcomes and surgical training
- Growth extends beyond surgery into diagnostics, AI and more scalable, globally accessible care

In Scotland, we are delivering robotic surgery across the country and across many cancer specialties. Robotic surgery is bringing huge benefits to surgeons, healthcare systems and patients. For surgeons, platforms like Intuitive Surgical's da Vinci 5 console bring greater precision, greater consistency and better real-time insights. This minimises trauma, speeds up recovery times and lowers readmission rates for patients. It also reduces the burden on healthcare systems, which benefit from increasingly granular patient and surgical data produced by platforms such as the da Vinci.

This is an exciting and evolving field. Intuitive has a head start but competition is increasing as patents expire, technology improves and the pace of AI adoption accelerates.

"Technology will impact and influence every part of the healthcare system"

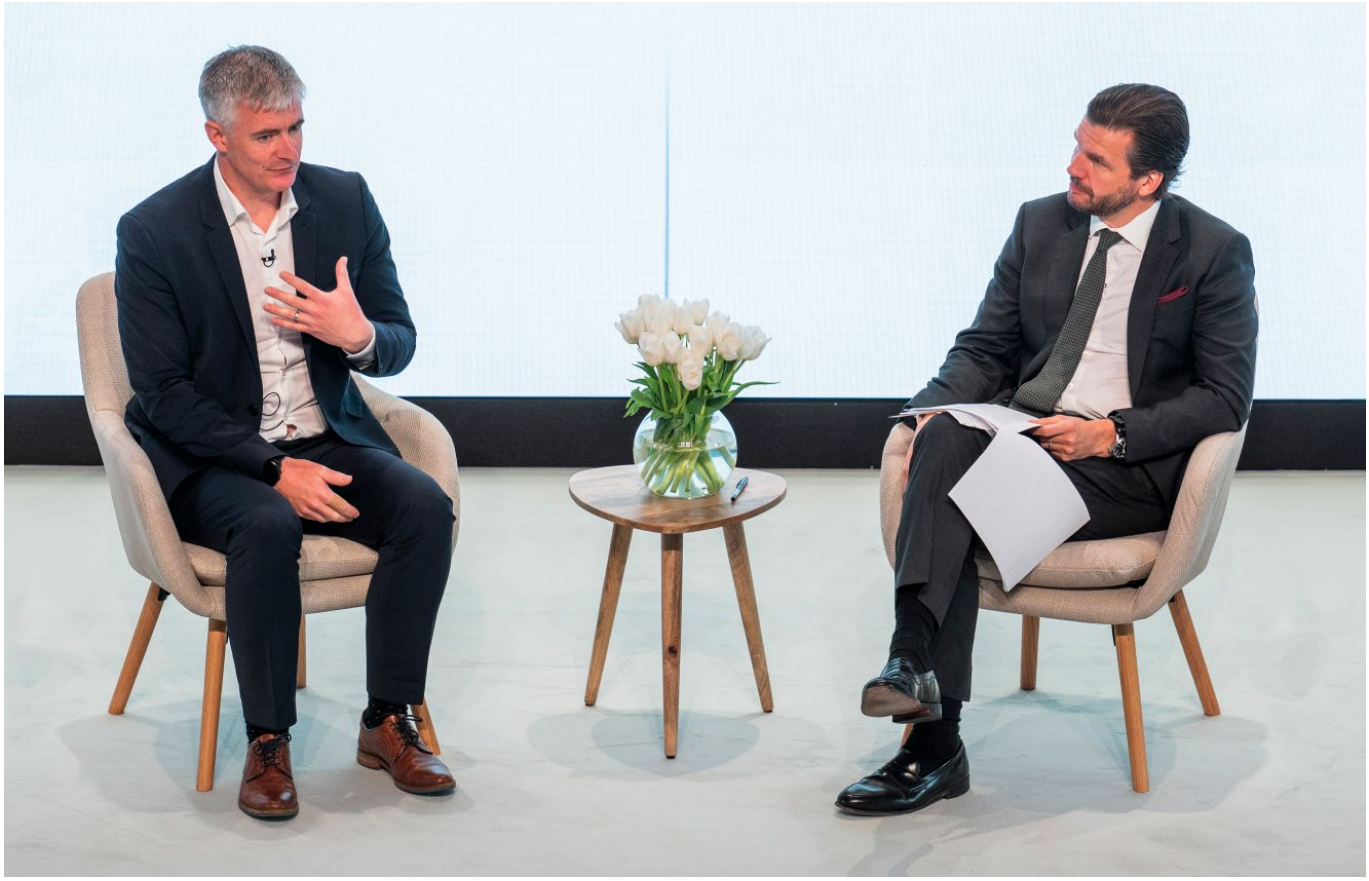
There is a clear competitive challenge from Chinese companies, which are developing technology at pace and at lower prices, and this trend is expected to continue over the next 5-10 years, although there may be regulatory and data privacy barriers around the adoption of Chinese technology in the US and the UK.

Against this backdrop, the key for companies like Intuitive is to stay ahead of the innovation curve and they are doing so by diversifying beyond surgery to diagnostics, which is another area of huge potential for robotics to improve processes.

Data is informing new functionality and powering innovation. For example, the da Vinci 5's feedback technology uses data to measure how tightly the surgeon is grasping the tissue during an operation. This is an entirely new measurement which will reduce trauma in surgery and feed directly into post-operative outcomes. Intuitive also has an app, the equivalent of the exercise app Strava for surgeons, that analyses and compares clinical performance, delivering real-time feedback about the operation. Technology such as this has great potential for training the next generation of surgeons, in the same way that airline pilots use flight simulators.

Doctors and patients are also now using AI platforms or apps to question things. There are lots of ways in which technology will accelerate the diagnostics and administration processes at scale and speed up patient interactions within healthcare in the future.

Robotics is a good example of a big-ticket piece of equipment that's made a big impact in a short time but there is huge potential for many other technologies to shape the healthcare system in a variety of ways. As AI adoption and compute power increase, technology will impact and influence every part of the healthcare system.



Campbell (left), interviewed by investment manager Des Armstrong, explains the remarkable advances in robotic surgery and the possibilities they offer for future patient care

Looking over the next decade or so, robotic surgery will continue to improve, reinforce learning and drive better behaviours. Consoles will become more agile, and I envisage closer integration of AI with other digital technology. You could even imagine a scenario in which patients can pick a surgeon from anywhere in the world to perform their operation, and the surgeon will use a local console to perform the procedure remotely. ■

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The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of Walter Scott.

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