



4IR Technologies:
Robotics

Emirate:
Dubai

Maturity:
■■■■■
Scaled Deployment

Type:
Public-Private

HEALTHCARE

068 Robot-Assisted Surgery

ACTORS

**The da Vinci Surgical Platform
UAE Health System**

SNAPSHOT

The da Vinci is a robotic surgical platform that enables surgeons to perform complex minimally invasive procedures from a console, using robotic arms with 3D high-definition visualisation and articulated instruments.¹ Da Vinci systems are in use at hospitals across Dubai,² Abu Dhabi,³ and Sharjah.⁴ Reported robotic-surgery volumes at American Hospital Dubai and Sheikh Shakhboub Medical City alone exceed 4,000 procedures,^{5,6} while robotic-assisted cases account for up to 20% of all surgeries at American Hospital Dubai.⁷ American Hospital Dubai also operates the region's first private robotic surgery centre of excellence accredited by the US-based Surgical Review Corporation and launched a structured robotic-surgery programme in 2024 to train 20 Emirati surgeons.⁸

WHY IT MATTERS

Minimally invasive surgery in anatomically constrained spaces demands a level of dexterity and visualisation that conventional instruments cannot reliably deliver. Laparoscopic surgery, the standard approach for minimally invasive procedures, operates through small incisions using a camera and long instruments rather than open access. While this reduces patient trauma and recovery time, it imposes well-documented constraints on the surgeon: two-dimensional depth perception, poor hand-eye coordination, limited range of motion, steep learning curves, and reduced haptic feedback that leaves hand tremors and involuntary movements uncorrected.⁹

Robotic surgery is designed to address some of these technical limitations, particularly in procedures requiring precise manipulation in confined anatomical spaces. In urology, systematic evidence shows that robot-assisted procedures can offer benefits including reduced blood loss and shorter hospital stays for selected operations.¹⁰ In gynaecology, evidence indicates more procedure-specific benefits; for example, robotic hysterectomy has been associated with modestly shorter hospital stays, although differences in blood loss and complications are not consistently demonstrated.¹¹

HOW THE TECHNOLOGY WORKS

The da Vinci platform, manufactured by Intuitive Surgical, a US-based company, is a robotic surgical system designed to address the core limitations of conventional laparoscopy. The surgeon operates from a console with every movement translated directly into instrument motion inside the patient. The system is not autonomous, and the surgeon retains full clinical control throughout.¹² Three generations of the platform are now in clinical use across the UAE. The da Vinci Xi, the most widely deployed, combines wristed instruments, 3D high-definition visualisation, and intuitive motion control through an overhead arm architecture that enables anatomical access from virtually any position.¹³

The American Hospital Dubai introduced the da Vinci SP (Single Port) system in September 2025, becoming the first hospital in the Middle East, Africa and Eastern Europe to employ the platform. The system enables procedures through a single incision or natural orifice.¹⁴ American Hospital Dubai added the da Vinci 5 system in early 2026.¹⁵ Its Force Feedback technology enables surgeons to sense pushing and pulling forces at the instrument tip and has demonstrated up to 43% less force applied to tissue in preclinical studies.¹⁶

IMPACT AND RESULTS

American Hospital Dubai has performed around 3,000 multi-specialty robotic surgeries and operates the da Vinci Xi, SP and da Vinci 5 platforms. Its Centre of Excellence in Robotic Surgery is the first private healthcare facility in the region accredited by the US-based Surgical Review Corporation.¹⁷ In 2024, the hospital launched a structured programme to train 20 Emirati surgeons in robotic surgery.¹⁸

Cleveland Clinic Abu Dhabi has used robotic surgery for complex procedures since 2015.¹⁹ In 2024, the programme performed more than 400 robotic surgical cases, including the first robotic mastectomy in the UAE and the region.²⁰

Dubai Health launched its robotic surgery programme at Dubai Hospital in the second half of 2022 and, by October 2025, had completed more than 145 surgeries. It reported reductions in blood loss exceeding 90% and hospital stays falling from 2 weeks to less than 3 days.²¹ Burjeel Medical City grew from one da Vinci-certified robotic surgeon when its programme launched in August 2023 to more than 15 certified surgeons and more than 470 robotic surgeries by January 2025.²² Mediclinic City Hospital has been recognised as the first regional reference centre for case observation in the UAE for da Vinci robotic surgery, supporting surgeon training through case observation.²³

Sheikh Shakhbout Medical City also operates da Vinci technology as part of a robotic surgery programme that has completed more than 1,000 robotic-assisted procedures,²⁴ while Al Qassimi Hospital in Sharjah has performed da Vinci robotic surgeries through the federal robotic surgery programme.²⁵ Taken together, these deployments demonstrate the use of robotic surgery across multiple public and private healthcare institutions in the UAE.



WHAT'S NEXT

The UAE's robotic surgery ecosystem now includes multiple institutional training pathways. American Hospital Dubai runs a structured robotic-surgery training programme for Emirati surgeons,²⁶ while Mediclinic City Hospital serves as a regional reference centre for da Vinci case observation.²⁷ Each institution is building capability within its own system; a next step would be to connect these efforts through more consistent credentialing across public and private systems, shared outcomes data, and training pipelines capable of sustaining quality as surgical volumes grow.

This direction is consistent with existing health-sector policy. The Dubai Health Strategy 2021 identifies smart healthcare and governance as two of its four core approaches,²⁸ while the Emirates Health Services Innovation Strategy 2023–2026 emphasises digital health practices, pilot projects, strategic partnerships and capability development.²⁹

Looking further ahead, Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) and Cleveland Clinic Abu Dhabi are researching AI-powered intrabody navigation, in which robotic systems autonomously guide instruments through the body, and autonomous ultrasound scanning, pointing to a next generation of surgical robotics developed from UAE-based R&D.³⁰

“Robotic surgeries at Dubai Health represent a significant step forward in the use of smart technologies in the operating room. This approach has increased surgical precision, strengthened patient safety, and led to improved outcomes,” said Dr Yaser AlSaeedi, Head of Urology and Director of the Robotic Surgery Programme at Dubai Health.³¹

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