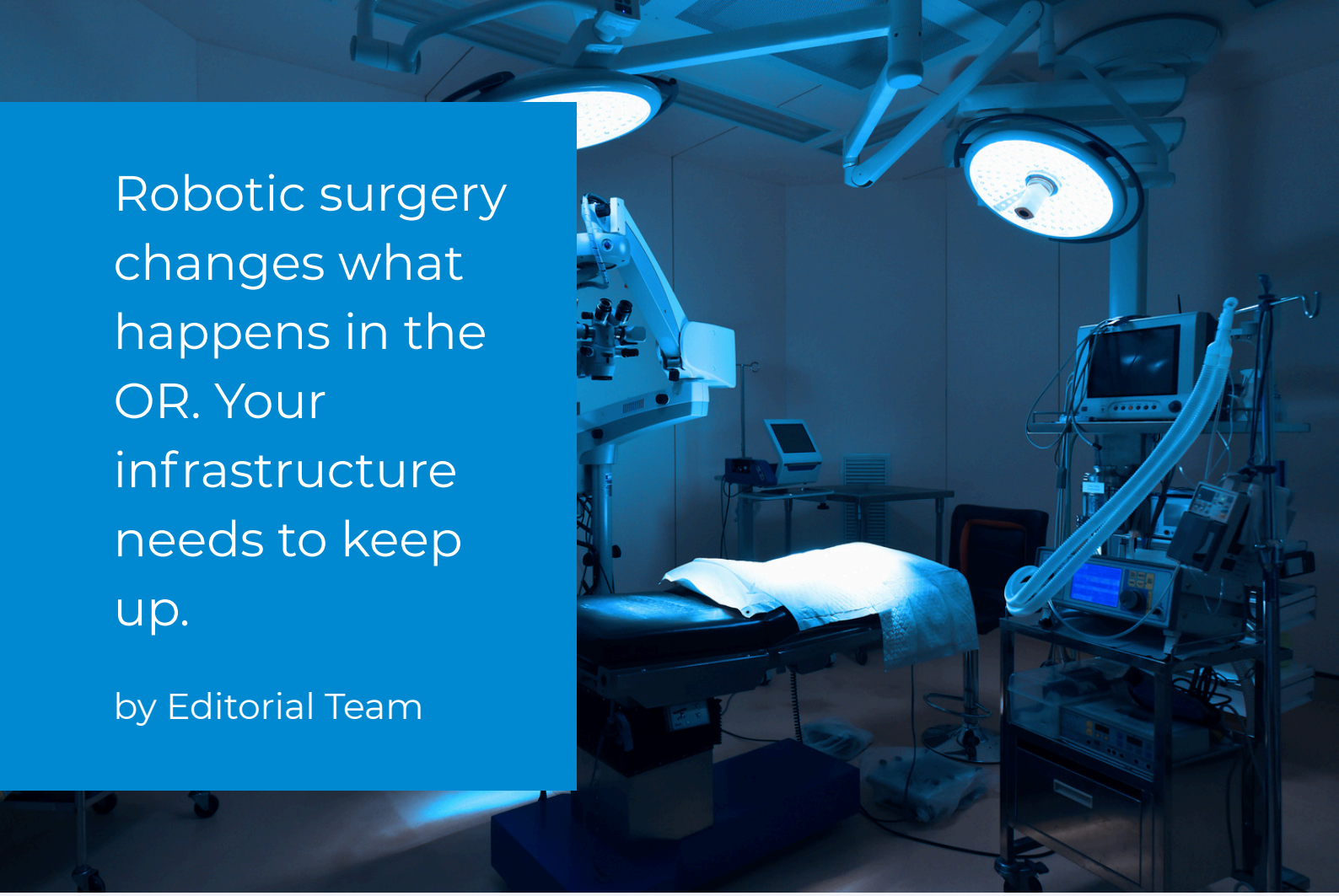

Robotic surgery changes what happens in the OR. Your infrastructure needs to keep up.

by Editorial Team

A practical guide to how robotic surgery works, what the room around it needs, and why OR integration isn't optional.

The adoption of robotic surgical systems in India is accelerating rapidly. Each is a significant capital investment. What gets less attention is what the room around the robot needs to look like — and what happens when that planning is skipped.

How robotic surgery differs from conventional approaches

In open surgery, the surgeon stands at the table with direct sight of the operative field. In laparoscopic surgery, they work through instruments while watching a 2D monitor. In robotic surgery, the surgeon sits at a console — physically removed from the patient — operating through robotic arms with a 3D, high-magnification view from a camera inside the patient. The arms filter hand tremor, scale movements, and offer wrist articulation that human anatomy doesn't allow.

The difference that matters most for OR planning: only the surgeon has that view. The console is private and immersive. Everyone else in the room is working blind unless the room is explicitly set up otherwise.

	OPEN SURGERY	LAPAROSCOPIC	ROBOTIC
Surgeon position	At table, direct	Standing, instruments	Console — separate from patient
Surgical view	Direct, naked eye (2D)	Camera feed, 2D	3D, 10–15× magnified, console only
Rest of team sees	The operative site	Shared 2D monitor	Nothing — without integration
Incision	Large (10–30 cm)	Small ports (5–12 mm)	Small ports (8–12 mm)
OR Integration	Useful	Important	**Essential**

What a robotic OR needs — beyond the robot itself

Equipment at the table

- Patient cart (robotic arms): Docks to the patient and holds instruments. Larger footprint than a standard trolley — room clearances must account for it.
- Surgeon console: Positioned away from the table, sometimes in a separate area. The surgeon operates from here, not bedside.
- Vision cart: Houses the camera control unit, light source, and signal processing. This is the video source that needs to be integrated into the room.

- Robotic instruments: Single-use or limited-use counters. Tracked separately from conventional surgical instruments.

Infrastructure the room must provide

- Power: Dedicated circuits for patient cart and vision cart. Confirm specifications with the robot vendor before electrical fit-out.
- Space: Robotic ORs need more floor area than standard laparoscopic rooms — patient cart, table, anaesthesia machine, and team positions need simultaneous clearance.
- Boom and ceiling infrastructure: Display booms positioned for assistant and anaesthetist visibility, not only the scrub position.
- AV matrix and patch panels: The vision cart outputs video. An AV distribution system is required to route it to room displays.
- Network: For multi-room or cross-site transmission, structured cabling or fibre between ORs and the hospital network.

Why OR integration is essential — not optional

In open and laparoscopic surgery, the team has a shared visual reference. In robotic surgery, that reference exists only inside the console. Without an integration system routing the feed to a room display:

- The surgical assistant cannot anticipate instrument changes — they can’t see what the surgeon sees
- The anaesthetist has no visual reference for intraoperative events near major vessels
- The scrub nurse works entirely from verbal cues
- There is no shared record of what was on screen if something unexpected happens

WHAT CREA DOES HERE

CREA connects to the robotic vision cart output and routes the surgical feed to a large-format OR display — typically 55" or larger — positioned for the whole team. The surgeon stays at the console. The room stays informed.

Transmission: moving the view beyond the OR

Once the robotic feed is in the AV system, it can go further. CREA's Unified Communications Platform (UCP) handles this distribution — across ORs, buildings, campuses, and lecture halls.

CREA — OR Integration Captures video from surgical cameras, scopes, and imaging systems inside the OR. Distributes and displays them on room monitors for the whole team.	**CREA — Unified Communications Platform** Extends that same video beyond the OR — to other rooms, buildings, campuses, or a lecture hall. Adds two-way audio, access control, and recording.

Inter-OR: Peer Observation

A surgeon mid-case with an unusual finding shares the live feed with a colleague in an adjacent OR. The colleague sees exactly what the surgeon sees — no phone call, no one leaving their room. This runs over the hospital's internal network with no disruption to either team.

Video Consultation with Remote Specialists

A specialist at a different campus views the live feed and gives a second read in real time. The conversation happens while the patient is on the table, when it can still affect the outcome — not in a debrief three hours later.

Live Streaming for Medical Education

For teaching hospitals with an attached medical college, the robotic feed streams live to a lecture hall. Students see the 3D magnified surgical view with faculty commentary. The OR team is undisturbed. A post-case debrief from memory is not the same.

3D DISPLAY PLANNING
If your robotic system outputs a 3D feed, the assistant's display must be 3D-compatible. A standard 2D monitor showing a 3D signal produces a blurred, doubled image. Confirm display compatibility with your vendor before specifying room monitors. For streaming to lecture halls or remote endpoints, a 2D feed is typically sufficient.

What happens when the infrastructure isn't there

The case for getting OR infrastructure right is not abstract.

CASE REFERENCE — BHU TRAUMA CENTRE, VARANASI, 2025
A 71-year-old admitted for spinal tumour surgery died after the wrong procedure was performed. Two patients shared the same first name — one in neurosurgery, one in orthopaedics for a leg fracture. The neurosurgery patient was taken for the orthopaedic procedure. This was a patient identification failure — no malfunction, no intent to harm. A digital pre-operative checklist displayed on the OR's main screen, with patient identity verified at room admission, creates the verification layer that catches this class of error before incision.

This is not a robotic-surgery-specific problem. But in a robotic OR — where the surgeon is at a console and the team has limited situational awareness without integration — the cost of that gap is higher.

How medical students benefit from integration

Robotic surgery is becoming the standard of care for a growing list of procedures. Students who train without exposure to it enter practice at a disadvantage.

A robotic OR cannot accommodate observers the way a conventional OR can. Through CREA UCP, the live feed streams to a seminar room or lecture hall in the attached college. Students see what the surgeon sees. The OR is undisturbed. This is the practical answer to making robotic surgery part of the curriculum.

If your robot moves between ORs, plan for that now

Many hospitals share one robot across two or three ORs. Each room that receives the robot needs its own input patch panel — a fixed wall connection point for the vision cart cables. Without it, teams run long cable lengths across the floor with each transfer, adding 20–30 minutes and creating trip hazards.

- Identify which ORs will receive the robot and specify patch panels during initial fit-out — retrofitting later means penetrating finished walls
- Route each panel to the AV matrix so signal distribution is consistent across rooms
- Test the full signal path — vision cart to panel to display — before the first live case in each room

Integration supports the transformation robotic surgery promises

Robotic surgery's clinical advantages — precision, reduced blood loss, faster recovery — depend on the surgeon. But they also depend on the team around the surgeon being able to do their job. A scrub nurse who can see the field anticipates instrument changes. An anaesthetist with visual context manages the patient better. A resident in the next room watching live is learning. A remote specialist viewing the feed is actually useful.

The robot changes what happens on the table. Integration changes what the whole institution can do with it.

Planning a robotic programme or upgrading an existing OR? Reach out to Esbee Dynamed today!

Esbee Dynamed specialises in OR integration and connected surgical instrument tracking solutions. To learn how we can support your operating theatre, contact our team.

Write to us at info@esbeedynamed.com for more info.