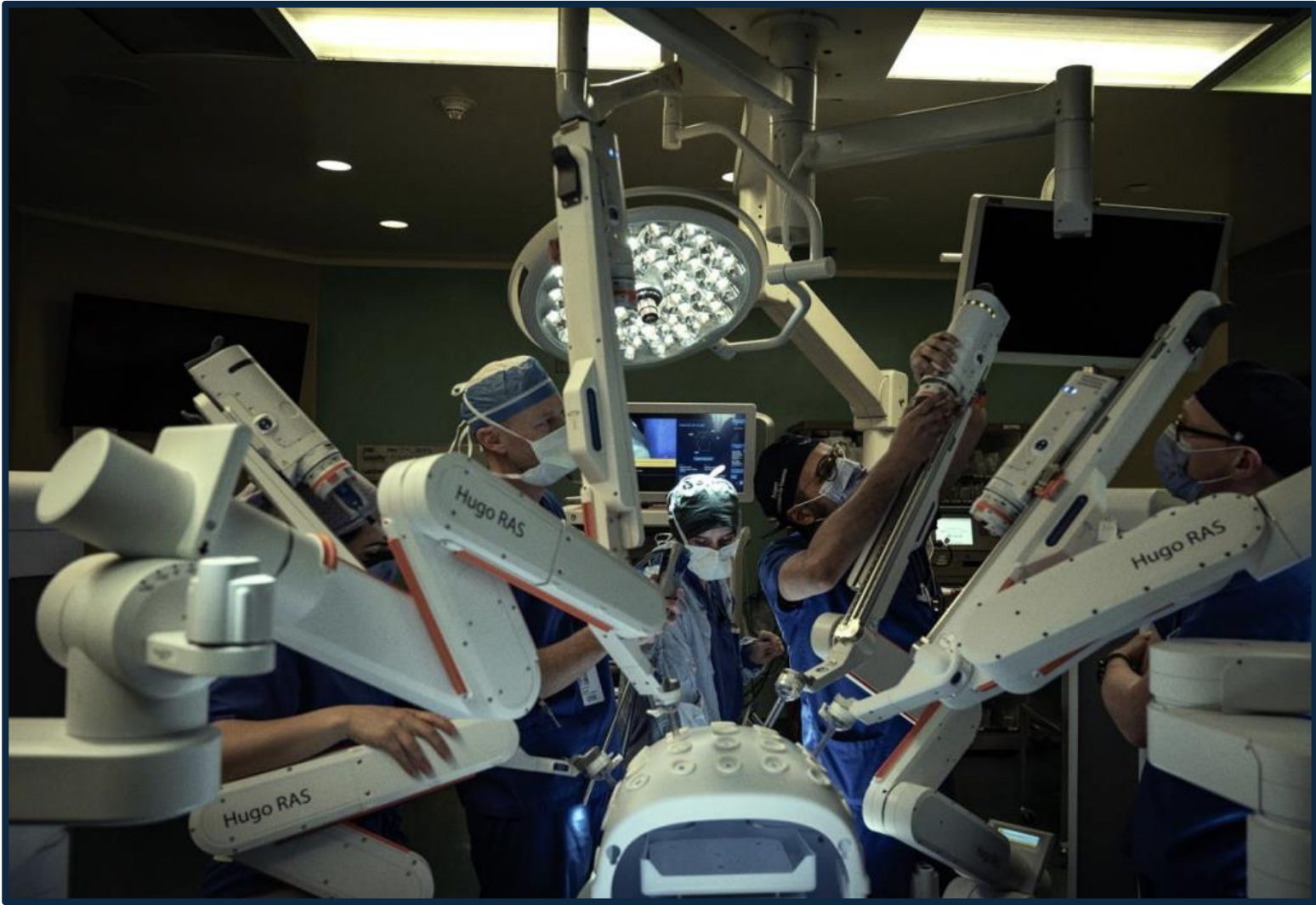
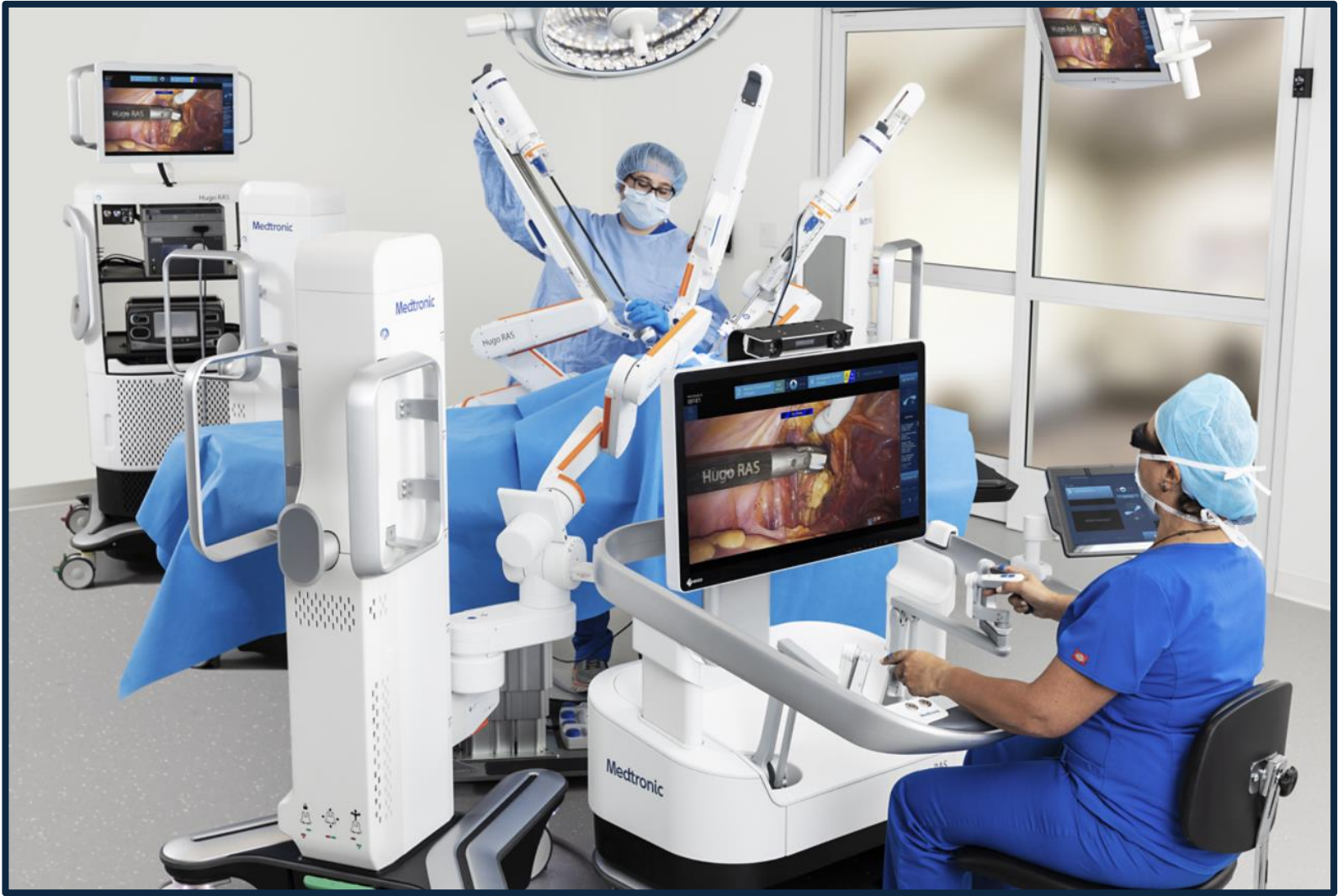


Comparative Outcomes of the Hugo™ and Da Vinci Xi Robotic Platforms in Oncologic Colorectal Surgery: A First North American Experience

Megan Watts, Raniya Quereshy, Haytham Msallak, Sami Chadi, Fayez Quereshy, Karineh Kazazian

Background

- A novel platform is the Medtronic Hugo™ Robotic-Assisted Surgery (RAS) system, which received approval for clinical use in North America in late 2022.
- Its first clinical application in colorectal surgery at the University Health Network (UHN) in Toronto, Canada, occurred in late 2023.
- The introduction of this system aimed to offer an alternative platform with a more ergonomic and customizable working environment for surgeons.



Methods

- Retrospective review of 68 patients who underwent robotic colorectal surgery between June 2023 and November 2025 at Toronto General Hospital
- All operations performed by 3 robotic trained surgeons.
- Dual docking setup for both pelvic access and splenic flexure mobilization.

Table 1: Clinicodemographic Characteristics

Variables	Hugo TM Ras (N=14)	Da Vinci Xi (N=54)	p-Value
Age, median	51 (39-82)	56.5 (35-85)	
Sex Female	7 (50%)	22 (40.7%)	0.56
BMI, median (kg/m²)	26.25 (19.5 - 44.3)	26.49 (18.44 - 42.87)	
Current smoker	2 (14.2%)	6 (11.1%)	0.66
Diabetes	2 (14.2%)	4 (7.4%)	0.60
Hypertension	6 (42.8%)	18 (33.3%)	0.54
ASA, median	3	3	
Prior abdominal surgery	9 (64%)	25 (46%)	0.37
Surgical indication			
Rectal Cancer	9 (69%)	46 (85.1%)	
Type of Surgery			0.18
Low anterior resection	9 (69%)	26 (48.1%)	
Abdominoperineal resection	3 (21.4%)	19 (35.1%)	

Table 2: Short Term Operative Outcomes

	Hugo TM Ras (N=14)	Da Vinci Xi (N=54)	p-Value
Duration of Surgery (mins), median	350.5 (225-747)	392.5 (171-877)	0.24
Intra-Op Complications	0	2	1.00
Conversion to open or lap	0	1	1.00
Post-op Complications	5 (31%)	14 (25.9%)	0.70
Clavien-Dindo			
II	3	5	
III	0	5	
IV	1	1	
Hospital Duration, median (days)	6.5 (4-17)	5 (0-48)	0.20
Anastomotic Leak	1 (7.1%)	5 (9.2%)	0.70
Readmission	3 (21.4%)	5 (9.2%)	0.30
Return to OR	1 (7.1%)	5 (9.2%)	1.00
Return to ED	1 (7.1%)	14 (25.9%)	1.00

Table 3: Oncologic Outcomes

Variables	Hugo TM Ras (N=11)	Da Vinci Xi (N=47)	p-Value
Harvested lymph nodes, median	12 (6-27)	16 (1-43)	
TME complete/ nearly complete	11 (100%)	44 (93.7%)	1.00
Margin Status			1.00
Negative	11 (100%)	44 (93.7%)	
Positive	0	3 (6.3%)	
LVI	6 (54.5%)	17 (36.1%)	0.32
Tumour Stages			0.63
T0	2 (18.1%)	6 (12.7%)	
T1	0	4 (8.5%)	
T2	2 (18.1%)	7 (14.8%)	
T3	6 (54.4%)	23 (48.9%)	
T4	0	6 (12.7%)	
Nodal Stage			0.26
N0	6 (54.4%)	29 (61.7%)	
N1	5 (45.5%)	12 (25.5%)	
N2	0	6 (12.7%)	

Results

- Of the 68 patients, 54 underwent surgery with the Da Vinci Xi system and 14 with the Hugo™ RAS.
- One conversion to laparoscopy occurred in the Da Vinci Xi group; no conversions occurred with Hugo™.
- Operative duration, length of stay, and complication rates (Clavien-Dindo) did not differ significantly between groups.
- All Hugo™ cases achieved R0 resection and complete/near-complete TME.

Discussion

- Largest North American case series of colorectal surgery performed with the Hugo™ RAS system, demonstrating successful procedural completion without conversion and supporting its safe integration into colorectal surgical practice.
- Surgeons transitioned successfully from the Da Vinci platform, highlighting transferability of robotic surgical skills despite no prior clinical experience with Hugo™ RAS.

Conclusion

- Our experience supports the technical feasibility, oncologic effectiveness, and applicability of the Medtronic Hugo™ Robotic-Assisted Surgery system used for colorectal procedures.
- It is shown to be an effective tool to achieve minimally invasive high-quality surgery and benefits in multi visceral disease involvement.
- The introduction of this new system represents an important opportunity to accelerate the evolution of robotic-assisted surgery.