Robotic Inguinal Hernia Repair for the New Robotic Surgeon—Safety and Early Outcomes in a Large Academic Medical Center

Daniel Tagerman, MD,[1,2] Michelle Nessen, MD,[1,3] Diego L. Lima, MD,1 Ryan Chin, MD,[1,4] Nawaf Hindosh, MD,[1] Zachary Solomon, MD,[2] Xavier Pereira, MD,[5] Prashanth Sreeramoju, MD,[1] and Flavio Malcher, MD[5]

[1]General Surgery, Montefiore Medical Center, Bronx, New York, USA. [2]General Surgery, Saint Francis Hospital, Hartford, Connecticut, USA. [3]General Surgery, Tufts University, Boston, Massachusetts, USA. [4]General Surgery, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA. [5]General Surgery, NYU Langone Medical Center, New York, New York, USA.

Introduction

- Inguinal hernia repair is one of the most frequently performed operations in the United States, with a growing number performed via minimally invasive techniques using robotic-assisted surgery.
- As the robotic platform has become more widely available, its use in both simple and complex inguinal hernia repair has expanded.
- Surgical technique for uncomplicated robotic inguinal hernia repair (RIHR) is standardized and reproducible. Utilization of the robotic platform contributes to improved visualization, dexterity, and ergonomics. Prior studies have reported low rates of complications with robotic repair, albeit with increased operative time and cost when compared with the laparoscopic approach.
- RIHR may be a useful tool for the less experienced general surgeon to gain robotic skills and confidence.

Primary and Secondary Aims

The **primary objective** of this study is to evaluate outcomes of all unilateral and bilateral RIHRs in an academic health system.

The **secondary objective** was to compare the outcomes between experienced robotic hernia surgeons and those with limited experience on the platform.

It's hypothesized that RIHR is safe and feasible in a diverse, complex patient population for both the advanced and novice robotic surgeon.

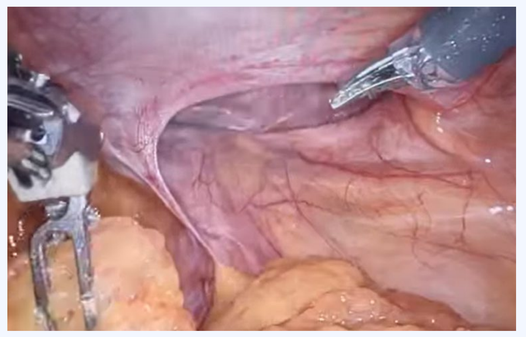
Google: Inguinal hernia repair, DaVinci Robot

Study Design

A retrospective chart review of all RIHRs performed between July 2016 and September 2021 at the Montefiore Medical Center (MMC) was performed.

Patients who underwent concurrent repair of ventral abdominal wall hernias were excluded from the analysis.

Baseline characteristics and outcomes between surgeons with >5 years of robotic experience (ERS) were compared with those with <5 years (NRS).



Results

A total of 297 cases of RIHR were performed. Mean age was 58.3 years (standard deviation [SD] 15.3) with a strong male predominance (88.2%). Forty-four patients (14.8%) had a previous repair, 87 (29.3%) underwent bilateral repair, and mean body mass index was 27.7 (SD 4.8). Sixty cases were performed by one ERS surgeon, and the remaining 237 cases were performed by eight NRS. ERS had more recurrent hernias (38.3% versus 8.9%, P < .001), previous abdominal surgery (48% versus 25%, P < .001), and more often had bilateral inguinal hernias (42% versus 26%, P = .018). Incarcerated hernias were more commonly repaired by ERS compared with NRS (35% versus 8.9%, P < .001). Mean operative time was higher for ERS (132.8 minutes versus 106.2, P < .001). ERS was associated with more intraoperative complications (10% versus 0%, P < .001) as well as 30-day complications (6.7% versus 1.7%, P = .033); however, these were of minimal clinical significance. While ERS had a higher rate of radiographical recurrence (6.7% versus 3.0%, P < .001) after 30 days, there was no difference in clinical concern for recurrence.

TABLE 4. LONG-TERM OUTCOMES

	Total	*Experienced robotic surgeon long term*			*Surgeon growth long term*		
	n *(%)*	*No* n *(%)*	*Yes* n *(%)*	P	*16–18* n *(%)*	*19–21* n *(%)*	P
Abdominal imaging >30 days	69 (23.2)	44 (18.6)	25 (41.7)	<.001	13 (15.7)	31 (20.1)	.4
Radiographical recurrence	11 (3.7)	7 (3.0)	4 (6.7)	.001	3 (3.6)	4 (2.6)	.38
Long-term follow-up	109 (36.7)	73 (30.8)	36 (60)	<.001	21 (25.3)	52 (33.8)	.18
Recurrence	6 (2.0)	5 (2.1)	1 (1.7)	.83	1 (1.2)	4 (2.6)	.48
Most recent MD/NP/PA	286 (96.3)	227 (95.8)	59 (98.3)	.35	80 (96.4)	147 (95.4)	.73
Concern for hernia	8 (2.7)	6 (2.7)	2 (3.4)	.75	1 (1.3)	5 (3.4)	.33

Conclusions

Our data suggest that robotic-assisted surgery is a safe and versatile approach for unilateral and bilateral inguinal hernia repairs. Intraoperative and early morbidity was of minimal related clinical significance and were largely influenced by preoperative factors and less by the relative robotic experience of the operating surgeon. Surgeons with a variety of experience can safely perform these repairs, gaining the fundamental skill and confidence to expand their practice on the robotic platform to more complex cases. This study was published May 26, 2025, in the Journal of Laparoendoscopic & Advanced Surgical Techniques **PMID : 40415567**