International Surgery Journal
Beg MF et al. Int Surg J. 2025 Nov;12(11):2006-2008
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20253465

Case Report

Robotic-assisted TAPP repair of supraumbilical hernia using the CMR™ Versius robotic system without composite mesh: a case report

Mirza Faraz Beg*, Anirudh Agrawal, Ved Prakash, Abhisekh Sharma

Department of General Surgery, AIMS, Faridabad, Haryana, India

Received: 05 August 2025
Revised: 10 September 2025
Accepted: 23 September 2025

***Correspondence:**
Dr. Mirza Faraz Beg,
E-mail: cambrianhall1@gmail.com

ABSTRACT

Robotic surgery offers improved visualization, ergonomics and instrument dexterity. The CMR™ Versius robotic system presents a promising alternative to traditional platforms for hernia surgery. We report a robotic-assisted TAPP repair for a supraumbilical hernia using the Versius system. Surgical workflow, port placement, mesh deployment and docking time were documented. The surgery was completed without complications using a self-fixating polypropylene mesh, avoiding costly composite materials. The patient recovered uneventfully and was discharged on the second postoperative day. Robotic-assisted TAPP repair using the CMR™ Versius platform is safe, ergonomic and cost-effective. Avoiding fixation devices and composite mesh offers economic advantages. The system holds promise for routine abdominal wall hernia repairs.

Keywords: Abdominal hernia, CMR, Robotic, TAPP

INTRODUCTION

Supraumbilical hernias, a subtype of ventral hernias, pose surgical challenges due to their anatomical location and limited working space. Laparoscopic TAPP hernioplasty is established but requires high precision. Robotic systems such as the da Vinci® have offered ergonomic and technical advantages.[1,2]Recently, the CMR™ Versius robotic platform has emerged with several enhancements: open-console design, modular arms and laparoscopic-like port placements.[1] These innovations support improved ergonomics, facilitate team communication and reduce fatigue while maintaining surgical precision.[1,2] This case illustrates the use of the CMR™ Versius robotic system in TAPP repair of a supraumbilical hernia and evaluates its efficacy and cost-effectiveness, particularly when composite meshes are avoided.[1,2]

CASE REPORT

A 45 years old male presented with a reducible supraumbilical swelling of 3 cm diameter for six months. There were intermittent discomfort episodes but no signs of obstruction or incarceration. Ultrasound revealed a defect of 2.8 cm containing omental fat. The patient had no major comorbidities and opted for robotic-assisted TAPP repair.

Preoperative preparation

The patient was evaluated clinically and radiologically. Pre-anesthetic assessment was normal. Informed consent for robotic surgery was obtained.

Positioning and setup

The patient was placed supine with a 15° reverse Trendelenburg tilt. Pneumoperitoneum was achieved using a Veress needle technique and a 12 mm camera port was placed supraumbilically.

Port configuration

Three 5 mm ports were inserted laterally in a fan-shaped configuration, with ≥8 cm spacing to avoid robotic arm

interference. Robotic arms were docked using the Versius laser-guided system (Figure 2).

Surgical steps

The surgical steps involved hernia sac reduction and margin dissection, followed by the development of a preperitoneal pocket. A 15×10 cm self-fixating polypropylene mesh was introduced and placed over the defect without additional fixation. Finally, the peritoneal flap was closed using a barbed 2-0 suture.

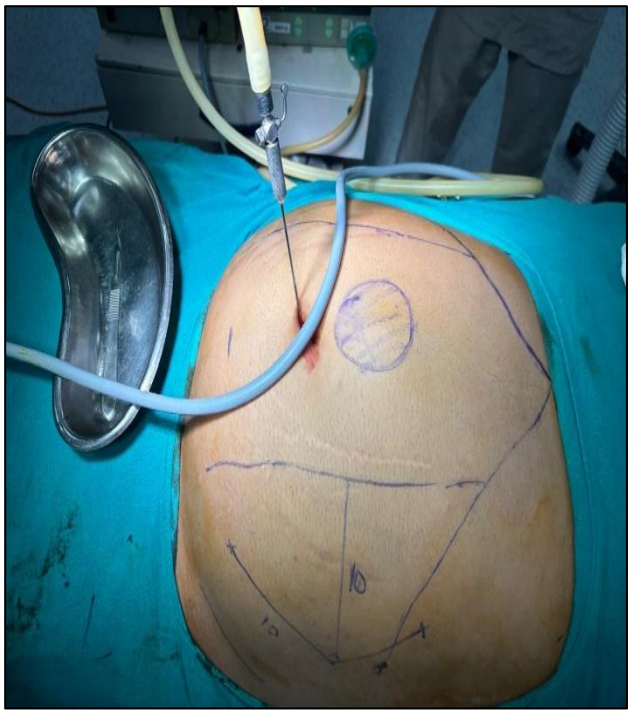

Figure 1: Preoperative supraumbilical swelling.

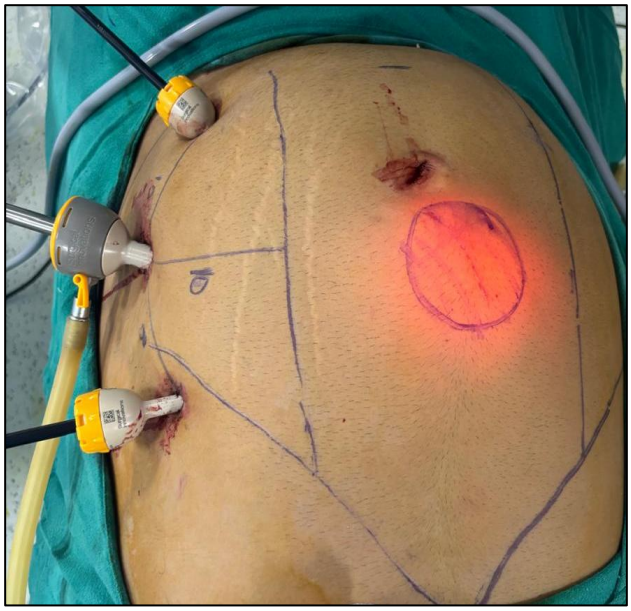

Figure 2: Robotic port configuration and docking.

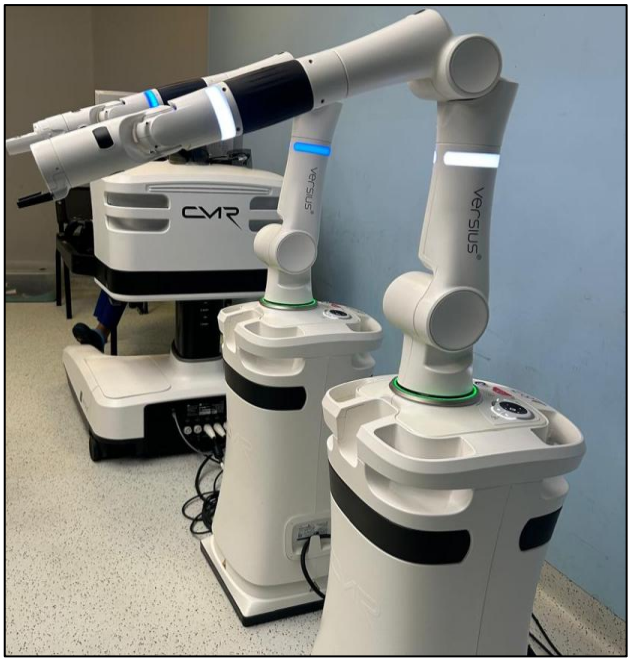

Figure 3: Modular Versius robotic system setup.

Outcomes

Operative time: 110 minutes (docking time: 12 min) with Blood loss: <50 ml. The patient has No intraoperative complications; Oral intake was resumed the same day and ambulation within 12 hours patient was Discharged on postoperative day 2 with No complications at 2-week follow-up.

DISCUSSION

Robotic platforms are increasingly integrated into abdominal wall hernia repair due to the limitations of laparoscopy in complex cases.[3-5] Supraumbilical hernias, while smaller than incisional hernias, are located in a confined space where robotic articulation is advantageous. The Versius system offers flexibility due to its independent bedside units and open-console design, improving team coordination.[1,2] Modular setup (Figure 3) enables port positioning tailored to patient anatomy. Compared to da Vinci®, Versius is more cost-effective and portable, with reduced footprint and maintenance needs.[1,2]

Cost-effectiveness is a significant factor. Traditional laparoscopic IPOM uses expensive composite mesh to prevent visceral adhesion.[6,7] However, in TAPP, the mesh lies in the preperitoneal space, allowing the use of affordable monolayer polypropylene mesh. In this case, the use of a self-fixating non-composite polypropylene mesh not only minimized the cost but also maintained optimal clinical outcomes.[3,6] Avoidance of composite mesh, which is often necessary in intraperitoneal placements due to adhesion risks, is a major advantage of the TAPP approach. Self-fixating meshes eliminate the need for tackers or glue, further reducing expenses and

postoperative discomfort. Ergonomically, Versius addresses surgeon fatigue with improved positioning and instrument control, especially during prolonged surgeries.[1,2,10] Although it lacks integrated advanced energy devices, standard monopolar/bipolar tools suffice. Learning curve studies suggest operative times with Versius reduce with experience, becoming comparable to laparoscopy.[5,8] The enhanced view, wristed instruments and communication-friendly design make it ideal for teaching hospitals and cost-sensitive environments.

CONCLUSION

Robotic-assisted TAPP repair of supraumbilical hernias using the Versius system is a safe, precise and economically viable alternative to both traditional laparoscopy and robotic IPOM repairs. The ability to avoid composite mesh and fixation devices provides significant cost savings without compromising outcomes. The Versius platform's modularity, compact footprint and ergonomic benefits support its broader adoption, especially in general surgical practice in resource-limited settings.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Alkatout I, Mettler L, Maass N, Noé G. The Versius Robotic Surgical System: An Overview of its Design, Versatility and Potential in Minimal Access Surgery. J Clin Med. 2023;12(4):1056.
2. Gueli Alletti S, Fanfani F, Corrado G. From Da Vinci to Versius: New Robotic Platforms in Gynecology. J Pers Med. 2022;12(9):1425.
3. Arcerito M, Cheng K, Mohamed E. Self-fixating mesh in robotic TAPP repair: Early outcomes and cost analysis. Hernia. 2020;24(2):267–73.
4. Caruso F, Oliva F, Castiglione G. Robotic Versus Laparoscopic Ventral Hernia Repair: A Meta-analysis. Hernia. 2022;26(3):663–72.
5. Prete FP, Pezzolla A, Gurrado A. Robotic-assisted repair of abdominal wall defects: A systematic review and meta-analysis of the literature. World J Surg. 2018;42(12):3766–74.
6. Kudsi OY, mccarty JC, Paluvoi N, Mabardy AS. Robotic transabdominal preperitoneal repair of ventral hernias: early experience and outcomes. Surg Endosc. 2021;35(1):86–95.
7. Chen DC, Renton DB, Patel VM. Robotic versus laparoscopic ventral hernia repair: a meta-analysis of randomized controlled trials. Surg Endosc. 2023;37(5):3251–60.
8. Petro CC, Carbonell AM, Warren JA. Robotic hernia surgery: adoption and outcomes in a nationwide registry. Hernia. 2022;26(6):1351–9.
9. Belyansky I, Tsirline VB, Klima DA. Prospective, long-term study of quality of life in patients undergoing ventral hernia repair. Ann Surg. 2019;270(2):302–9.
10. Köckerling F, Lammers B. Robotic-assisted abdominal wall repair: review of the literature and current recommendations. Hernia. 2020;24(5):905–14.
11. Prabhu AS, Carbonell A, Hope W. Robotic repair of ventral hernias: expert consensus from the Americas Hernia Society. Hernia. 2021;25(2):335–48.
12. Abdelaal A, Ramakrishnan P, Kudsi OY. Robotic hernia repair: a comprehensive review. Ann Laparosc Endosc Surg. 2022;7:12.

Cite this article as: Beg MF, Agrawal A, Prakash V, Sharma A. Robotic-assisted TAPP repair of supraumbilical hernia using the CMR™ Versius robotic system without composite mesh: a case report. Int Surg J 2025;12:2006-8.