

The Role of Robotic Surgery in Emergency General Surgery: A 3-Year Experience at a Large Academic Center



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INTRODUCTION

- **Acute care surgery (ACS)** is often one of the highest contributors to patient case volume in surgery departments.
- While robotic surgery has historically been limited to elective surgery and non-ACS specialties, its adoption in ACS has shown promise as a minimally invasive option in emergency general surgery.
- **Objective:** Demonstrate the results of our expanded acute care surgery (ACS) robotic program as a scalable template for institutions nationwide.

METHODS

- **Data Source:** Retrospective cohort study (January 2022 – Q1 2026)
- **Population:** All adult patients undergoing robotic procedures by the acute care surgery service.
- **Primary Outcome:** Procedure volume trends in context of programmatic changes, case mix evolution, program sustainability metrics.

35.5-Fold Quarterly Increase Totaling 1,149 robotic ACS procedures from Q1 2022 to Q1 2026

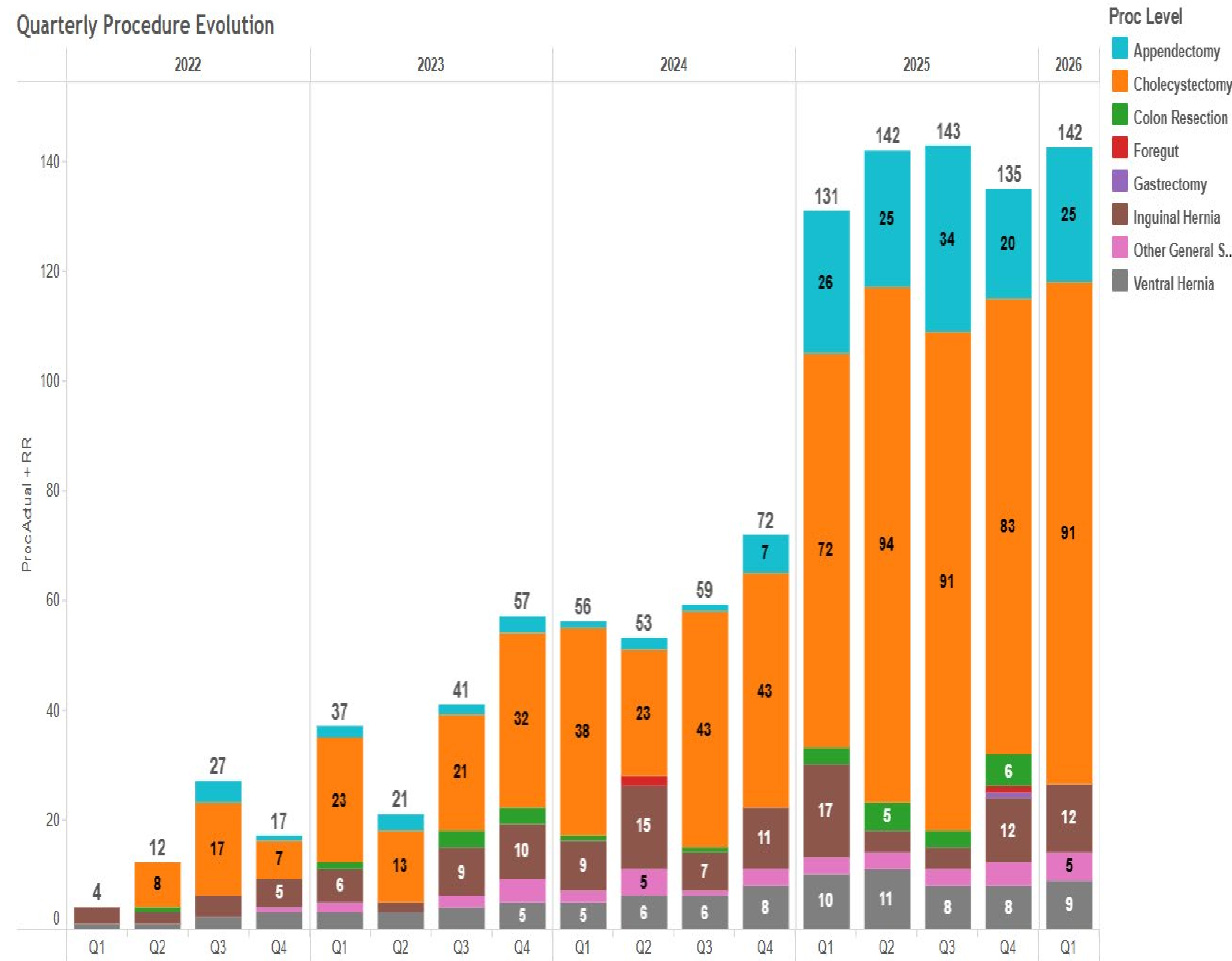


Figure 1. Quarterly robotic ACS case volume by procedure type, Q1 2022 – Q1 2026 (Intuitive Surgical program-level data; total n=1,149 procedures).

Cholecystectomy (59.5%), Inguinal hernia repair (12.2%), and appendectomy (8.0%) represent the most common procedures. All biliary disease combined represents 71.8% of total volume.

RESULTS

Perioperative Outcomes

3.1%

Overall Conversion Rate
(to Laparoscopic/Open)

13.2%

Overall Post-Operative
Complication Rate

4.5 Days

Median Hospital Length
of Stay (LOS)

4.1%

ICU Admission Rate

CONCLUSIONS

- A 35.5-fold robotic ACS volume increase demonstrates the feasibility of large-scale robotic ACS program growth.
- Low conversion rates and short median LOS suggest a robotic-first approach in emergency general surgery may improve patient outcomes.
- Dedicated resources — 24/7 robot access and a daily robotic OR, were the critical drivers of sustainable program expansion.
- These findings provide a roadmap for institutions seeking to move beyond pilot phases toward comprehensive, sustainable robotic emergency surgery capabilities.

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