ROBOTIC-ASSISTED APPENDECTOMY: IS IT SAFE AND EFFECTIVE IN URGENT SETTINGS?

Diaa Soliman, MD; Christopher Mishreky; Nada Dakka; Abdulghafoor Alani; Mohammad Shaear, MD; Akram Alashari, MD, FACS

Central Michigan University, College of Medicine, Saginaw, Michigan

Introduction

- **Laparoscopic** and **open** techniques are standard for urgent general surgery procedures.
- The role of **robotic** assistance in urgent operations is an emerging topic of interest.
- Limited comprehensive data on clinical outcomes, especially in newly established robotic surgery programs.
- **Study Focus:** Evaluate the **safety** and **efficacy** of **robotic-assisted appendectomies** for **acute appendicitis**, including complex cases like **perforated appendicitis** or **appendicitis with an abscess.**

Purpose

- **Aim:** Determine whether **robotic appendectomies** are **safe** and **effective** in **urgent** surgical settings.

Methods

Study Design
Retrospective review

Duration
Data collected from 08/2023 to 09/2024

Location
Saginaw, MI, USA, tertiary hospital

Study Population
46 patients who had urgent robotic-assisted appendectomies for acute appendicitis.

Perioperative Variable
Patient demographics, overall morbidity, serious morbidity, mortality, conversion to open, length of hospital stay, readmissions, and patient satisfaction.

Results

Category	Details
Gender Distribution	55.2% females, 44.8% males
Mean BMI	31.12 (±7.3)
Median Age	44 years (IQR = 34.5–57)
Case Distribution	- 62% acute appendicitis - 28% perforated appendicitis - 10% acute appendicitis with abscess
Intraoperative Drain	8.7% (n = 4 patients, all with perforated appendicitis)
Overall Morbidity	6.5% (n = 3 patients)
Complications	- 2 intrabdominal fluid collections (treated with IR drain) - 1 treated with IV antibiotics
Serious Morbidity	None (Clavien-Dindo 3 or 4)
Median Hospital Stay	1 day (IQR = 0–1.5)
Conversion to Open	1 case (2.2%)
Readmissions	4.3% (n = 2 patients)
Mortality	None

Discussion

- **Safety and Efficacy:** The **low complication rates** (6.5%) and **absence of serious morbidity** (Clavien-Dindo 3 or 4) **highlight** the **safety** of **robotic-assisted appendectomies.** The **short median hospital stay** (1 day) and **low readmission rate** (4.3%) further underscore its efficacy.
- **Complex Cases:** The successful management of **perforated appendicitis** and **abscess** cases with robotic assistance demonstrates its **versatility** in **urgent settings.**
- **Comparison to Laparoscopic and Open Techniques:** While laparoscopic appendectomy remains the gold standard, robotic surgery offers potential advantages, such as **improved dexterity** and **visualization**, particularly in **complex cases.** However, **cost** and **resource utilization** remain considerations.
- **Limitations:** This study is limited by its **retrospective design** and **small sample size.** Larger, prospective studies are needed to validate these findings and assess long-term outcomes.

Conclusion

- This **retrospective analysis** provides an initial evaluation of the **robotic-assisted platform** for managing **acute appendicitis** and its complications.
- **Robotic surgery** for acute appendicitis is **safe** and **effective**, with **low morbidity**, **no mortality**, **minimal conversions to open**, **low readmission rates**, and **short hospital stays.**
- Findings support the **feasibility** of **robotic-assisted appendectomies**, especially in complex cases like perforated appendicitis or abscesses.
- This study may contribute to developing a **framework** for establishing a **registry** for **urgent robotic interventions**, guiding future research and clinical practice.