Role of robotic-assisted surgery in incisional ventral hernia repair (iVHR) over ten years: a review of the real world data from the ACHQC database

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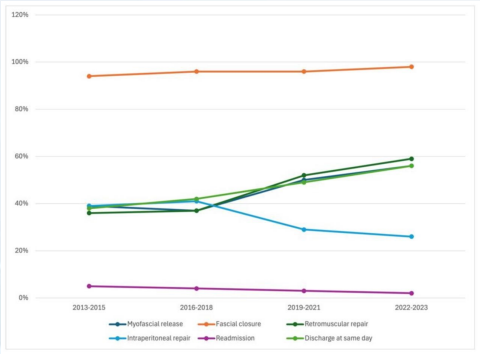
Introduction

- Robotic surgery has gained popularity in the past few years in managing hernias.
- Management of incisional ventral hernia repairs (IVHR) has evolved with a deeper understanding of the anatomy, and novel techniques have been developed.
- The last decade has seen increased usage of robotic platforms in those procedures.
- This study evaluates the trends and short-term outcomes of Robotic IVHR techniques in the United States over ten years.

Methods

- A retrospective review of Robotic IVHR from the Abdominal Core Health Quality Collaborative (ACHQC) database was conducted from January 2013 to December 2023.
- Adult patients who underwent Robotic IVHR and with 30-day follow-ups were included. Univariate and multivariate analyses were performed comparing different timeframes.

Main Findings



5,558 patients were included in 4 different groups (2013-2015 n =259, 2016-2018 n=1396, 2019-2021 n=2278, 2022-2023 n=1625) after applying inclusion and exclusion criteria. There was an increase in median hernia length and width over time (p<0.001). Median Mesh width increased over time from 15 (IQR 12-20) to 17 (IQR 12-25) (p<0.001), along with median mesh length from 19 cm (IQR 15-25) to 25 cm (IQR 15-30) (p<0.001).

- Regarding mesh positioning, retromuscular repair increased from 36% to 59%, preperitoneal decreased from 25% to 20%, and intraperitoneal decreased from 39% to 26% (p<0.001).
- Myofascial release increased from 39% (2013-2015) to 56% (2022-2023) (p<0.001). Fascial closure increased from 94% to 98% over the years (p=0.002) and readmissions decreased over time.
- Same day discharged increased over time (Figure 1) SSI (Surgical Site Infection) and reoperation were similar across groups.
- Logistic regression showed more recent cases (2022-2023) with decreased odds of readmission (OR 0.4, 95% CI 0.2–0.7, p = 0.004), SSO (OR 0.5, 95% CI 0.34–0.7, p = <0.001), seroma (OR 0.5 95% CI 0.4–0.8; p=0.002) and LOS (effect -0.99 (95% CI -1.3–0.7; p<0.001) when compared with old cases (2013-2015).

Conclusion

- There is an increasing trend of using robotic platforms for IVHR cases.
- Robotic-assisted surgery in IVHR has proven safe in managing complex hernia repairs, as evidenced by increased use in larger hernia repairs and more retromuscular repairs and myofascial releases in the last decade.
- Recent cases showed decreased odds of readmission, SSO, seroma, and LOS, which can be translated into increased experience with the robotic platform.

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