Differential Effects of Surgical Approach on the Likelihood of Experiencing Complications Post Ventral Hernia Treatment Across Sexes

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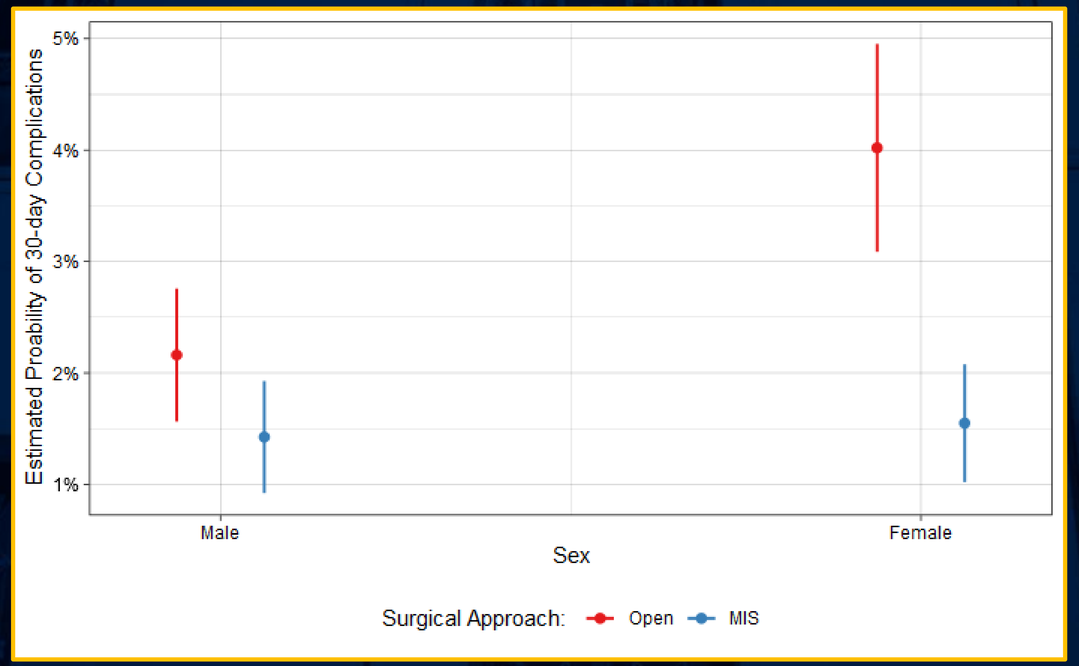
BACKGROUND

- Discrepancies in inclusion rates between sexes in hernia surgery studies, particularly concerning female patients, raise concerns about the equity of surgical outcomes, specifically relating to the patient experience across sexes.
- It is known that female patients are more likely to experience post-operative chronic pain. However, little is understood about how surgical approach may differentially influence the likelihood of complications between sexes.
- This study seeks to shed light on potential improvements for more equitable hernia surgery outcomes by leveraging robust data and analytic methods that account for similarities within, and variabilities across treatment sites.

METHODS

- We utilized data of 11196 adult (18+) patients receiving elective abdominal wall hernia repair between 2020-2023 from Michigan Surgical Quality Collaborative – Core Optimization Hernia Registry (MSQC-COHR), a representative, random sample of adult patients from 70+ hospitals in the state of Michigan.
- We utilized multivariable logistics mixed effect model to measure the adjusted associations between 30-day complications likelihood and the interaction between surgical approach sex, with sites as random intercepts.
- Hernia-specific attributes, comorbidities, patient characteristics, and year of surgery were included as control variables.

Accounting for patient similarities and variabilities across sites, **the risk, as well as the risk difference of short-term complications between open and minimally invasive surgery approaches, was greater for female than for male ventral hernia patients.**



RESULTS

- Multivariable logistics mixed effects regression model with sites as random intercepts revealed the existence of interactive effects between sex and surgical approach with respect to 30-day complications ($p<0.05$).
- Accounting for site level variabilities, cases of female patients who underwent open repair was on average estimated to have 4.02% (95% CI: 3.08%, 4.95%) probability of 30-day complications, whereas it was 1.56% (95% CI: 1.03%-2.09%) for MIS cases. For male patients underwent open repair, it was 2.15% (95% CI: 1.56%-2.75%), and 1.42% (95% CI: 0.92%-1.93%) for MIS cases.
- Effectively, for male patients, cases with open repair were on average 1.51 times as likely as MIS to have 30-day complications, whereas it was 2.58 times for female patients.

DISCUSSIONS

- Accounting for patient similarities and variabilities across sites, we observed differential effects of surgical approach on the likelihood of experiencing post-operative complications across sexes.
- These findings highlight areas for improvement and underscore the need for targeted research, particularly for female patients.
- Additionally, our results emphasize the necessity for further, in-depth investigation into minimally invasive techniques, suggesting that these methods might efficiently and equitably reduce the risk of complications for both sexes.

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