# Optimal Timing for Elective Ventral Hernia Repair to Prevent Intestinal Obstruction Utilizing a Population-Level Model

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## Background & Aims

- Ventral hernia repairs (VHR) are among the most performed surgical procedures worldwide
- Presence of ventral hernia (VH) is a risk factor for intestinal obstruction, along with downstream complications and morbidity.
- Intestinal obstruction was selected as a morbidity which may be mechanically related to the presence of VH.
- Optimal timing of surgical repair is highly debated among the surgical community, with no large-scale definitive data to answer this question.

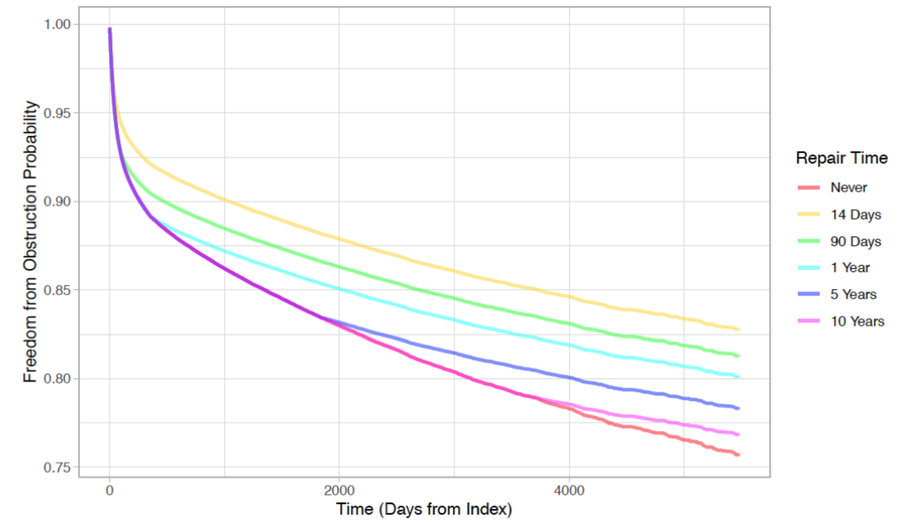
**Our study aims to utilize population-level data to model the ideal timing of ventral hernia repair after diagnosis to minimize the occurrence of intestinal obstruction in those patients awaiting repair.**

## Methods and Materials

- We utilized the TriNetX Research Network, a large global health research network and used the diagnosis of VH as the index event.
- We created a Cox proportional hazards regression model, with surgery status as a time-varying covariate, to assess the impact of surgery on incidence of obstruction.
- We examined the likelihood of freedom from intestinal obstruction over time.
- Using this Cox model, we simulated this patient undergoing surgery within 14 days, 90 days, 1 year, 5 years, 10 years, and never, to model the outcome "freedom from intestinal obstruction."

## Results

Figure. Estimated Freedom from Obstruction, Representative Average Patients, 15 Years Out




- 587,384 patients with VH diagnosis were identified, with a median age of 50 years; 51% were men; 64.3% were white.
- This model estimates that early VHR within 14 days of diagnosis of VH is protective, showing increased freedom from intestinal obstruction.

## Conclusion

**Our study demonstrates that a simulated average patient diagnosed with ventral hernia will benefit from the earliest possible surgical intervention to maximally reduce their risk of intestinal obstruction over time.**

- While delaying repair may allow for the optimization of patient comorbidities, it also increases the risk of complications such as intestinal obstruction.
- Therefore, a balanced approach between optimization and a timely repair should be strongly considered.

## Future Directions

**Investigate additional complications beyond intestinal obstruction, such as hernia recurrence, surgical site infections, and postoperative pain**

**Assess differences in outcomes based on hernia characteristics, such as size and location**

**Evaluate the impact of different timing strategies on hospital resource utilization, including readmission rates and emergency department visits**

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