

Which is More Important in Hernia Repair – Optimization or Timing? An ACHQC Analysis

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Background:

- Hernia repair is among the most frequently performed procedures with outcomes influenced by various modifiable patient risk factors
- Preoperative optimization protocols have been developed to focus on modifiable risk factors prior to repair with focus on areas such as weight loss, smoking abstinence, and glycemic control
- Pursuing optimization inherently delays elective repair and potentially increases the risk of requiring an emergent repair for complications, such as strangulation, obstruction, and/or perforation
- Emergent repairs are associated with higher morbidity compared with elective repairs, yet the impact of optimization and timing is poorly understood

Study Objective: Evaluate the relative impact of preoperative optimization and operative timing on hernia repair outcomes

Methods:

Design: Retrospective cohort study conducted using the Abdominal Core Health Quality Collaborative (ACHQC) international data registry

Population: All adult patients (≥18 years old) undergoing hernia repair between January 2014 and March 2022 with available 30-day follow-up, diabetes, body mass index (BMI), and nicotine data

Patient Groups:

Optimized	- BMI <40kg/m² - AND no nicotine use - AND either non-diabetic or diabetic with HbA1c <7.5
Non-Optimized	- BMI ≥40kg/m² - AND/OR yes nicotine use - AND/OR diabetic with HbA1c ≥7.5

Primary Outcomes: Surgical site (SSIs), recurrence
Secondary Outcomes: Demographics, hernia characteristics, Postoperative outcomes

- Data Analysis:**
- Kruskal-Wallis and Pearson tests were used for unadjusted analysis
 - Binomial logistic regression models evaluated predictors of 30-day SSI and 1-year recurrence, adjusting for optimization, timing, surgical approach, hernia size, age, sex, race, and comorbidities

Results:

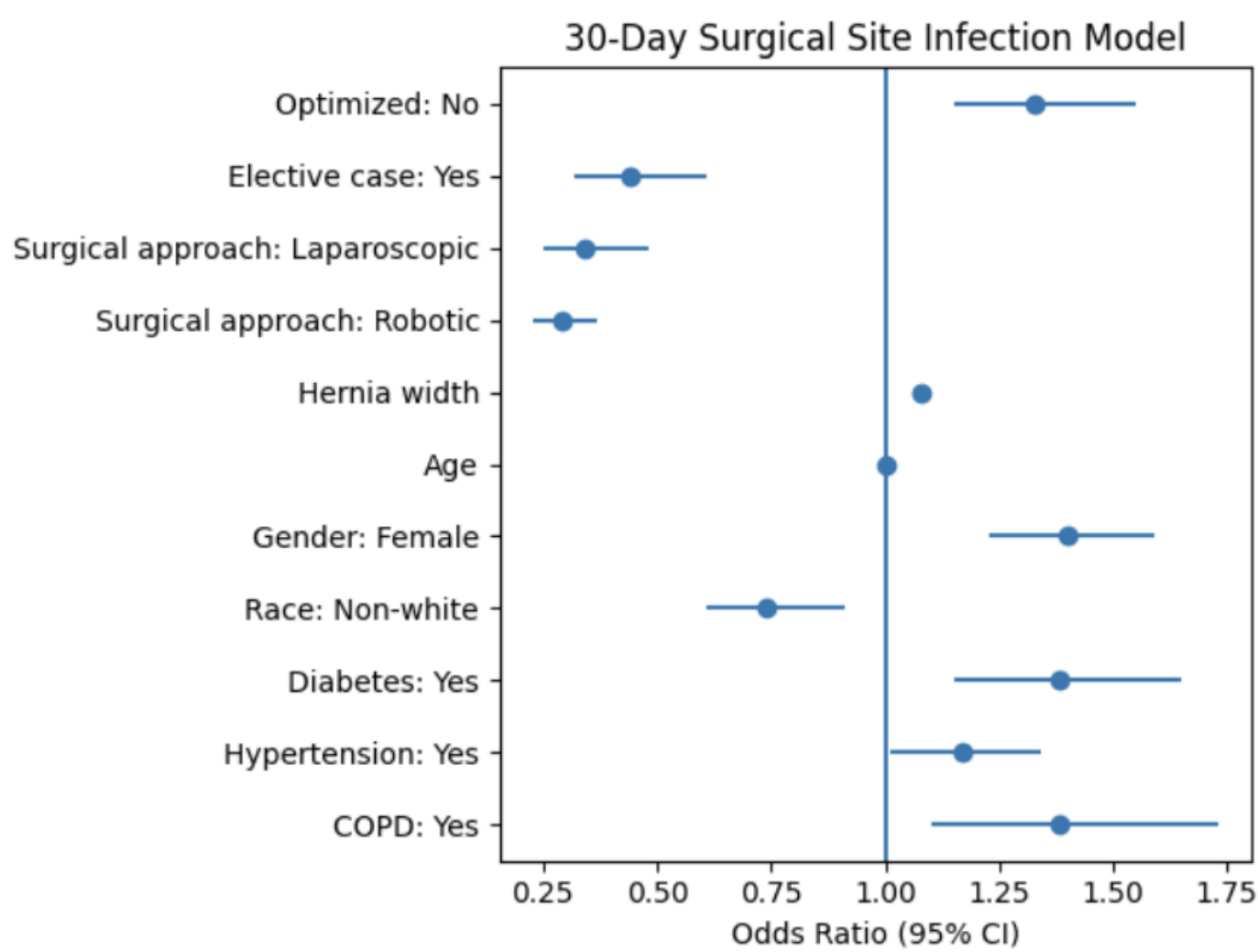
Table 1: Demographics and Hernia Characteristics

	Non-Optimized (n=11,932)	Optimized (n=54,879)	Overall (n=66,811)	P value
Age, years, median [IQR]	54 [44–63]	60 [49–70]	59 [48–68]	<0.001
Female sex	38.1% (4,546)	29.0% (15,892)	30.6% (20,438)	<0.001
Non-White race	19.3% (2,298)	15.0% (8,247)	15.8% (10,545)	<0.001
ASA class ≥3	54.5% (6,502)	34.0% (18,567)	37.6% (25,069)	<0.001
BMI, mean (SD)	33.0 (9.6)	27.9 (4.9)	28.4 (6.4)	<0.001
Current smoker	60.1% (7,177)	0% (0)	10.7% (7,177)	<0.001
Elective case	96.9% (11,561)	98.8% (54,241)	98.5% (65,802)	<0.001
Diabetes mellitus	17.1% (2,038)	5.6% (3,087)	7.7% (5,125)	<0.001
COPD	8.6% (1,030)	3.3% (1,799)	4.2% (2,829)	<0.001
Recurrent hernia	18.6% (2,219)	13.0% (7,136)	14.0% (9,355)	<0.001
Hernia width, cm, median [IQR]	4 [2–8]	3 [2–8]	3.5 [2–8]	<0.001
Hernia grade				
1	2.4% (281)	57.4% (31503)	47.6% (31784)	<0.001
2	88.1% (10513)	36.2% (19867)	45.5% (30380)	
3	9.5% (1133)	6.3% (3479)	6.9% (4612)	

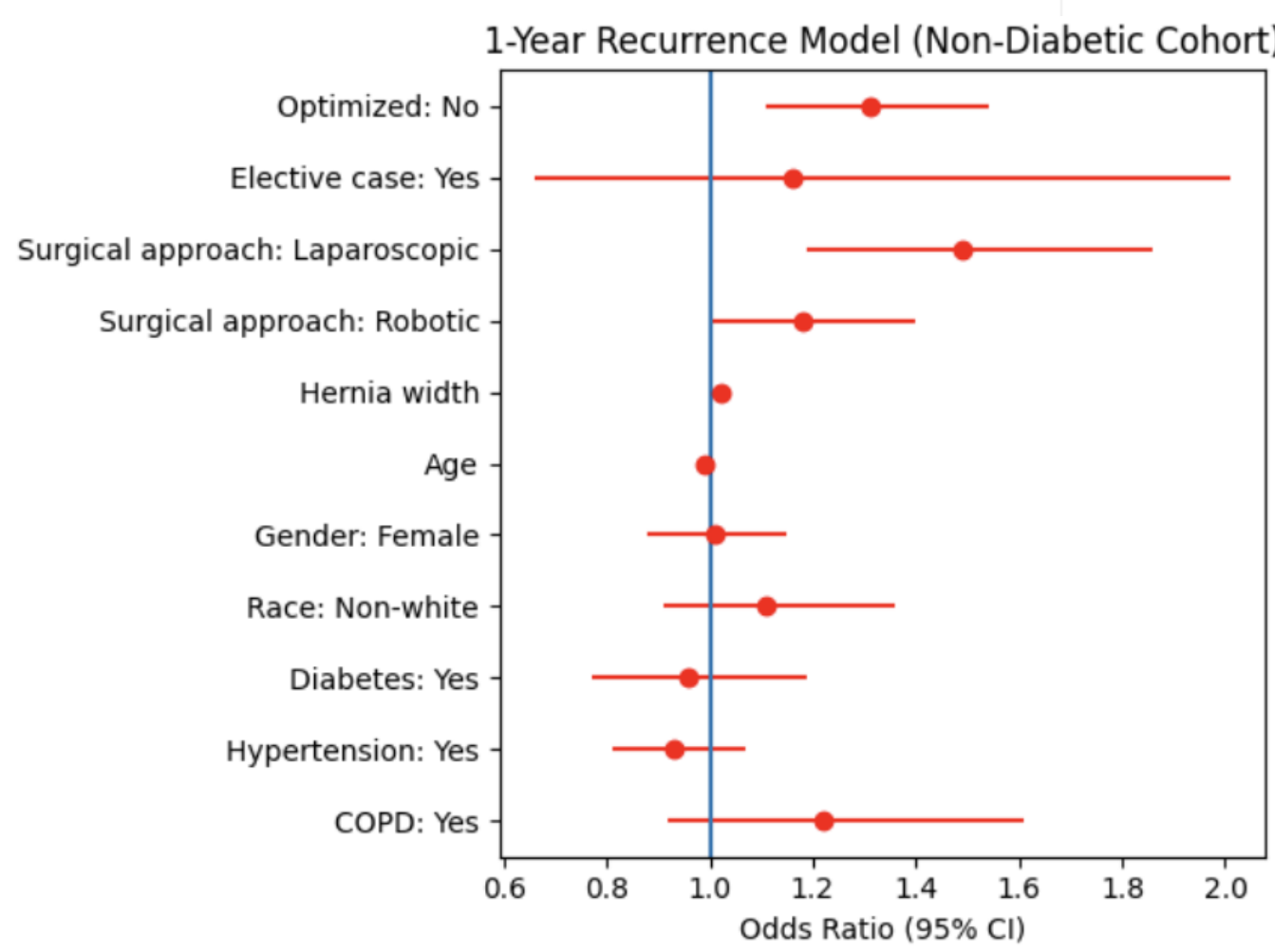
Table 2: Postoperative Outcomes

	Non-Optimized (n=11,932)	Optimized (n=54,879)	Overall (n=66,811)	P value
Length of stay, days, median [IQR]	0 [0–2]	0 [0–1]	0 [0–1]	<0.001
Any length of stay ≥2 days	35.7% (4,397)	28.1% (15,421)	29.9% (19,818)	<0.001
30-day SSO	10.9% (1,303)	6.4% (3,538)	7.2% (4,841)	<0.001
30-day SSO/SSI requiring intervention (SSO/I)	12.7% (1,520)	7.5% (4,125)	8.4% (5,645)	<0.001
30-day SSO/I with procedural intervention (SSOPI)	4.0% (481)	2.1% (1,129)	2.4% (1,610)	<0.001
30-day readmission	3.3% (392)	2.1% (1,177)	2.3% (1,569)	<0.001
30-day reoperation	1.4% (162)	0.8% (422)	0.9% (584)	<0.001
1-year recurrence	17.8% (273)	13.2% (946)	14.0% (1,219)	<0.001

- Regression modeling showed optimization and surgery timing were independent predictors of 30-day SSI and 1-year recurrence
- Compared to non-optimized/elective patients, the optimized/emergent patient subgroup had:
 - Higher odds of 30-day SSI (OR 0.59, 95% CI 0.41-0.85)



- No difference in 1-year recurrence (OR 1.52, 95% CI 0.83-2.74).



Conclusions:

- While optimization has been shown to improve outcomes, this study demonstrated that emergent status may be a stronger predictor of SSI even among optimized patients
- Recurrence at 1 year does not seem to differ between non-optimized patients in the elective setting and optimized patients receiving emergent repairs
- These findings highlight the importance of pragmatic optimization strategies that reduce delay and help patients avoid emergent presentation