# DEMOGRAPHIC AND CLINICAL FACTORS ASSOCIATED WITH SAME-DAY DISCHARGE FOLLOWING ELECTIVE VENTRAL HERNIA REPAIR: A NSQIP ANALYSIS

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## Introduction

- Ventral hernia repair (VHR) is one of the most common general surgical procedures in the world.
- Ventral hernias are often asymptomatic, however, elective repairs are offered in anticipation of complications such as pain, incarceration and strangulation.

**386,000**
Ventral hernia repairs performed annually in USA

- VHR itself is associated with significant complications, including surgical site infections, hernia reoccurrence and reoperation. The rates of these complications range from 10% to 60%.

- Same-day discharge (SDD) following surgery is a key indicator of quality of care.
- SDD following surgery can have several advantages such as reduced healthcare expenses, reduced risk of hospital-acquired infections, and improved patient comfort.

- In clinical practice, deciding whether patients should be discharged on the same day versus monitoring them for short stays is often a case-by-case decision that depends on several factors.
- Despite being a common surgical procedure, there is limited data on predictive factors influencing SDD following VHR

## Objectives

1. To evaluate patient demographic and clinical factors associated with SDD among adult patients who underwent elective VHR (primary and incisional)
2. to evaluate 30-day clinical outcomes between patients who received same-day discharge (length of stay = 0 days) vs. multiple-day discharge (MDD), defined as length of stay greater than 0 days.

## Methods

- A retrospective cohort study using the National Surgery Quality Improvement Program (NSQIP) database from 2011-2021 was conducted.
- ICD9/10 and CPT codes were used to include those who underwent elective ventral hernia repair. Emergency cases were excluded.
- We collected data on patient factors such as demographic information, race and comorbidities.

**Outcomes included:**
30-day post-operative complications, readmission, reoperation and mortality rates.

- Statistical analyses were performed using SAS software. Multivariate logistic regression analysis was used to adjust for clinically relevant confounding variables. P-values <0.05 were statistically significant.

## Results

**Table 1. Baseline patient characteristics**

| Characteristic | Same Day Discharge (*n* = 305,731 ) | Multiple Day Discharge (*n* = 175,646) | *p*-value |
|---|---|---|---|
| Demographics | | | |
| Male sex | 175,974 (57.6) | 72,774 (41.4) | <0.0001* |
| BMI ≥ 30 | 164,173 (53.7) | 110,170 (62.7) | <0.0001* |
| Smoker | 52,238 (17.1) | 30,843 (17.6) | <0.0001* |
| Non-independent functional status | 1,938 (0.6) | 2,680 (1.5) | <0.0001* |
| Race | | | |
| White | 223,926 (73.2) | 130,992 (74.6) | <0.0001* |
| Black | 33,765 (11.0) | 20,280 (11.6) | <0.0001* |
| Asian | 3,266 (1.1) | 1,899 (1.1) | 0.6760 |
| American Indian or Alaska Native | 1,615 (0.5) | 974 (0.6) | 0.2301 |
| Native Hawaiian or Pacific Islander | 586 (0.2) | 270 (0.2) | 0.0026* |
| Other | 595 (0.2) | 225 (0.1) | <0.0001* |
| Comorbidities | | | |
| ASA ≥ 3 | 102,168 (33.4) | 101,424 (57.7) | <0.0001* |
| Congestive heart failure | 1,528 (0.5) | 1,767 (1.0) | <0.0001* |
| Hypertension | 119,816 (39.2) | 93,387 (53.2) | <0.0001* |
| Steroid use | 7,870 (2.6) | 9,854 (5.6) | <0.0001* |
| Chronic obstructive pulmonary disease | 10,217 (3.3) | 10,248 (5.8) | <0.0001* |
| Bleeding disorder | 5,308 (1.7) | 6,857 (3.9) | <0.0001* |
| Disseminated cancer | 936 (0.3) | 1,692 (1.0) | <0.0001* |
| Ascites | 1,167 (0.4) | 1,851 (1.1) | <0.0001* |

*Significance based on p-value <0.05. BMI Body Mass Index. ASA American Society of Anesthesiologists.

- A total of 305,731 and 175,646 patients were in the SDD and MDD groups, respectively.
- SDD was significantly higher among males (p<0.001).
- SDD was significantly lower in patients with BMI ≥ 30, smokers, non-independent functional status, and ASA class ≥3 (p<0.001).
- Patients were less likely to be discharged on the same day as VHR in the presence of comorbidities such as congestive heart failure, hypertension, steroid use, chronic obstructive pulmonary disease, bleeding disorder, disseminated cancer, and ascites (p<0.001).

## References

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## Results

**Table 2. Summary of outcomes.**

| 30-Day Outcomes | Same Day Discharge (*n* = 305,731 ) | Multiple Day Discharge (*n* = 175,646) | *p*-value |
|---|---|---|---|
| Morbidity (≥1 complications) | 8,092 (2.7) | 8,666 (4.9) | <0.0001* |
| Morbidity (≥2 complications) | 3,496 (1.1) | 2,297 (1.3) | <0.0001* |
| Superficial Incisional SSI | 4,081 (1.3) | 4,799 (2.7) | <0.0001* |
| Deep Incisional SSI | 1,099 (0.4) | 1,839 (1.1) | <0.0001* |
| Organ space SSI | 1,409 (0.5) | 1,456 (0.8) | <0.0001* |
| Pneumonia | 2,154 (0.7) | 1,206 (0.7) | 0.4719 |
| Unplanned reintubation | 1,434 (0.5) | 757 (0.4) | 0.0590 |
| Pulmonary embolism | 654 (0.2) | 475 (0.3) | <0.0001* |
| Postoperative dialysis | 456 (0.2) | 188 (0.1) | 0.0001* |
| Cerebrovascular accident | 172 (0.1) | 115 (0.1) | 0.2074 |
| Cardiac arrest requiring CPR | 305 (0.1) | 327 (0.2) | <0.0001* |
| Myocardial infarction | 466 (0.2) | 350 (0.2) | 0.0001* |
| Deep vein thrombosis | 771 (0.3) | 523 (0.3) | 0.0033* |
| Sepsis | 1,520 (0.5) | 1515 (0.9) | <0.0001* |
| Septic shock | 1,002 (0.3) | 424 (0.2) | <0.0001* |
| Urinary Tract Infection | 1,592 (0.5) | 1,736 (1.0) | <0.0001* |
| Readmission | 7,466 (2.4) | 12,578 (7.2) | <0.0001* |
| Reoperation | 4,274 (1.4) | 4,017 (2.3) | <0.0001* |
| Mortality | 675 (0.2) | 734 (0.4) | <0.0001* |

**Table 3. Multivariable regression analysis of 30-day outcomes.**

| 30-Day Outcomes | Adjusted OR | 95% CI | *p*-value |
|---|---|---|---|
| Serious complications | 1.266 | 1.224-1.308 | <0.0001* |
| Readmission | 2.423 | 2.349-2.498 | <0.0001* |
| Reoperation | 1.260 | 1.203-1.318 | <0.0001* |
| Mortality | 1.063 | 0.952-1.186 | 0.2768 |

- SDD was associated with significantly lower rates of 30-day complications, reoperation, readmission, and mortality after elective VHR (p<0.001).
- After adjustment, MDD was associated with significantly higher odds of 30-day complications (OR 1.27, p<0.001, 95% CI 1.23-1.31), reoperation (OR 1.26, p<0.001, 95% CI 1.20-1.32) and readmission (OR 2.42, p<0.001, 95% CI 2.35-2.50). However, there was no significant difference with respect to 30-day mortality.

## Conclusions

- SDD following elective VHR is associated with significantly lower rates of 30-day post-operative complications, reoperation, and readmission.
- Obesity, smoking and severe comorbidities are associated with MDD.
- There was some variation in SDD based on race.
- SDD following elective VHR appears to be safe in select patients.