The Impact of the COVID-19 Pandemic on the Length of Stay in Elective Ventral Hernia Repair

Jennifer Allison, MD; Denise Wong, MD; Allison Falcon, MD; Timothy Storm Owens; Matthew Davis, MD
University of Tennessee Health Science Center

THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

Introduction

The COVID-19 pandemic has significantly impacted the delivery of surgical care worldwide. Adjustments have been made to reduce the likelihood of transmission of the disease and the outcomes for patients, including those undergoing elective surgical procedures. The goal of this study was to evaluate for any difference in length of stay (LOS) that may exist for patients undergoing elective ventral hernia repair (VHR) before and during the COVID-19 pandemic. Patient demographics, comorbidities and complications were also evaluated. It was hypothesized that LOS would be decreased during the COVID pandemic but increased for patients with comorbidities, complications and increasing age.

Methods

A retrospective analysis of patients from a single Memphis-based academic institution who underwent elective VHR between 2015 and 2021was conducted. Admissions during the COVID-19 pandemic were defined as those after March 1, 2019. Factors associated with LOS were assessed including comorbidities, complications and age. Due to changing policies during the COVID-19 pandemic, the ability to have visitors was also evaluated. Variables were evaluated for association with LOS by Chi-square or Student's t test as appropriate. Variables with $p<0.05$ after univariate analysis were considered for inclusion in multivariate logistic regression modeling.

Results

A total of 549 patients were included in the study with 93 patients defined as during the COVID-19 pandemic. Race was divided into white and non-white categories with 247 and 302, respectively. A significant difference in LOS was found between white and non-white patients ($p<0.001$). Patients who developed a postoperative complication had significantly increased LOS by multivariate analysis ($p<0.001$). No significant difference in LOS was found between patients before and during the COVID-19 pandemic. There were 29 patients that were unable to have visitors during the COVID-19 pandemic due to hospital policy and they were found to have a significantly longer LOS ($p=0.007$). As expected, patients that were older or had comorbidities were independently associated with increased LOS ($p<0.001$ and $p=0.006$, respectively).

Conclusions

It was hypothesized that patients who underwent ventral hernia repair during the COVID-19 pandemic would have decreased LOS, however no significant difference was found.

Interestingly, patients that were not allowed visitors during the pandemic had significantly longer LOS. Further studies to investigate inpatient visitation and LOS would be of interest to elucidate the reason for this difference.

Characteristics of Cohort

Variable	All N=549	Male N=243	Female N=306	*p*-value	White N=247	Non-white N=302	*p*-value
Age (years; mean, std)	50.49 ± 14.13	54.51 ± 12.17	47.34 ± 14.77	**<0.001**	55.19 ± 13.53	46.65 ± 13.45	**<0.001**
Race White Non-white	247 (45) 302 (55)	146 (60.1) 97 (39.9)	101 (33.0) 205 (66.9)	**<0.001**	----	----	----
Comorbidities Any None	450 (82) 99 (18)	200 (82.3) 43 (17.7)	250 (81.6) 56 (18.3)	0.855	219 (88.7) 27 (10.9)	230 (76.2) 72 (23.8)	**<0.001**
LOS (days; mean, std)	1.38 ± 2.13	1.39 ± 2.29	1.37 ± 1.99	0.897	1.75 ± 2.22	1.08 ± 2.01	**<0.001**

Multivariable Logistic Regression by LOS

	β	Standard Error	95% CI	*p* value
Post-COVID	-0.0057	0.2280	-0.454 – 0.442	0.9799
Any Complication	-2.9393	0.2007	-3.333 – -2.545	**<0.001**
Any Comorbidity	-0.5442	0.1969	-0.931 – -0.158	**0.006**
Age	0.0221	0.0054	0.011 – 0.033	**<0.001**
Visitors Allowed	1.0279	0.3815	0.279 – 1.777	**0.007**