

Retrospective Study on Clinical Outcomes Following Transcatheter Aortic Valve Replacement

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RETROSPECTIVE STUDY ON CLINICAL OUTCOMES FOLLOWING TRANSCATHETER AORTIC VALVE REPLACEMENT

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Background

- Heart disease is the leading cause of death in the U.S. with aortic stenosis (AS) being present in 1.5 million Americans, and severe symptomatic AS affecting 250,000 Americans¹.
- Transcatheter Aortic Valve Replacement (TAVR) surgery is a minimally invasive procedure which replaces the aortic valve in the heart using a porcine valve attached to a catheter².
- TAVR is the preferred procedure for patients suffering from aortic stenosis who are high risk patients for surgical aortic valve replacement (SAVR)^{3,4}.

Objectives

This study analyzes 1-year mortality as well as clinical outcomes and procedural complications of patients who underwent TAVR surgery in the Lehigh Valley Health Network between 2012-2017.

Methods

- A retrospective review of all TAVR patients was recorded from 2012-2017 at the Lehigh Valley Health Network.
- This study included 624 patients. Using the EPIC database, electronic hospital records of all patients were reviewed and organized into an Excel file.
- The variables that were tested included 7 procedural complications, 2 common outcomes present at discharge, and 1-year mortality rates.
- Due to lack of patient information available on Epic, only 579 patients were used in the final analysis.

Outcomes

Year	2012	2013	2014	2015	2016	2017	
Total Patients	13	71	83	105	173	134	579
1 Year Mortality	2	9	9	11	21	12	64
Relative Frequency	15.38%	12.68%	10.84%	10.48%	12.14%	8.96%	11.05%

Figure 1: 1-year mortality frequencies of patients following TAVR procedure between 2012-2017 at Lehigh Valley Health Network (LVHN). 1-year mortality frequencies are not statistically different between 2012-2017 ($p < .05$). LVHN 1-year mortality following TAVR was estimated at 11.05% (CI 95%, 8.50%-13.60%), while national published values indicate a 23.7% 1-year mortality⁵. LVHN mortality is significantly lower than published values ($p > 0.05$).

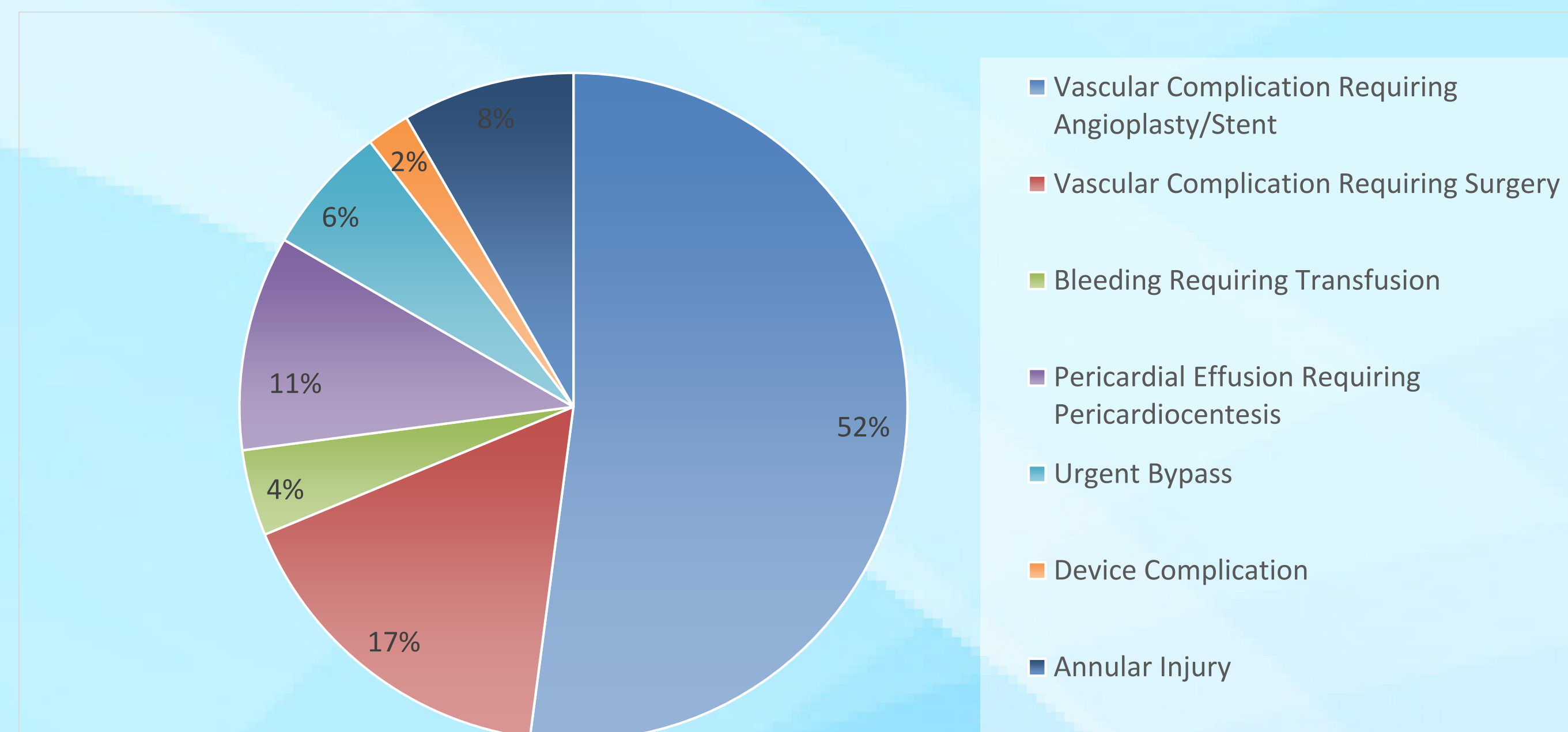


Figure 2: Relative distribution of procedural complications (n = 48) during TAVR. 8.29% (CI 95%, 6.04%-10.54%) of patients who underwent TAVR experienced complications, with 52% of those patients specifically having vascular complications that required angioplasty/stent.

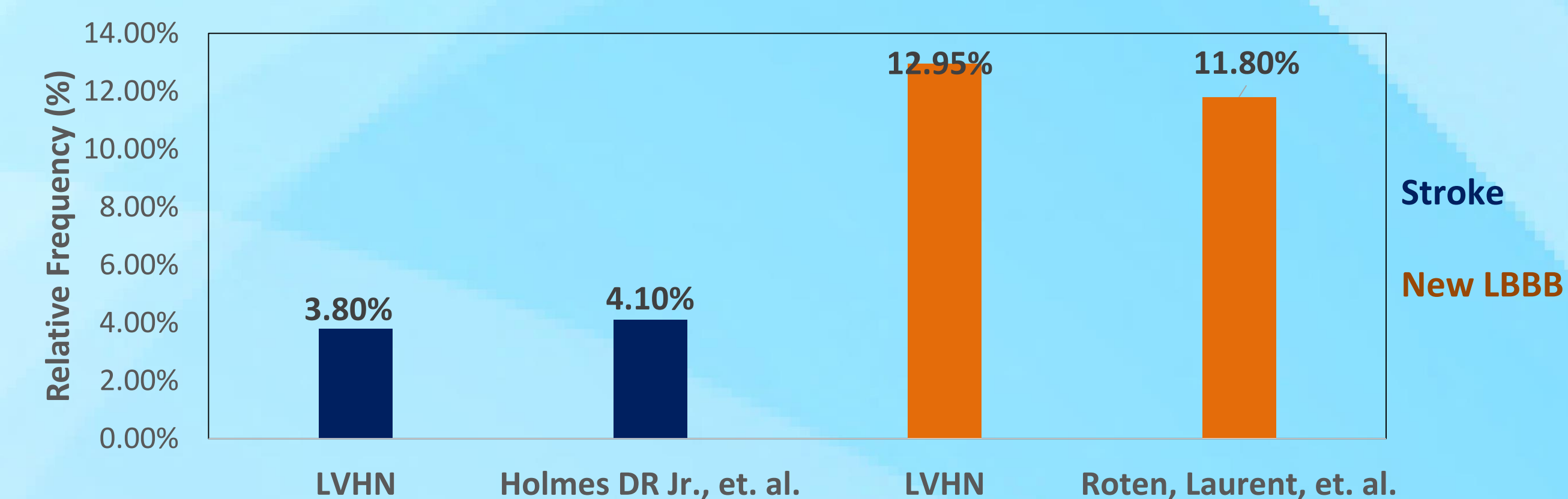


Figure 3: Indication of stroke and left bundle branch block (LBBB) at discharge. Comparisons of relative frequencies for both outcomes between LVHN and published values^{5,6}. There is no statistical difference between LVHN and published values for either new onset stroke or LBBB at discharge ($p > 0.05$).

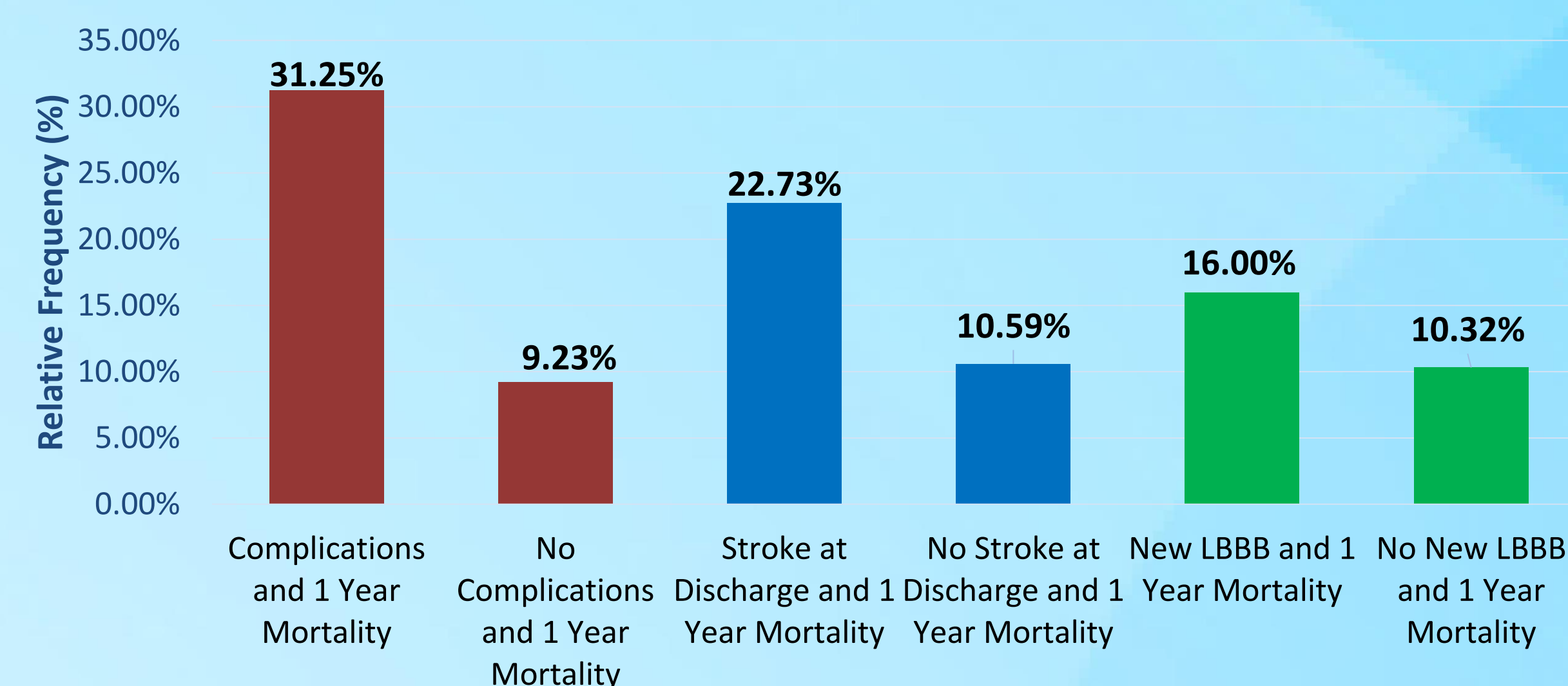


Figure 5: Relative frequencies of 1-year mortalities for patients that either experienced a certain outcome/complication and for those that did not. Complications, stroke at discharge, and new onset LBBB were all evaluated for 1-year mortality. Only patients who experience procedural complications had a significantly higher 1-year mortality from patients that did not experience complications ($p < 0.05$).

Results

- Patients who underwent the TAVR procedure at LVHN had a year mortality of 11.05% (CI 95%, 8.50%-13.60%).
- 8.29% (CI 95%, 6.04%-10.54%) of patients experienced procedural complications.
- New onset stroke and (LBBB) were present in 3.80% (95% CI, 2.24%-5.36%) and 12.95% (95% CI, 10.22%-15.68%) of all patients.
- The relative frequency of patients that experienced procedural complications and then died within one year of TAVR was significantly higher than for patients that died within one year, but did not experience complications ($p < 0.05$).

Conclusions

- LVHN 1-year mortality frequencies were significantly lower than published values⁵.
- Stroke and LBBB rates at discharge are comparable to published values^{5,6}.
- Procedural complications for patients during TAVR are associated with an increased risk of dying within one year.

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