Outcome of Surgical Ultrasonic Aspirator Use for Patients with Severe Mitral Annular Calcification for Mitral Valve Replacement

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Background

- Mitral and aortic valve surgeries complicated by calcification relate to high mortality rates[1]
- There is no defined strategy on how to combat calcification buildup, with severe cases labeled as inoperable[1, 2]
- Recently, ultrasonic debridement of aortic/mitral tissue and calcification has seen success[2]

Objectives

- Analyze the success of the ultrasonic aspirators within a selected sample of LVHN patients (n=19)
- Investigate the benefits and risks of continued ultrasonic aspirator use at LVHN

Methods

Context

Performed an exploratory background investigation into ultrasonic aspirator use within the United States

Data Collection

Obtained a sample of LVHN patients with severe calcification requiring ultrasonic aspirator use, between 2019-2021

Created and employed a database in REDCAP to document ultrasonic aspirator use with surgical success rate, perioperative conditions, and survival rate

Analysis

Generated Kaplan Meier curves demonstrating survival rates after both the first 30 days and 2 years post-op

Observed trends revealed through quantitative analysis

Results

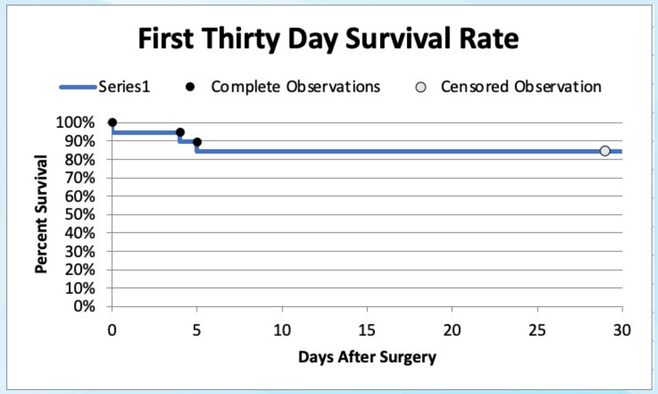

Figure 1: Patient Survival Rate In the First 30 Days After Ultrasonic Aspirator Left Sided Heart Valve Surgery

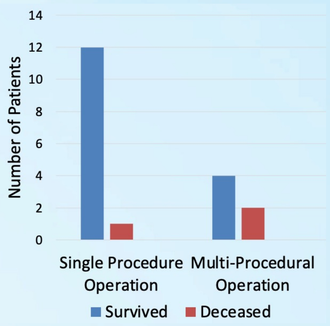

Figure 2: Surgical Success Rate by Operation Type

Mortalities
Mediastinal Mass and Constriction (1)
Aortic Valve Replacement, Mitral Valve Replacement (1)
Aortic Valve Replacement, Mitral Valve Replacement, Coronary Bypass, Septal Myectomy (1)

Figure 3: Surgical Operations with Mortalities

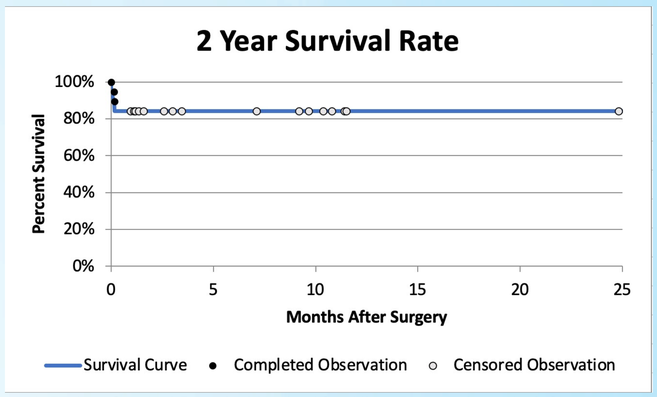

Figure 4: Patient Survival Rate 25 Months After Ultrasonic Aspirator Left Sided Heart Valve Surgery

Results Cont.

Surgery Type	Survived	Deceased	Total
Mitral Valve Replacement	8	2	10
Aortic Valve Replacement	8	2	10
Coronary Bypass	2	1	3
Mitral Valve Repair	2	0	2
Septal Myectomy	1	1	2
Mediastinal Mass and Constriction	0	1	1

Figure 5: Patient Survival Per Individual Surgery Type

Conclusions

- The lowest probability of survival is during the operation and in the first seven days that follow
- Patients who survive the first seven days post-op experienced reasonable survival in the mid-term
- There were no complications related to mitral annular debridement
- The survival rates from this small population encourage future ultrasonic aspirator use at LVHN

Future Research/Directions

- Continue to follow up on surviving ultrasonic aspirator cases to gain more insight into the device's impact at LVHN in the long term

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