



Morten Jensen, DrMed, PhD

Transforming Mitral Valve Surgery

New Research Could Be Life-Changing for 50,000 People Yearly

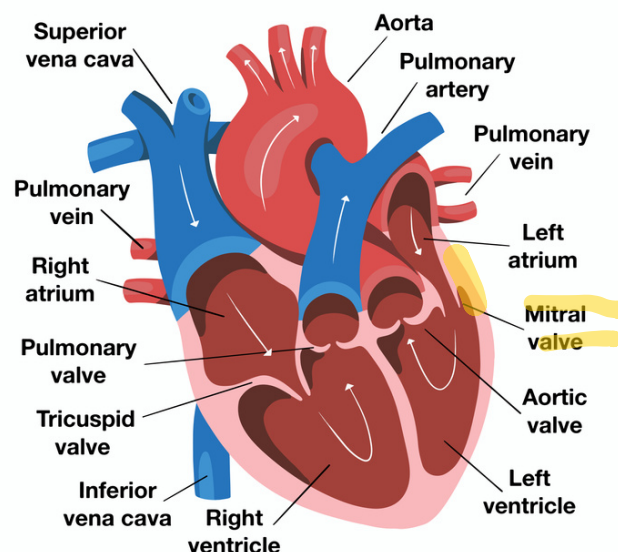
Dr. Jensen is a renowned cardiovascular researcher leading groundbreaking research to improve the durability of heart valve surgery - specifically, mitral valve surgery.

Recent advancements in cardiac surgery have revolutionized the treatment of heart valve disease, improving patient outcomes tremendously. In particular, less invasive techniques have been developed to repair or replace heart valves. However, durability remains a significant issue with surgical repair techniques, devices, and replacement valves.

The Challenge

The American Heart Association reports that in the US alone, around 3 million people suffer from mitral valve disease. Each year, there are over 50,000 mitral valve operations, and the numbers are growing fast. Additionally, repair is expensive. According to a 2020 report by the American Heart Association, mitral valve repair surgery costs between \$80,000 and \$200,000 in the US (depending on the hospital, type of surgery, surgeon's fees, and the patient's insurance coverage).

The mitral valve is subject to high pressure, making it especially difficult to ensure that repair or replacement surgery is successful long-term. Current methods of mitral valve repair are very imperfect: A year after mitral valve surgery, more than 30% of patients still have mitral valve issues. There is clearly an urgent need for improved surgical planning and device design to reduce the stress on the valve after surgery.



The Solution

The goal of Jensen's project, funded by the National Institutes of Health, is to create a new, force-validated model of the mitral valve. The benefits are twofold: this model could be used for patient-specific surgical planning, as well as in device development.

The model could help create better devices, lessening stress on the valve post-surgery, and improving long-term durability, so that patients don't need to undergo surgery a second time.

Methods & Data

Jensen and his team studied the mitral valve using pigs' hearts as models, measuring the forces and movements of the pig's heart mitral valve using MRI. They then used this information to create a computer model of the mitral valve that can be used to design better surgical procedures and medical devices to treat mitral valve disease.

Next Milestone & Ask

This project aims to transform surgical planning and device design for heart valve disease by developing a more accurate and validated model of the mitral valve. Successful completion of the work will lead to better outcomes for patients undergoing heart valve surgery.

For this important research to continue, continued funding is needed. Additionally, the installation of a large animal research laboratory would be extremely helpful in continuing to expand on this research, improving patient outcomes for years to come - this could mean restructuring existing facilities, which could cost around \$100K, or a new facility, which could cost a couple million dollars.

Contact & Additional Information



mojensen@uark.edu



www.cblab.uark.edu

