

Atrial fibrillation may be root cause of some severe mitral regurgitation cases

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Mitral regurgitation is a common heart valve disorder, where blood flows backwards through the mitral valve when the heart contracts and reduces the amount of blood that is pumped out to the body. It is a serious condition with many foundational causes. Now, a new study from researchers at the Perelman School of Medicine at the University of Pennsylvania has for the first time linked atrial fibrillation (AF) to some cases of mitral regurgitation (MR). The new study is published online in the [Journal of the American College of Cardiology](#).

"To the best of our knowledge, our study is the first to elucidate the role of atrial fibrillation in causing some cases of mitral regurgitation," said Zachary Gertz, MD, lead study author and a cardiovascular fellow at Penn. "This new revelation may lead to better, more targeted treatments for patients with mitral regurgitation, and in some cases, help certain patients avoid [invasive surgery](#) to correct their MR."

In normal hearts, the flaps of the valve between the left atrium and the [left ventricle](#) come back together after each heartbeat. With mitral regurgitation, the valve does not seal completely and blood leaks back into the [left atrium](#). This reverse flow forces the heart to work harder to circulate the blood and can result in [shortness of breath](#), fainting, [low blood pressure](#), fatigue, loss of appetite, and other symptoms. If left untreated, patients with mitral regurgitation can suffer serious complications. In severe cases, patients may need heart surgery to repair or replace the leaky valve.

In some cases, the underlying cause of the MR is the weakening and remodeling of the valve as the result of damage from common cardiac conditions, such as a heart attack or an infection of the heart. Cardiac experts at Penn theorized that another common cardiac condition, atrial fibrillation (abnormal heart rhythm), may also play a role in the process.

To test this theory, researchers performed a retrospective cohort study of 828 patients who had undergone an ablative procedure for atrial fibrillation to restore a normal heart rhythm. The researchers reviewed patients' echocardiograms at the time of the ablative procedure and than one-year after the procedure.

Of this population, researchers identified 53 patients that had moderate to severe mitral regurgitation prior to ablation. The researchers noted that after the ablative procedure, those patients whose normal rhythm was restored experienced a dramatic reduction in backflow of blood into the heart, virtually eliminating their condition.

In patients with this type of MR that is caused by AF, which the authors named atrial functional MR, patients tended to be older and also have hypertension. They also tended to have persistent atrial fibrillation, as opposed to intermittent episodes of AF.

The authors note that perhaps the most important finding from the new study may be that patients with atrial functional MR could potentially be treated without cardiac surgery.

"This work greatly extends our knowledge of the mechanics of mitral regurgitation," said Dr. Gertz. "We hope that further research will help us to determine the clinical significance of this finding in a larger population of MR patients."

Provided by University of Pennsylvania School of Medicine

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