

Large study of thoracic aortic aneurysm backs guidelines

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A large, new Kaiser Permanente study provides high-quality evidence that most of the 33,000 patients diagnosed each year in the U.S. with a thoracic aortic aneurysm—a bulge in the part of the main artery that runs through the chest—are not likely to experience an aortic dissection and may not need open-heart surgery.

"We built the largest-ever cohort of patients with thoracic [aortic aneurysm](#) to study their [natural history](#)," said lead author Matthew D. Solomon, MD, Ph.D., a physician researcher at the Kaiser Permanente Division of Research and a Kaiser Permanente cardiologist.

"This research was critical because of the lack of evidence to guide clinicians and the ongoing debate in the field as to how large an aneurysm should be before recommending a patient undergo a very high-risk [surgery](#)."

The study, published October 5 in *JAMA Cardiology*, is the largest to date to support the current consensus guidelines that recommend surgery for most patients with a thoracic aneurysm that is 5.5 centimeters or larger. These guidelines are specific to patients who do not have certain genetic conditions that increase their risk of experiencing an aortic aneurysm or dissection.

The study included 6,372 Kaiser Permanente patients in Northern California who were identified as having a thoracic aortic aneurysm between 2000 and 2016. Of these, 6,092 (96%) were diagnosed with an aneurysm that was initially less than 5.5 centimeters, and 280 (4%) were initially diagnosed with an aneurysm 5.5 centimeters or larger.

All the patients were enrolled in a computerized population management system to ensure they received appropriate, ongoing imaging to assess the size and growth of their aneurysm. None had a genetic syndrome known to increase risk for an aortic aneurysm or dissection.

For patients with an aneurysm less than 5.0 centimeters, the 5-year risk of experiencing an [aortic dissection](#) was less than 1%, and for patients with 5.0 to 5.4 centimeters aneurysms it was 1.5%.

But for patients with an aneurysm 5.5 centimeters or larger, the story

changed: The 5-year predicted risk of a dissection for an aneurysm 5.5 to 5.9 centimeters was 3.6%, and for patients with an aneurysm 6 centimeters or larger, the 5-year risk of experiencing a dissection jumped to more than 10%.

"Our study shows that regular monitoring, coupled with aggressive blood pressure control and [lifestyle changes](#), is a safe strategy for most patients until the aneurysm reaches the 5.5 centimeters mark, when surgery becomes necessary," said Dr. Solomon, who is the founder and director of the Kaiser Permanente Center for Thoracic Aortic Disease.

"The fact that we found a clear inflection point in risk at 6.0 cm supports the current guidelines and will help inform the debate of when to do surgery."

The aorta, which is about the diameter of a garden hose, is the largest blood vessel in the body. It carries blood from the heart to all the vital organs. A thoracic aortic aneurysm typically causes no symptoms and is usually discovered incidentally, on a scan for another health problem.

Skilled cardiac surgeons can perform surgery to repair the aneurysm to prevent dissection. But it is a complex procedure that can require stopping the heart and putting patients on a heart-lung bypass machine to replace the heart's pumping function. The surgery can put patients at risk for a [heart attack](#), stroke, pneumonia, and loss of kidney function; requires a hospital stay of up to 10 days; and has a recovery time of 2 to 3 months.

"We have amazing cardiac surgeons and an outstanding aortic surgical program, but this can be one of the most difficult surgeries they do," said Dr. Solomon.

"Patients absolutely need this surgery when surgical risk is less than the

risk of dissection. Our study will help physicians and patients make the most informed decision when contemplating such a significant procedure."

Started in 2017, the Kaiser Permanente Center for Thoracic Aortic Disease includes a multispecialty team of cardiologists, cardiac surgeons, vascular surgeons, and cardiovascular geneticists, and imaging analysts. The team cares for nearly 15,000 Kaiser Permanente patients in Northern California through its groundbreaking population management program and has presented its work and shared best practices nationally and internationally.

"This type of study in a very large, diverse population where patient characteristics, care received, and outcomes experienced are systematically captured across all practice settings is only possible within fully integrated health care delivery organization like Kaiser Permanente," said senior author Alan S. Go, MD, a senior research scientist at the Division of Research.

"The ability to do these long-term follow-up studies among representative patients is critical to informing accurate risk prediction and optimizing management decisions for thoracic aortic [aneurysm](#)."

More information: Long-term Outcomes for Patients with Ascending Thoracic Aortic Aneurysm: Results from the KP TAA Cohort Study, *JAMA Cardiology* (2022).

Provided by Kaiser Permanente

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