

Tears during coronary angioplasty: Where are they and how do they affect patient outcomes?

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Researchers from Thomas Jefferson University Hospital discovered that blockages in the right coronary artery and those in bending areas of the coronary artery are the most common places for dissection, a tear in the artery that can occur during balloon angioplasty of the coronary arteries.

They will present their findings at the American College of Cardiology annual meeting in Chicago on Saturday, March 24 at 9 AM.

A 'controlled tear' is the mechanism by which angioplasty dilates the blocked vessels. A large tear, or spiral dissection, that continues almost entirely down the artery, however is associated with serious complications. When such a dissection occurs, the interior wall of the artery is torn, causing it to fold into the path of blood flow and sometimes block flow of blood in the artery altogether.

"This used to cause patients to be rushed to the operating room during angioplasty to open their chest and fix the blockage," says Rajesh Pradhan, MD, cardiology fellow at Jefferson and first author on the study. Modern technology now allows for [stents](#) to be used to open the blockage and repair the torn artery in most cases.

"We wanted to look at these large tears that can dramatically affect blood flow to understand where they happen most and how good we are at fixing them for our patients," says Pradhan.

The team retrospectively reviewed 24 cases of spiral dissection and matched them against a [control group](#) of patients without dissection.

Their analysis showed that the right [coronary artery](#) (RCA) was seven times more likely to be complicated by propagating dissection compared to other coronary arteries. Also, lesions ([blockages](#)) on a bend of 45 degrees or greater were 12 times more likely to develop a dissection compared to lesions that were not on a bend.

Stenting was successful in treating the dissection in 75 percent of patients. Major in-hospital adverse [coronary events](#) (stroke, heart attack, need for emergent bypass surgery, stent thrombosis or death) occurred in 54 percent of patients in the large dissection group and none in the control group. Adverse events in the dissection group included 11 heart attacks, need for emergent [bypass surgery](#) in four patients, and one stent thrombosis.

"Armed with this knowledge, we can more readily anticipate this complication and be better prepared when treating patients with lesions in these areas," says Pradhan.

Provided by Thomas Jefferson University

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