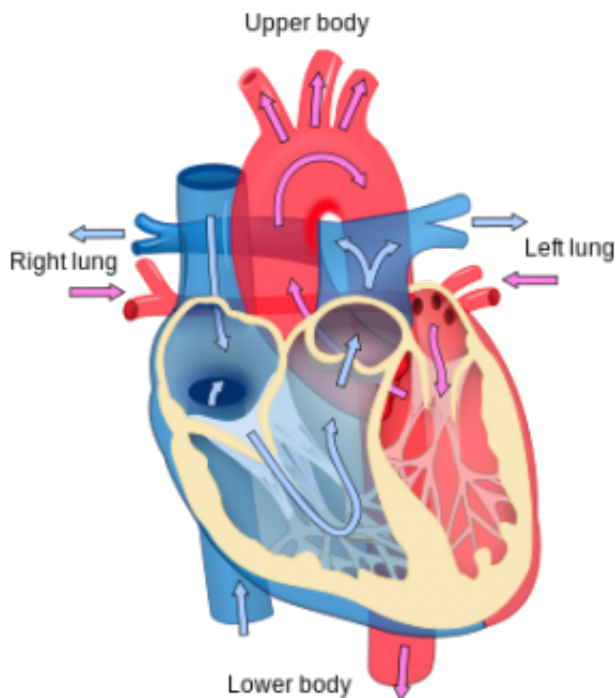


# Re-inflating balloon after carotid stenting appears to double risk of stroke and death

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Heart diagram. Credit: Wikipedia

After reviewing outcomes from thousands of cases, researchers at Johns Hopkins report that patients with blocked neck arteries who undergo carotid stenting to prop open the narrowed blood vessels fare decidedly worse if their surgeons re-inflate a tiny balloon in the vessel after the mesh stent is in place.

Although the overall risk of stroke and death is low in patients who undergo [carotid stenting](#), the common practice of "ballooning" the vessel after the wire mesh is inserted can double the risk of death and stroke during or shortly after the procedure, according to findings published online May 30 in the *Journal of Vascular Surgery*.

"Ballooning after placing the stent appears to cause the very complication it's intended to prevent," says study senior author Mahmoud Malas, M.D., M.H.S., an associate professor of surgery at the Johns Hopkins University School of Medicine. "Surgeons should avoid doing it. Period."

The carotid arteries, which run on both sides of the neck and ferry oxygen-rich blood from the heart to the brain, can become narrowed and stiff from buildup of fat and calcium deposits over time. The condition, known as carotid stenosis, is responsible for half of the nearly 800,000 strokes that occur in the United States each year, according to the Centers for Disease Control and Prevention.

Patients with severe blockages typically undergo surgery to scrape off the [fatty deposits](#) from the walls of the vessel, the preferred approach that carries notably lower stroke risk but is not recommended for people too sick to withstand traditional surgery. Such patients are often offered minimally invasive stent placement to flatten and stabilize the built up debris inside the clogged vessels.

To place the stent, surgeons thread a catheter through the groin and up into the neck artery. Once inside, surgeons typically insert a tiny surgical balloon and inflate it to compress the fatty deposits, open up the vessel, and make room for the stent.

Once the stent is in place, however, it is common practice to re-inflate the balloon to expand the wire mesh and firm up its position against the

artery walls. But the new Johns Hopkins study shows re-inflating the balloon once the stent is in place fuels stroke risk.

A previous study led by Malas showed post-stent ballooning could cause another serious complication marked by a precipitous drop in blood pressure and breathing problems.

For the new study, the team analyzed stroke and death risk in more than 3,700 patients, ages 19 to 89, who had carotid stenting between 2005 and 2014 in hospitals across the United States and whose outcomes were reported in the Vascular Quality Initiative, a national repository of vascular surgery outcomes. One group of patients had pre-stent ballooning only, another was treated with post-stent ballooning only, and a third had the combination technique involving balloon use both before and after stent placement.

While the overall risk of stroke and death was relatively low—2.4 percent of patients had a stroke within 30 days of treatment and less than 1 percent died—those treated with combination pre and post-stent ballooning were twice as likely to suffer a stroke or die. Those who had post-stent ballooning alone also had an elevated risk but in the final analysis, the difference did not reach statistical significance.

The researchers believe that repeat ballooning after [stent placement](#) causes [stroke](#) by driving the stent deeper into the fragile vessel walls and disturbing the fatty plaque that is built up atop the walls. This, they say, can cause splinters of plaque to chip off and make their way to the brain.

"The main goal of carotid stenting is not so much to restore blood flow as to contain and stabilize preexisting plaque," Malas says. "Our message is clear: Once inside the artery, leave the stent alone."

Unlike the more common heart stenting where the main goal is to open

the heart's arteries and restore blood flow to the cardiac muscle, stenting the carotid arteries is done with the brain in mind.

"Carotid stenting is unique," says study author Tammam Obeid, M.B.B.S., a surgery fellow at the Johns Hopkins University School of Medicine. "It is the only stenting procedure where the end target is not muscle but the far more delicate tissue of the brain."

Provided by Johns Hopkins University School of Medicine

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