

KARIN MURASZKO: Just a little under a million people a year within the United States will-- at some way or some form-- be touched by a stroke. And many of those patients will be left either with permanent disability or almost 200,000 of them will die every year in the United States from having a stroke.

NEERAJ CHAUDHARY: So there are two types of stroke. One is hemorrhagic, where there is bleed in the brain which causes a stroke, or blocked blood vessel, which is the acute ischemic stroke.

ERIC ADELMAN: A hemorrhagic stroke, or a bleeding stroke, is caused by a blood vessel rupturing either onto the surface of the brain or into the brain itself.

B. GREG THOMPSON: For a hemorrhagic stroke to the brain-- say, from an aneurysm-- patient would come to the emergency room and would be seen by the ED physician. And they typically would call the neurosurgeons right away because, in that situation, there's the usual decision being made is one between treatment of the endovascular-- through the blood vessel-- treatment or an open operation to clip an aneurysm and evacuate a clot.

ADITYA PANDEY: The beauty of the endovascular procedure is there is no incision. There's no scar. All you do is place, literally, an IV either into the arm or the leg. And once you're able to place that IV into one of the arteries, all the arteries in the body are interconnected-- one highway to another.

B. GREG THOMPSON: Open microsurgery has also made tremendous advances because it's a competitive technology in some ways. And it's had to improve. And we're able to do that open surgery with a lot more minimally invasive techniques. And it's very important to have specialists who can treat these diagnoses both ways, both with endovascular and with microsurgical techniques, because sometimes microsurgical techniques, still today, are by far the best treatment for a patient.

JOSEPH GEMMETE: Ischemic stroke, we do a CTA which looks at the blood vessels in the brain. If one of those blood vessels is occluded, then those patients are candidates to have the stent retriever.

ADITYA PANDEY: We're actually able to navigate-- the same way we do for the bleeding stroke-- through blood vessels of the arm or leg to be able to pull that piece of clot out. And that is known as thrombectomy. Lately, all the research is showing that the stents, or what are known as the stentriever, are the best devices to be able to pull these pieces of clot out.

NEERAJ CHAUDHARY: The stent technology that we have, which we can put at the end of the catheter, is now applied to acute ischemic stroke where we can go into blood vessels with really, really tiny catheters and lay metal stents-- which are like meshed metal-- which open up inside blood vessels. And they open beyond the clot-- in that way, engage the clot. And then the whole system is dragged out by that-- the clot, as well.

NICHOLAS OSBORNE: Obviously, the stroke team has a very important job of prioritizing, treating the patient initially, identifying whether they have a chance of rescue and removal of the clot from the brain. Now, once you get beyond that point, we then have to look at preventing secondary or further strokes.

And there have been numerous studies which have shown that if we remove that narrowing in the carotid artery, we can decrease the risk of another stroke happening so that they don't have another second stroke-- and then have another insult-- where they have difficulty recovering from and have less chance of having a meaningful recovery.

ADITYA

Not only must we continue doing what we're doing, we've got to push the envelope-- the envelope of research.

PANDEY:

And at the University of Michigan, if you look at every stage and every team member, they're pushing the envelope of how we can do this [INAUDIBLE].

[MUSIC PLAYING]