

Vacuum cleaner sucks up strokes

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A clot vacuum cleaner that sucks out stroke-producing blockages from blood vessels in the brain sounds like science fiction.

But 27 Calgary patients who were rescued from massive strokes know the endovascular procedure is for real, Dr. Mayank Goyal told the Canadian [Stroke](#) Congress today.

The innovative technique uses a tool called the Penumbra System® of Continuous Aspiration Thrombectomy to break down and gently aspirate stroke-causing [blood clots](#) to open up the blocked vessels.

If used within a few hours of an [ischemic stroke](#), the process can reverse the effects of stroke by restoring blood flow to the affected areas of the brain – preventing the permanent loss of brain cells and related brain damage. "This unique new procedure is really quite miraculous," says Dr. Goyal, the director of the Seaman MR Research Centre at the University of Calgary.

The procedure involves going in through the groin and threading a tiny catheter in a blood vessel. The catheter is taken up to the neck and then an even smaller catheter is threaded into the brain beside the clot.

Then the clot is vacuumed out.

"It requires years of training to be able to do this," says Dr. Goyal. "It places enormous demands on the interventionalist, on the imaging specialists, and on the emergency team that gets the patient to a

designated stroke care facility. Teamwork is key for success"

He says that only really large strokes are suitable for this type of procedure.

"The bottom line is we have this new technology which is extremely effective. This study involved patients with large strokes associated with much higher levels of disability and death and we have the potential to be able to give them a good quality of life."

About 80 per cent of strokes are ischemic, which means they are caused by the interruption of [blood flow](#) to the brain due to a blood clot.

Currently the only proven treatment for this type of stroke is the use of the well-established clot-busting drug t-PA, which must be administered within three hours of the onset of stroke to work. This new process has a decreased risk of bleeding and may also successfully salvage brain cells for more than just the first three hours following a stroke.

Dr. Goyal and others have shown that with proper patient selection and use of advanced imaging techniques we have the potential to significantly extend that time window in a select group of patients.

"Our work shows the importance of proper interpretation of the patients imaging and then, achieving quick recanalization," says Dr. Goyal. "This will maximize the likelihood of a good outcome."

"This could be a paradigm-shifting finding to how we treat stroke around the world," says Canadian Stroke Network spokesperson Dr. Antoine Hakim. "It answers questions not just related to use of this device but also the importance of patient selection and good teamwork."

The challenge presented to the research team was to determine which

patients benefit from the procedure. The study showed that patients who have good results on the CT scan and then undergo an emergency procedure to achieve early and safe recanalization have a very good chance of recovery from their big stroke.

"The outcomes for this type of procedure are not always good and why this is has been a big question in the stroke community," says Dr. Goyal. "Our study untangled the mystery of why this is and identifies which patients WILL benefit from the procedure."

Dr. Goyal is now working on a training website that will help other physicians across Canada on interpretation the CT scans of these patients efficiently.

"This promising technique has the potential to curb many of the devastating effects of large strokes," says Heart and Stroke Foundation spokesperson Dr. Michael Hill. "Patients may benefit in a number of ways including improved outcomes and improved quality of life." He emphasizes that Canadians should be aware of the stroke warning signs and to always treat them as a medical emergency.

Provided by Heart and Stroke Foundation of Canada

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