

New devices causing 'paradigm shift' in stroke care

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New devices called stent retrievers, which effectively reverse strokes, have revolutionized the treatment of certain stroke patients, according to an article in the journal *Expert Review of Neurotherapeutics*.

"Stent retrievers are a major advance in acute ischemic stroke care and will have significant impact on the evolution of stroke systems of care," according to the article by Loyola Medicine neurologists Rick Gill, MD and Michael J. Schneck, MD. Dr. Gill is the outgoing chief resident and Dr. Schneck is a professor in the Department of Neurology of Loyola University Chicago Stritch School of Medicine.

Eighty-seven percent of strokes are ischemic, meaning they are caused by clots that block [blood flow](#) to a portion of the brain. In selected patients, stent retrievers can be used to remove such clots. Loyola used stent retrievers on 34 patients in 2015, and 21 patients during the first six months of 2016.

A stent retriever is a self-expanding mesh tube attached to a wire, which is guided through a catheter (thin tube). The endovascular specialist inserts the catheter in an artery in the groin and guides the catheter through various blood vessels all the way up to the brain.

Once the stent retriever reaches the blockage, the endovascular specialist deploys it. The device pushes the gelatinous blood clot against the wall of the blood vessel, immediately restoring blood flow. The stent retriever then is used to grab the clot, which is pulled out when the surgeon

removes the catheter.

"With the advent of stent retriever devices, there has been a paradigm shift in the utilization of endovascular therapies for acute ischemic stroke," Drs. Gill and Schneck write. (Endovascular refers to catheter-based surgery.)

Drs. Gill and Schneck describe how the current generation of stent retrievers, including the TREVO and Solitaire devices, are a remarkable improvement over earlier devices such as MERCI and Penumbra that employed different technology. Studies of these earlier devices showed results that were equivocal at best. But more recent trials of stent retrievers consistently show the newer devices are clearly superior to the intravenous drug tissue plasminogen activator (tPA) alone in reducing disability from strokes.

The clot-busting drug tPA can restore blood flow and limit stroke damage, if it is given within 4.5 hours of the onset of the stroke and the clot is small enough. (If the patient is older than 80, the cutoff time is three hours.) But in many patients, tPA either would not be safe to take, or would not be sufficient by itself to restore blood flow. In such patients, stent retrievers often can be used to remove the clot.

Drs. Gill and Schneck foresee future device improvements that will do an even better job of restoring blood flow and increasing the number of patients who could benefit.

Stent retrievers also will affect where stroke patients are treated. Paramedics will play an important role in routing higher severity [stroke patients](#), who could benefit from stent retrievers, to centers that have the capability to perform neuroendovascular procedures, Drs. Gill and Schneck write.

More information: Rick Gill et al, The use of stent retrievers in acute ischemic stroke, *Expert Review of Neurotherapeutics* (2016). [DOI: 10.1080/14737175.2016.1193007](https://doi.org/10.1080/14737175.2016.1193007)

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