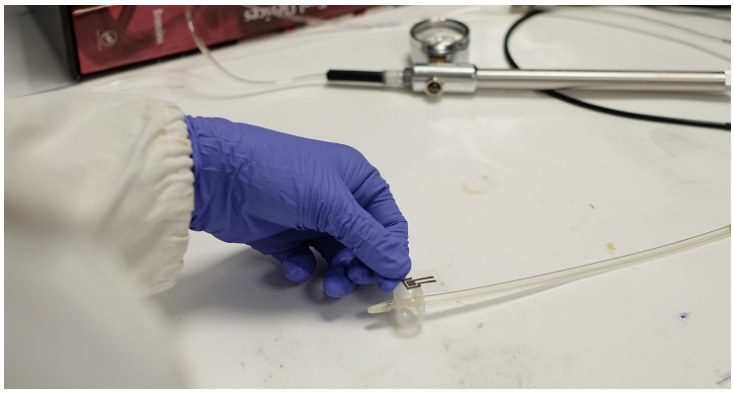
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ASIA EDITION

Singapore develops electrifying way to seal tears, holes in blood vessels

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This device could eventually replace the need for open or keyhole surgery



A team of researchers led by NTU Singapore has developed a device that offers a quicker and less invasive way to seal tears and holes in blood vessels, using an electrically-activated glue patch applied via a minimally invasive balloon catheter.

This device could eventually replace the need for open or keyhole surgery to patch up or stitch together internal blood vessel defects.

After inserting the catheter into an appropriate blood vessel, the glue patch – nicknamed ‘Voltaglue’ – can be guided through the body to where the tear is located and then activated using retractable electrodes to glue it shut in a few minutes, all without making a single surgical cut.

Voltaglue is a new type of adhesive that works in wet environments and hardens when a voltage is applied to it. This catheter device is the first proof-of-concept application of Voltaglue in a medical setting since it was invented by NTU Associate Professor Terry Steele in 2015.

The team showed in lab experiments on a pig’s heart that the Voltaglue patch can be safely and effectively administered in a variety of situations, including withstanding the high pulsatile pressure of blood in arteries like the aorta.

The commercial potential of the catheter system highlights NTU’s commitment to innovation in its recently announced 2025 strategic plan, which aims to translate research into products and outcomes that enhance the quality of life.