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NTU develops biorubber glue for faster surgical recovery

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The biorubber glue innovation took the research team five years to develop

Materials scientists from Nanyang Technological University, Singapore (NTU Singapore) have invented a new type of surgical glue that can help join blood vessels and close wounds faster and may also serve as a platform to deliver pain relief drugs.

In a paper published in Elsevier's Biomaterials in July jointly with clinicians from Singapore General Hospital (SGH), the NTU researchers showed that their glue can bond soft tissues including muscle and blood vessels, even when their surfaces are wet.

Named CaproGlu, it is activated by a low dose of ultraviolet (UV) light that cures it in seconds, turning it from a liquid glue into a solid but flexible biorubber – a biocompatible material that can be resorbed by the tissue after a few weeks.

The team showed in animal experiments that blood vessels can be rejoined with just four stitches and a mesh wrapper dipped in CaproGlu, compared to the usual eight stitches that are required for a reliable and unobstructed join.

The authors estimate that this will reduce surgery time by 25 per cent, as surgeons spend less time and effort stitching up blood vessels and tissues.

As demonstrated in animal experiments, CaproGlu can also be used to deliver local anaesthetics or pain relief medication to tissues in the body, which may be useful both during and after an operation and would reduce the need for pain relief medication to be administered afterwards.

Moving forward, the joint team will be looking to conduct further animal experiments and to assess the performance of CaproGlu in other applications, such as on bone and other organic surfaces.

The biorubber glue innovation took the research team five years to develop and is the subject of a provisional patent filed through NTUitive, the university's innovation and enterprise company.