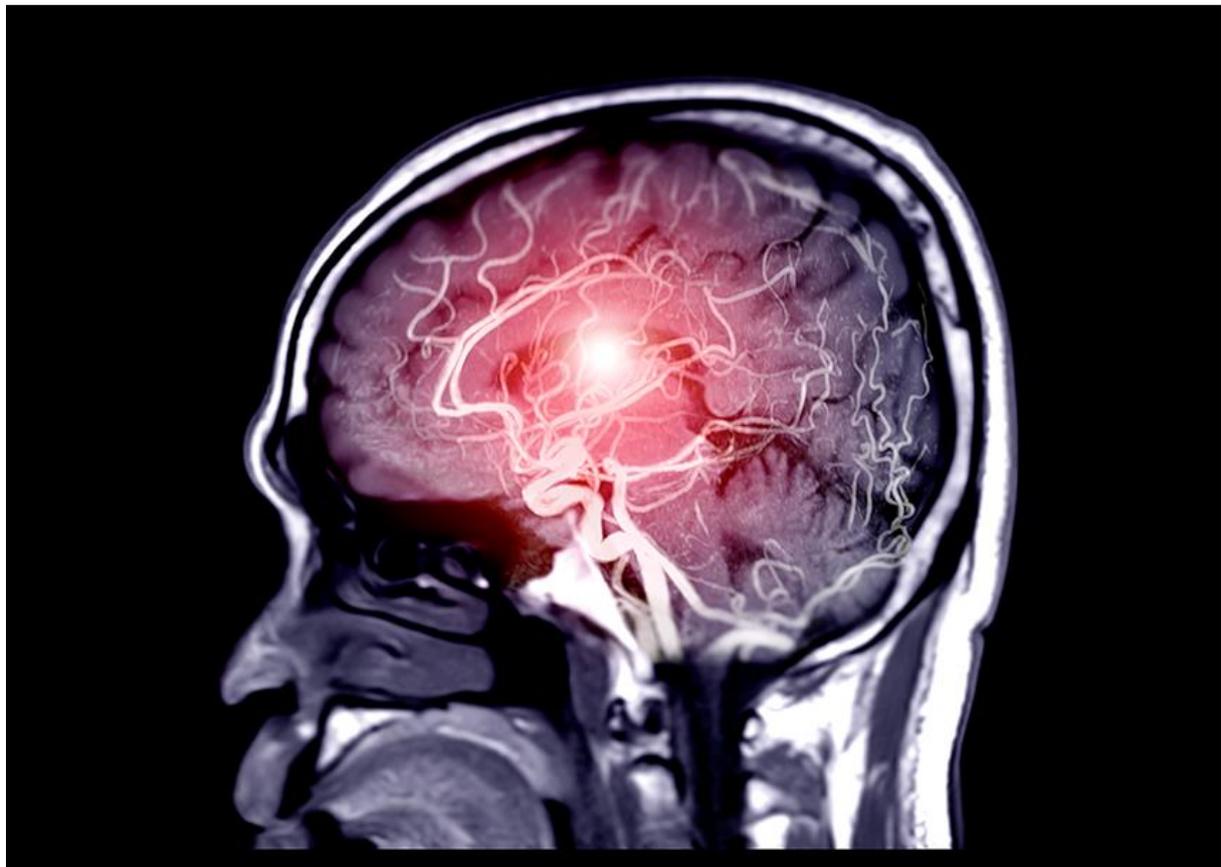


Textile implant for effective and early on treatment of life-threatening aneurysms

15.04.2021 – Uniklinik RWTH Aachen and NLC sign license agreement and agree on research cooperation for product development

Brain aneurysms are a silent danger: If these pathological dilations of the cerebral arteries remain undetected and untreated, the risk of the vessel rupturing increases once it reaches a certain size. The consequences are often serious: Affected individuals can suffer severe brain damage and disability, or even die. Detected early, the aneurysm is fairly well treatable.



Aneurysms often remain undetected, although two to five percent of the population has vasodilatation in the brain. ©iStock.com/mr.suphachai praserdumrongchai

However, conventional surgical procedures are associated with increased risks and complications for patients as well as high costs for the health care system. As the owner of an invention, Uniklinik RWTH Aachen offers a patented solution to this problem: an implant that makes the treating of these aneurysms less risky and more promising. The invention was patented with the support of PROvendis GmbH and has now been licensed to the Dutch medical technology company OccluTex Medical.

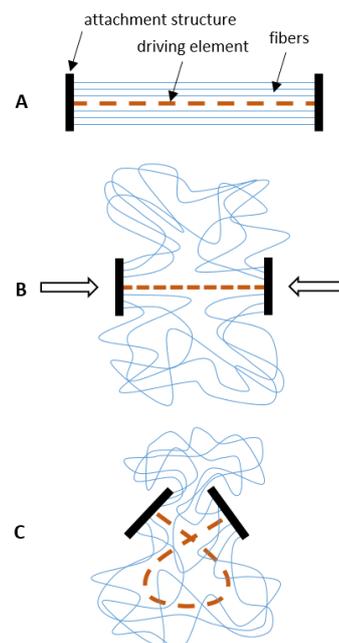
Relieving weak points, reducing risk

As an estimation, two to five percent of the population has vasodilatation in the brain. The incidence occurs in nine to 15 people per 100,000 per year. As the blood vessel walls in these areas are less resilient, they can disrupt without any previous symptoms. If the aneurysms are detected in time, it is important to take pressure off these weak points. "The bulges are usually

filled with spiral-shaped structures made of metal, so-called coils," explains Univ.-Prof. Dr. med. Stefan Jockenhövel from the Institute of Applied Medical Engineering (AME) at RWTH Aachen University. This causes a slowing of the blood flow and eventually the desired thrombosis, the occlusion of the vascular bulge. Depending on the size, up to 30 coils need to be pushed into the bulge via a catheter until the aneurysm has been completely filled. This treatment is very complicated, particularly in the case of brain aneurysms. Aside from high costs, the procedure time is also long, resulting in increased risk for patients. "Using OccluTex will allow us to reduce the number of coils used in future, thereby lowering the cost of treatment and shortening the treatment time, which means that patients are exposed to a significantly lower risk of complications," says Jockenhövel, summing up the advantages of OccluTex.

Tectile-based solution approach

The innovation of the patented technology consists of a new fiber-coated, formable coil: With OccluTex, co-inventor Stefan Jockenhövel, NRW-Schwerpunktprofessor BioTex – Biohybrid & Medical Textiles (BioTex), developed an implant consisting of a flexible and non-flexible textile fiber component that is inserted into the aneurysm in a tensioned state using a catheter system (see figure, A). Once in place, the tension is released and the flexible component changes its shape (B): the implant contracts and bulks up the inflexible textile fiber (C). "This allows us to effectively fill a relatively large area of the aneurysm with these filaments and to achieve the same effect as with previous standard therapy, only with fewer implants and shorter intervention times for patients," says Jockenhövel. It is also conceivable, he says, to enrich the fibers with coagulant substances and thereby increase the thrombotic effect – "but we are continuing to investigate this together with OccluTex Medical."



Novel Design of fiber-coated coils: OccluTex
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Research cooperation with long-term prospects

The licensing to OccluTex Medical, which was spun off from the Dutch company NLC – The European Healthtech Venture Builder, does not mark the end of research activities at OccluTex: The start-up and Uniklinik RWTH Aachen are collaborating on product development and broadening the field of application for these textile coils. "The next step in the development of OccluTex is to miniaturize the prototype in order to make it suitable for currently available catheter systems," says Jack van Lint, CEO of Occlutex Medical B.V, and continues: "We are very pleased about the collaboration. With the AME team from Aachen, we have experienced professionals at our side."

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