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Smart drainage device may help glaucoma patients

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Scientists have developed a smart drainage device that may help patients with glaucoma, one of the leading causes of blindness in the world save their eyesight.

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Implantable glaucoma drainage devices have grown in popularity over the past years, but only half of the devices are still operational after five years because microorganisms accumulate on the device during and after implantation. This problem is known as biofouling.

"We created a new drainage device that combats this problem of buildup by using advances in microtechnology," said Hyowon Lee, an assistant professor from Purdue University in the US.

"It is able to clear itself of harmful bio-buildup. This is a giant leap toward personalised medicine," said Lee, who led the research team.

The glaucoma drainage device is built with microactuators that vibrate when a magnetic field is introduced. The vibrations shake loose the biomaterials that have built up in the tube.

"We can introduce the magnetic field from outside the body at any time to essentially give the device a refresh. Our on-demand technology allows for a more reliable, safe and effective implant for treating glaucoma," said Lee.

The device can vary flow resistance, which allows the drainage technology to customise treatment for each patient at different stages of glaucoma with varying degrees of pressure buildup inside the eye.