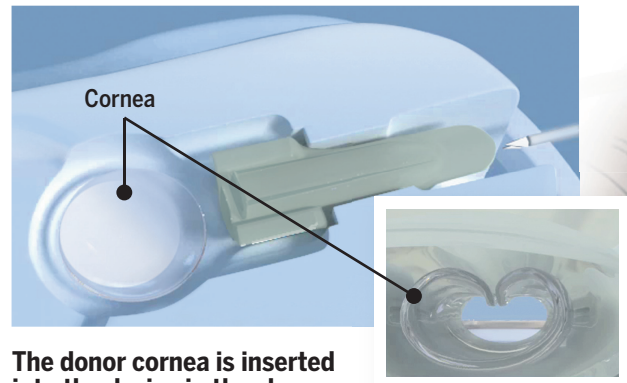
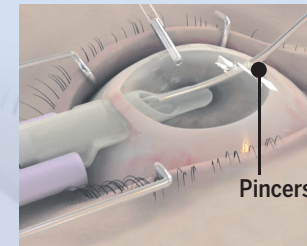


A new way of folding a cornea



The donor cornea is inserted into the device in the shape of a heart, such that the inside of the cornea does not come into contact with anything. Conventional devices have the cornea rolled up like a burrito, with the inside and outside of the cornea rubbing against each other.



The device is then inserted through a small cut in one side of the eye. As a pair of pincers (above) pulls out the cornea from the other side of the eye, the sides of the cornea naturally unfurl. In conventional methods, the cornea, folded up like a burrito, is more difficult to unroll and the whole procedure causes more damage.

Reducing damage in cornea surgery

Device invented here does away with traditional folding of cornea

■ BY LIAW WY-CIN

A CORNEAL transplant brings light to those whose own corneas have been damaged, leaving them blind.

But the process of getting these new corneas into the patient's eye can damage about 35 per cent of the new cornea's cells.

Doctors from the Singapore National Eye Centre (SNEC) have now invented a device which reduces damage to the cells to 7 per cent.

Under traditional methods, a new cornea is rolled up like a taco or burrito and inserted into a

pen-shaped device. But this folding damages the cornea's cells as the inside of the cornea rubs against the outside, said SNEC director Donald Tan.

The cornea is pushed through a 4mm cut at one side of the eye and unfolded while it is on top of the eye. But trying to unfold the cornea when it is on top of the eye further damages the cells.

The problem is worse for Asian eyes, said Prof Tan. "Asian eyes are smaller than Caucasian ones, so it is more difficult to unfold the cornea," he explained.

The SNEC device, which is

shaped like a thumb drive, configures the cornea into a heart shape, with the inside of the cornea not touching anything.

While the device is inserted into one side of the eye with the inside of the cornea facing the eyeball, the cornea is carefully pulled out with forceps on the other side of the eye through a tiny incision.

As it is pulled out, its sides naturally unfurl and it sits nicely on top of the eye, said Prof Tan.

He said the inspiration for the device – which took two years to develop – was the computer thumb-drive, for its utility and simplicity.

"It has to be a simple device so that surgeons will find it easy to use. It's no point coming up with something complicated because other doctors will not want to use it," said Prof Tan.

The centre started using the device, called the Tan endoglide, six months ago.

It has also been approved for use almost everywhere around the world, and up to 30 surgeons are using it.

One of them is Dr Akira Kobayashi from Japan's Kanazawa University Graduate School of Medical Science.

Dr Kobayashi said he liked the device because it could protect the cells of the cornea and was suited to smaller Asian eyes.

In fact, he likes it so much that he is including it in a surgical textbook he is writing on new surgical methods in ophthalmology.

There are about 350 corneal transplants done a year in Singapore following infection, injury and age-related degeneration, and this number is rising with Singapore's ageing population, say eye doctors.

Factory worker Chiew Su Huay, 71, underwent a cornea transplant in her right eye in February using the Tan endoglide.

She said in Mandarin: "In the past, my vision was very blurred and cloudy but now things are getting clearer every day."

"I can see the computer parts I have to assemble at the factory more and more clearly."

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