

Mr Chen Yi Xi flanked by his mother, actress Xiang Yun, and Dr Julian Theng after his partial cornea transplant last week. Also with him are his father, actor Edmund Chen, and staff from Mount Alvernia Hospital.

PHOTO: MOUNT ALVERNIA HOSPITAL



More choosing partial cornea transplants

They offer lower risk of rejection by body over full cornea replacement

By FIONA LOW

Since the SNEC offered the procedure in 2006, the number of EK cases had risen from 16 then to 104 last year. The number of PK cases has fallen by more than a third, from 103 in 2000 to 68 last year at the SNEC.

In partial transplants, the risk of rejection is lower because less foreign tissue is used. This is a key consideration as rejection is the main reason for transplant failure, said SNEC director Donald Tan.

In the ALK procedure, chances of rejection are less than 1 per cent and, in the EK one, they are about 2 per cent, he added.

In PK, rejection rates are about 10 per cent.

"There has been a tremendous change in the way cornea transplants are being done today and we can see a shifting trend towards a preference for these complex (surgical operations), which give better outcomes," added Professor Tan.

Surgeons in private practice agree. Dr Leonard Ang, medical director of the Eye & Cornea Transplant Centre at Paragon Medical Centre, said about 40 per cent of his patients opt for such a procedure now. Ten years ago, the number was less than 20 per cent.

He attributes the surge to improvements in surgical techniques and development of more sophisticated equipment such as motorised blade systems.

"With these developments, there is a faster recovery time for patients and they can achieve better visual results."

But not all patients are suitable for partial transplants. More than half will still need full transplants because many conditions damage the entire cornea, making partial transplants less effective.

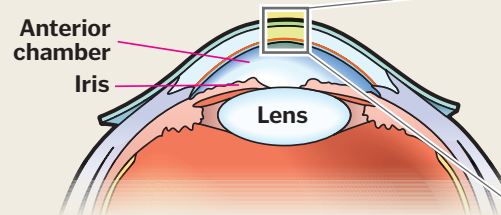
Singaporeans are usually allocated corneas from their fellow countrymen or they can be sourced from the United States, the Philippines or Sri Lanka. The local supply is usually sufficient for domestic needs, said Prof Tan who is also medical director of the Singapore Eye Bank.

Last year, 143 corneas were harvested from dead Singaporeans. Local corneas cost about \$2,200 while those from overseas range from about \$1,200 to \$4,200.

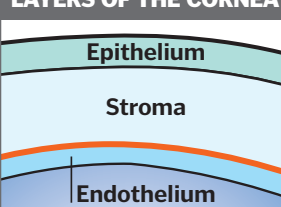
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DIFFERENT METHODS

ANATOMY OF THE EYE

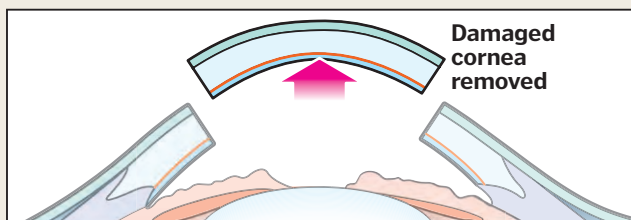


LAYERS OF THE CORNEA



1 PENETRATING KERATOPLASTY (PK)

Traditional full transplant replaces the whole cornea with donor tissue which is then held in place with stitches.



Advantage

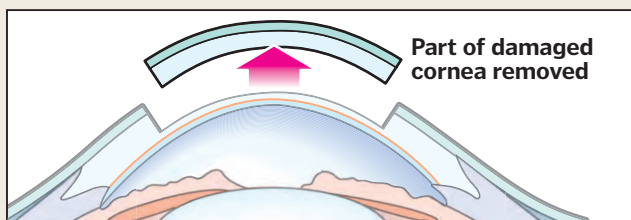
Less complex surgery, does not require as much surgical technique.

Disadvantage

Higher risk of rejection and poorer vision due to stitches.

2 ANTERIOR LAMELLAR KERATOPLASTY (ALK)

Part or all of the stroma is sliced away with a blade and replaced with donor stroma which is then stitched in place.



Advantage

Very low risk of rejection. Rejection usually occurs in the endothelial layer which is retained in an ALK.

Disadvantage

Reliant on surgical skills. May result in less vision clarity if the surface between the patient's tissue and donor tissue is not perfectly smooth.

About 350 cornea transplants are carried out in Singapore yearly. These are the main methods for a cornea transplant.

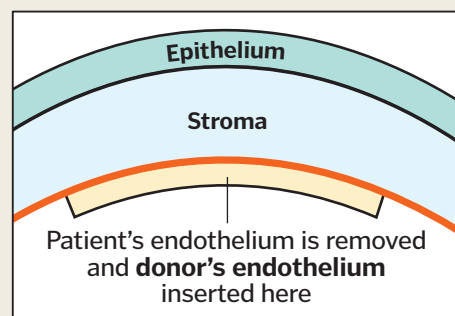
3 ENDOTHELIAL KERATOPLASTY (EK)

The endothelium is a very thin layer, about one hundredth of a millimetre, that pumps water out of the cornea to keep it clear.

A small incision is made in the eye and only the endothelium is removed.

The endothelium from a donor cornea is inserted into the patient's eye with a vial or tweezer-like grips, to replace the layer that was removed.

The donor endothelium is attached to the stroma by injecting air beneath it to push it upwards.



Advantage

Less invasive surgery. A keyhole surgery with no stitching involved, therefore there is less chances of infection and faster visual recovery.

Disadvantage

More complex surgery.

NOTE: Graphics not drawn to scale.

Source: SINGAPORE NATIONAL EYE CENTRE ST GRAPHICS

THE 20-year-old son of MediaCorp artists Edmund Chen and Xiang Yun underwent a cornea transplant recently after a contact lens infection six years ago had badly affected vision in his left eye.

But unlike a traditional operation to replace the entire cornea, Mr Chen Yi Xi, like more and more eye patients, opted for a partial cornea transplant. He did a procedure called anterior lamellar keratoplasty (ALK), which involves removing the front layers of the cornea and replacing them with donor tissue.

The national serviceman is expected to fully regain his eyesight, said Dr Julian Theng, group medical director of Eagle Eye Centre, who performed the 90-minute operation last Friday.

The cornea, a transparent surface covering the front of the eye, controls the entry of light into the eye.

Compared with the traditional penetrating keratoplasty (PK) or full-thickness transplant which replaces the entire cornea, the ALK is harder to do as it needs more technical skills, say surgeons. But more people are opting for such partial transplants as the risk of rejection is lower.

Statistics from the Singapore National Eye Centre (SNEC) show a more than six-fold increase in ALK cases over the last decade - from 11 in 2000 to 68 last year.

Each year, about 350 cornea transplants are done here. About half the patients are Singaporeans and the rest are medical tourists.

Another partial cornea transplant, called endothelial keratoplasty (EK), replaces just the endothelial layer, leaving most of the cornea intact.

This very thin layer of cells functions to pump water from the cornea, keeping it clear.