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My sight is so clear I can see the dust I used to miss cleaning up

Every year, around 2,500 Britons - usually over the age of 65 - undergo a corneal transplant. Jessie Brett, 83, who lives in London, was one of the first in Britain to have a new, simpler procedure with a faster recovery time.

She tells CAROL DAVIS her story, while her surgeon explains the operation.

Back in focus: Jessie Brett

THE PATIENT

Until my 50s, my eyesight was perfect. I worked as a printer for a bank, and I'd be able to spot even the tiniest flaw on the cheque books. Then, five years before I retired in 1989, small details, like the letters on a page, started looking blurry.

I went to my optician, who prescribed glasses and warned there might be a problem with my sight. But no one could say why it was getting worse. I just put it down to ageing.

Over the next four years my sight deteriorated at an alarming rate, so I was referred to hospital for more tests. That's when I was diagnosed with Fuchs' endothelial dystrophy, a disease in the cornea, the bit which focuses at the front of the eye.

The layer of cells - the endothelium - which pumps fluid out of the cornea was deteriorating. This meant the cornea was clouding over.

Worryingly, I was told my eyesight would keep getting worse and I would go blind in both eyes. But doctors said they wanted to delay an operation to replace my corneas with donor ones as I'd need to start wearing contact lenses - not easy for someone of my age.

The news was upsetting, but I trusted their advice implicitly. Over the next 13 years my eyesight got worse and worse. The lenses in my glasses had to be made thicker and my vision was blurry.

Then, in 2001 my consultant, Dr Simon Levy, told me that the time had come for the corneal transplant in my right eye - without it I'd lose all vision.

I had the cornea transplant under general anaesthetic. After the 90-minute operation, my eye felt very uncomfortable. It was covered with a plastic shield to protect against infection. When the shield was removed a few hours later, the light was blinding and my sight was very blurry.

Dr Levy told me that the new cornea would take around 18 months to heal. I also had to wear a hard contact lens to aid the process.

But the hard lens was incredibly uncomfortable. Eventually, I just gave up and relied on glasses again. I continued to see Dr Levy regularly. He warned me that my left eye was getting worse. I knew this meant another operation, but I dreaded it because of the hard lens.

However, this time Dr Levy offered me a new operation he'd pioneered.

Instead of replacing the entire cornea, he could simply replace the faulty layer of endothelial cells using donor cells, so the eye would heal much faster and I wouldn't need a hard contact lens.

I waited three months for the NHS operation in March 2003. It took an hour.

After the operation, I took a peek out of the eye shield and I couldn't believe it - nothing was blurry. When I got home, I could see dust everywhere. I've always been fussy about cleanliness and couldn't believe how much I'd missed.

Although my right eye is still blurry without the lens, the vision in my left eye makes up for it. I don't even need to wear glasses now.

THE SURGEON

Dr Simon Levy is a consultant opthalmologist at North West London Hospitals NHS Trust, and in private practice at Spire Bushey Hospital and the Wellington Hospital in London.

He says: Most corneal transplants are carried out on those over 65, often because the eye degenerates with age. There is currently a shortage of donor material and a waiting list.

The cornea is the front window of the eye, and is essential for focusing. In a healthy eye the cornea is transparent and water-free, but in some patients the cornea becomes filled with fluid so it becomes cloudy and they become blind.

This can be caused by a condition called Fuchs' endothelial dystrophy, which is common, especially in later life, but no one knows what causes it.

This disease means that the cells lining the inner surface of the cornea, called the endothelium, gradually die. The job of these cells is to pump the cornea free of water.

Damage to the endothelial cells can also occur after a cataract operation, the most common operation in Britain.

Corneal disease has traditionally been treated by removing the entire cornea with a circular blade and transplanting a donor cornea from a cadaver which we secure with 16 tiny sutures.

Because this is such a major operation, it takes around 18 months to recover while the new cornea 'beds in'. This is a huge operation for a tiny organ like the eye, and can also lead to glaucoma or abnormally high pressure in the eye which can damage vision.

Even if successful, most patients go on to suffer astigmatism, where the surface of the cornea is uneven, causing a loss of focus. To correct this the patient has to wear a hard contact lens permanently.

For older people who may have difficulty seeing and inserting a tiny contact lens, that hard lens is almost impossible to manage.

Fortunately, six years ago, a revolutionary new treatment became available - selective corneal endothelial transplantation, which allows us to replace just the faulty layer of endothelial cells instead of the entire cornea. Since there is nothing wrong with the cornea itself, there is no need to remove normal tissue.

We can do this operation under local anaesthetic, though I prefer general anaesthetic. This is because it takes an hour and it's a very precise operation, so they need to be totally still.

First, I make two small side incisions - around 0.9mm - between the cornea and the white part of the eye. I use one to insert fluid into the eye to help it maintain its shape and through the other I manipulate the transplant into place.

Then I make the main incision which is just 4mm wide. A tiny surgical hook is used to peel away and pull out the diseased endothelial layer.

After removing the endothelial layer from the donor cornea, I insert it through the 4mm hole. The endothelium is round, like a disc, and 8mm in diameter so to get it in I have to roll it into a scroll, protecting the delicate endothelial cells on the inside, and fix it to the cornea using air.

I then close the main incision with a single stitch - the side ports are so small they heal naturally. Once the patient has recovered from the anaesthetic, they go home.

Jessie was one of my first patients, and her sight is very good and has stayed that way. I'm delighted for her, and for the hope it offers many more corneal transplant patients.

• *The operation costs £4,000 to £5,000 privately, a similar cost to that on the NHS. Go to www.eyesite.org*