

Development of retinal Implant

This research has been in development for some time and gradual the number of pixels or quality has increased. It has now reached the level at which a CE marked product has been launched in Europe. Thus patients are beginning to have this operation. In time we will have more information about how effective this implant is.

IT is though only for very severe patients who have very poor vision, especially those with Retinitis pigmentosa. This article is a nice summary appearing in the Daily Mail.

The bionic eye that could restore the sight of thousands

By **Jenny Hope**
Medical Correspondent

IT was the 'magic moment' that released Chris James from ten years of blindness.

Doctors switched on a microchip that had been inserted into the back of his eye three weeks earlier.

After a decade of darkness, there was a sudden explosion of bright light - like a flash bulb going off, he says.

Now he is able to make out shapes and light. He hopes his sight - and the way his brain interprets what the microchip is showing it - will carry on improving.

Mr James, 54, is one of two British men who have had their vision partly restored by a pioneering retina implant.

The other, Robin Millar, one of Britain's most successful music producers, says he has dreamed in colour for the first time. Both had lost their vision because of a condition known as retinitis pigmentosa, where the photoreceptor cells at the back of the eye gradually cease to work.

Their stories bring hope to the 20,000 Britons with RP - and to those with other eye conditions such as advanced macular degeneration which affects up to half a million.

Mr James had a ten-hour operation to insert the wafer-thin microchip in the back of his left eye at the Oxford Univer-

'Distinguish the outlines of objects'

sity Eye Hospital six weeks ago. Three weeks later, it was turned on.

Mr James, who lives in Wroughton, Wiltshire, with his wife Janet, said of his 'magic moment': 'I did not know what to expect but I got a flash in the eye, it was like someone taking a photo with a flashbulb and I knew my optic nerve was still working.'

The microchip has 1,500 light sensitive pixels which take over the function of the retina's photoreceptor rods and cones.

One of the first tests was making out a white plate and cup on a black background.

Mr James, who works for Swindon Council, said: 'It took a while for my brain to adjust to what was in front of me, but I was able to detect the curves and outline of these objects.'

Tim Jackson, a consultant retinal surgeon at King's College Hospital and Robert MacLaren, a professor of ophthalmology at

the University of Oxford and a consultant retinal surgeon at the Oxford Eye Hospital, who are running the trial, say it has 'exceeded expectations' with patients already regaining 'useful vision'.

Ten more Britons with RP will be fitted with the implants, which are also being tested in Germany and China. The device, made by Retina Implant AG of Germany, connects to a wireless power supply buried behind the ear. This is connected to an external battery

unit via a magnetic disc on the scalp. The user can alter the sensitivity of the device using switches on the unit.

Mr Jackson said: 'It's difficult to say how much benefit each patient will get, this pioneering treatment is at an early stage.'

'But it's an exciting and important step forward. Many of those who receive this treatment have lost their vision for many years. The impact of them seeing again, even if it is not normal vision, can be profound and at

times quite moving.' Mr Millar, 60, who was behind Sade's Diamond Life album, has been blind for 25 years. He said: 'Since switching on the device I am able to detect light and distinguish the outlines of objects.'

'I have even dreamt in very vivid colour for the first time in 25 years so a part of my brain which had gone to sleep has woken up! I feel this is incredibly promising and I'm happy to be contributing to this legacy.'

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HOW THE IMPLANT WORKS

1 Wafer-thin three millimetre square chip packed with 1,500 light sensors implanted in back of eye in ten-hour operation

2 Ultra fine cable runs from the eye to a magnetic coil under the skin behind the ear. The battery pack is then connected magnetically on the outside of the head

3 Sensors pick up light and convert it to electrical signals. These stimulate cells in the retina before being passed down the optic nerve to the brain for processing into an image

4 Vision gradually returns, allowing patient to see loved ones smile, recognise people from 20ft away, read clocks and navigate round obstacles

Eye ball, Lens, Retina, Light travelling into the eye, Optic nerve, Magnetic coil under skin

Patient Chris James, 54, with the external battery unit

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