Tiny contact lens eye patch to save glaucoma victims

By Mark Wagnhorn

A TINY patch that injects medicines directly into the eyelid could revolutionise the treatment of vision-threatening conditions, scientists believe.

Doctors say it will allow patients to treat diseases such as glaucoma and age-related macular degeneration at home.

Many medications for eye conditions work best when released directly into the tissue. But injections can cause problems ranging from pain to infections and permanent eye damage.

Eye drops wash out and are often inefficient. They also get mixed with tears instead of going where they are needed.

**Blindness**

The contact lens-style patch is just a millimetre wide and uses microsyringes to release drugs into the eyelid.

Its painless spikes dissolve over time, slowly releasing the drug in a controlled way.

Study author Dr Peng Cao said: "The eye patch application is easy and minimally invasive to ensure good patient compliance.

"Such drug delivery strategy promises effective home-based treatment of many eye diseases."

AMD affects the retina at the back of the eye and is the leading cause of blindness in older people, with 500,000 UK sufferers.

A similar number have glaucoma which causes fluid to build up, damaging the optic nerve and causing loss of vision.

In tests on mice, just one drug treatment delivered by patches repaired 96 per cent of damage caused by corneal neovascularisation, which is common among contact lens wearers and can cause blindness.

Clinical studies on humans found repeated high doses of eye drops repaired just 41 to 46 per cent of the damage.

Dr Cao, of Nanyang Technological University, Singapore, said delivering drugs into the eye is hard because the lining of cells in the cornea at the front and the retina at the back act as "walls".

He said: "Microsyringes can penetrate the barriers with minimal invasiveness and be self-implanted as drug reservoirs for controlled drug release.

"This approach could be paradigm-shifting for long-term home-based treatment and management of various eye diseases."

The study, published in Nature Communications, concluded clinical trials will now be required to evaluate the patches' effectiveness and safety for humans.