

Hyperosmotic Contact Lens for the Treatment and Prevention of Corneal Edema (Mor)

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Background - Corneal Edema

Edema of the eye's cornea is a disabling and agonizing condition that could lead to significant decrease in vision, pain, scars and eventually could result in an invasive corneal transplant surgery. Corneal edema is caused when the cornea's ability to stay dehydrated is impaired, as influx of water into the cornea's layers accumulates and results in edema. The edema reduces corneal transparency which is crucial for adequate eye site. Impairment of the cornea's inner layers, causing edema, usually happens as an adverse effect of eye surgery (most common cataract operations), trauma, and infections, or as a result of a congenital disorder.

The HyperCL

The HyperCL is a hyperosmotic contact lens targeting corneal edema with the only efficient non-invasive treatment to be offered. Invented by Dr. Ofer Daphna, M.D. (Ophthalmology Dept., Kaplan Medical Center), the HyperCL is a simple solution that from its exterior, looks just like the ordinary common contact lens, but actually consists of an innovative design, with an inner hyperosmotic compartment. The hyperosmotic compartment enables the safe drainage of the accumulated fluid from the edematous cornea. Once the HyperCL is applied on the edematous eye, the passive osmotic forces drain the excessive fluid from the cornea through a selective water permeable membrane which consists of the lens' back wall.

The Need

To date, medicine can hardly offer any help to suffering corneal edema patients, nor can it help prevent the condition itself or control most of its complications. Predominantly treatment consists of hyperosmotic eye-drops which are applied a few times a day. Obviously, the eye drops are cleared away very fast after a few eye blinks and therefore are of only minimal help.

Moreover, the eye drops commonly cause eye burns which may lead to low compliance. The long waiting lists (estimated 10M patients WW, 1/3 of which is attributed to corneal edema) for cornea transplants are yet another dreadful proof of the need for the HyperCL - an efficient and safe solution for the prevention and treatment of corneal edema.

Targeting corneal edema has two main aspects:

1. Prevention and treatment of short term corneal edema:
Up to 20% of eye operations which involve the cornea will result in short term corneal edema.
2. Treating chronic corneal edema patients: Estimated 1%-3% of patients with corneal edema will develop a chronic condition which will necessitate ongoing treatment.


Current Status

A PCT Patent Application entitled: "The Hyper Osmotic Contact Lens" has been submitted by Mor Research Applications in December 2008.

Summary

HyperCL is an innovative solution for an efficient non-invasive treatment of corneal edema. The clinical and economic advantages of the HyperCL result from prevention of post-operative complications, to include sparing the torment of costly recurring cornea transplantations. With an expected short time to market, the HyperCL is a true opportunity for real advancement in Ophthalmologic medicine, bringing a much anticipated solution to the huge corneal edema market.

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