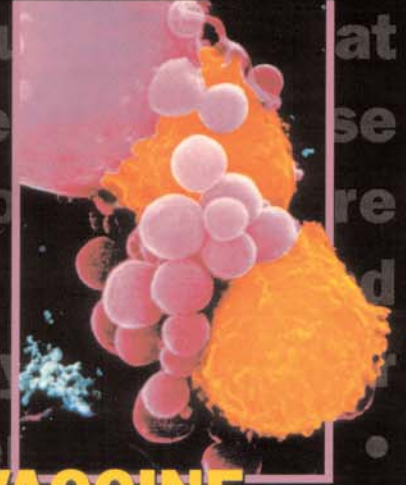


Reader's
Digest

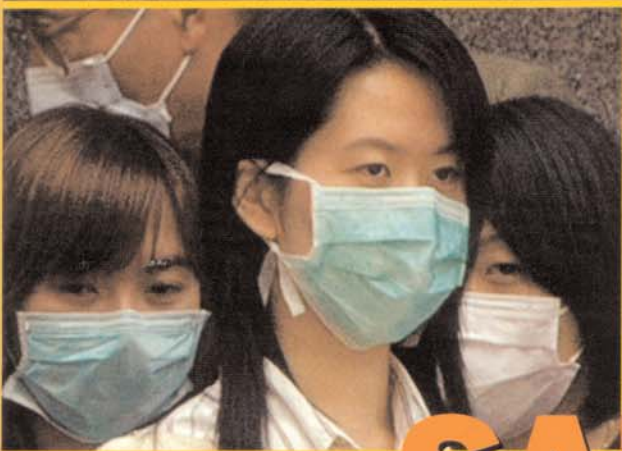
2004

MEDICAL BREAKTHROUGHS

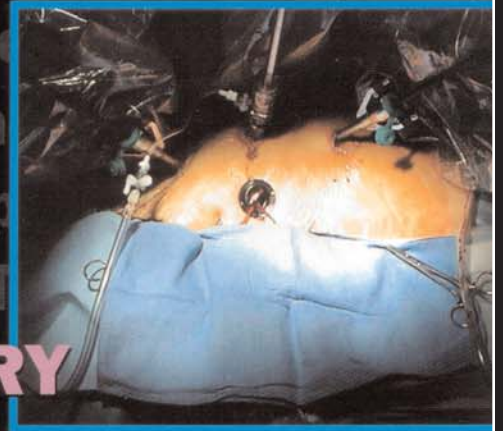
The Year's Most Important
Health Developments



CANCER VACCINE

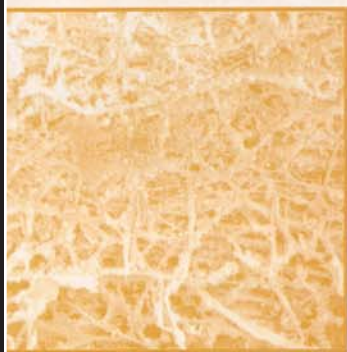


SARS



ROBOTIC HEART SURGERY

Diabetes Discovery • Mercury Su
New Inertity Treatment • He
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• Are Statins the New Aspirin?
Gene Therapy
• Peanut Alle
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• Implantable Contacts •
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Attacks • Growth Hormone Up
Cell Therapy • Viagra's New T
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Sea Worm Blood Substitute • Alzheimer's Sur

Surgical Solutions**A New Laser,
a Better
Glaucoma
Treatment**

Clogs in this meshwork cause fluid backups in the eye. Pulses of light shake the meshwork, dislodging stuck particles.

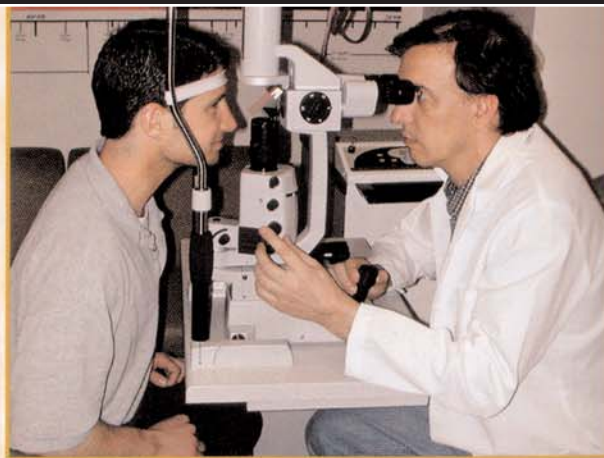
An estimated 2 to 3 million Americans have the insidious eye disease glaucoma, the leading cause of blindness in the United States. The most common form, called primary open-angle glaucoma (POAG), affects 1 percent of all Americans and comes on silently, with no swelling or pain—just a slow buildup of pressure and the equally slow destruction of the optic nerve. Treatments typically involve daily medications, most of

which have significant side effects, or surgery, which is often effective for only a short time and usually can't be repeated when the pressure builds again. Now, a small company in Boston is hoping that its new laser treatment can provide another option.

Glaucoma results from a buildup of fluid in the eye. Normally, fluid travels through various parts of the eye and drains through a spongy meshwork, called the trabecular meshwork, where the cornea and iris meet. If the fluid passes through this drain too slowly, pressure builds and can eventually cause damage to the optic nerve that can lead to blindness.

The most common laser surgical procedure, argon laser trabeculoplasty (ALT), releases the pressure by making small burns in the mesh, causing the drain holes to stretch. But it's effective in only about 60 percent of patients, and for half of them, the effects wear off within a few years. Because the lasers emit such powerful beams, they can burn the eye tissue and leave permanent scars, so patients can undergo the procedure only once or twice.

How it works. The procedure developed by SOLX, based at the Photonics Center at Boston University, relies on a different kind of laser, called



A patient undergoes the new laser treatment for glaucoma.

a titanium sapphire laser. Instead of stretching the meshwork, the laser emits quick pulses of energy to shake it, somewhat like shaking out a blanket after a day at the beach. The motion dislodges any particles that may be blocking the flow of fluid and normalizes pressure without damaging the eye.

"If you produce minimal change in the eye, you have the possibility of retreatment," says Francisco Fantes, M.D., professor of ophthalmology at the University of Miami's Bascomb Palmer Eye Institute. Dr. Fantes is familiar with the SOLX technology and calls the clinical trial data impressive.

One study of 100 patients conducted by researchers in Madrid, Spain, found that the SOLX procedure, called gonioscopic laser trabecular ablation (GLTA), reduced pressure in the eye more than ALT did. Another study involving patients who had already had ALT produced similar results. Those who had GLTA were able to cut the amount of medication they required by 72 percent. If they were taking only one drug before the surgery, they didn't need it afterward.

SOLX's greatest competition will probably be lasers approved by the FDA in October 2002 for a procedure called selective laser trabeculoplasty (SLT). It also uses a low-intensity laser and can be repeated several times. But the GLTA laser can penetrate deeper into the eye, says Dr. Fantes, making it more effective. In fact, studies found that GLTA penetrates almost 90 percent of the trabecular meshwork, compared to about 15 percent for SLT, making it better able to clear out any "clogs." Additionally, GLTA patients required significantly fewer medications after surgery than SLT patients.

Availability. SOLX was approved for use in Europe in August 2003. It was expecting FDA approval of its laser in fall 2003. Once approved, says Dr. Fantes, GLTA may be considered a first-stage treatment for POAG instead of drugs. ■