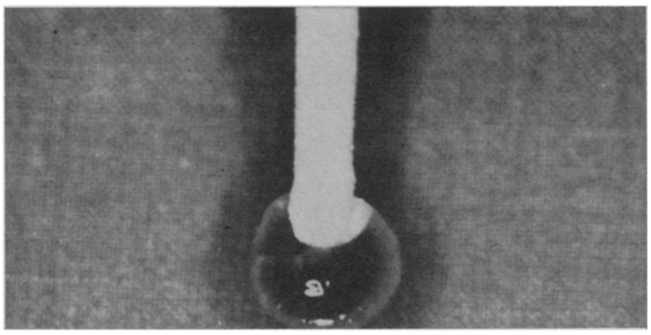
Army



Army

The removal of a cataract by freezing. The instrument used here is called a cryophake (Greek for freezing the lens).

Eye Surgeons Join Sound, Cold

New techniques are replacing heat in some eye surgery

by Faye Marley

"Ice is also great and would suffice," said Robert Frost in his poem, "Fire and Ice."

So, say the surgeons, do sound and heat suffice, for purposes well beyond the poet's ken.

Eye surgeons have been coming to rely on cold, however, at liquid Freon or nitrogen temperatures—for the removal of cataracts and the treatment of detached retinas.

And now, as cryosurgery is beginning to come into its own, replacing the traditional diathermy, ultrasound and laser surgery are coming along to supplement, but not replace the sophisticated and maturing cryosurgical technique.

At Western Reserve University's School of Medicine, a part of the University Medical Center in Cleveland, Drs. Adnan Sokollu, associate professor of biophysics, and Edward S. Purnell, assistant professor of ophthalmology, are beginning human trials of the revolutionary new surgical technique that uses high frequency sound waves.

Ultrasound has proved successful in several hundred animal experiments, and in a progress report on their five-year research project supported by the National Institute of Neurological Diseases and Blindness, Bethesda, Md., the scientists discussed their achievements not only in pushing back the retina when it is detached, but also "welding" it into place. For the welding procedure they use a higher intensity of sound waves.

In using ultrasound a focused beam of high-frequency sound waves is applied to the patient's eye through a cone-shaped nozzle. A few drops of a liquid lubricator in the eye serve as a conducting medium; ultrasound cannot pass through the air gap but travels easily through liquids or solids. Ultrasound requires more intensive investigation before "welding" can be feasible in a detached retina. It is used to push back the retina and, diagnostically, to locate foreign objects.

Retinal detachment may be caused by disease, accident or shock, and unless it is successfully treated it can cause blindness or serious impairment of sight.

The retina is the inner layer or coating at the back of the eyeball where the sensation of vision is initiated. It is a network of fibers that receive light rays or images from the front of the eye, transmitting them to the vision centers in the brain.

Detachment means that some part of the retina has become separated from its blood supply and connections with the brain. Floating in the eye fluid, the detached part fails to perceive light rays and the vision gets worse without treatment.

Cryosurgery is becoming the method of choice in treating detached retina as well as cataracts.

Dr. Edwin H. Eigner of the University Medical Center compares tears in the retina to the ripping of a thin handkerchief, permitting fluid in the middle part of the eye to get through. To seal the tear the surgeon creates with cryosurgery a reaction to make tissue grow between the retina and the adjacent lining.

In many hospitals, Dr. Eigner says, heat, or diathermy, has been entirely replaced by cryosurgery.

"There are some problems with cryosurgery," Dr. Eigner explains. Edema can occur, and with overtreatment, excessive bleeding also takes place.

"As in any new method, cryosurgery has been fairly slow to be taken up in all hospitals. But I use it for cataracts in all except cases among the young."

At Walter Reed General Hospital, Col. Jack Passmore, chief of the ophthalmology service and consultant in ophthalmology to the Surgeon General of the Army, says he has used cryosurgery on 50 cases of retinal detachment, and on 75 to 100 cataracts.

"I believe cryosurgery is here to stay," he says. "It may ultimately be used with ultrasound. We are using ultrasound for diagnosis now. We also use the laser. I would not say definitely that cryosurgery will replace diathermy entirely, but this could happen."

More and more residents in hospitals where the freezing technique is used are being trained in cryosurgery, so it is logical to expect a wider use in the near future.

Cryosurgery has had considerable publicity since 1962 when Dr. Irving S. Cooper of St. Barnabas Hospital, the Bronx, New York City, performed the first operation with it for Parkinson's disease, or shaking palsy, applying a nickel stainless steel cannula to the thalamus to freeze a part of it with liquid nitrogen.

The prefix cryo is from the Greek kryos meaning cold. The liquid nitrogen is 321 degrees below zero F.

Dr. William G. Cahan has used the freezing method at Sloan-Kettering Cancer Center, New York City, for treating tongue cancer and to destroy some uterine tumors.

Numerous other conditions have been treated with cryosurgery, and although one cannot predict its future adaptations, it looks as though it will have a permanent place in the operating room.