



**Harvey A. Lincoff, MD** spent his career developing minimal surgical techniques for retinal detachment. In 1964 he reported his first cases using cryopexy. Here, Dr. Lincoff relates the events around his invention:

“The idea of freezing to replace diathermy to produce a retinal adhesion came about in response to the recognition that diathermy causes necrosis of the sclera and that was the critical factor in the production of scleral abscess in the scleral buckling operation for repair of retinal detachment...this led to a trial of cryopexy with carbon dioxide pencils...

Carbon dioxide pencils were difficult to use and maintain in the operating room. At the time the Linde Corporation was producing a cryosurgical instrument for brain surgery that use a long stylette cooled with liquid nitrogen. We consulted with Linde in 1963 about making a probe suitable for retinal surgery. John McLean who has engineering training led the consultations for the design of the first cryosurgical probe for eye surgery. The handle of the probe was filled with liquid nitrogen at the beginning of an operation. There were two nitrogen gas lines, one to drive the liquid nitrogen into the tip of the probe and the other served as an exhaust. The gas lines were connected to a Minneapolis Honeywell control unit. Depending upon how it was set it would drive the gas and the liquid nitrogen into the tip of the probe at a rate sufficient to produce a temperature between -20 degrees Celcius and -110 degrees Celcius. We subsequently concluded that -20 degrees Celcius to -50 degrees Celcius was clinically appropriate.

The white lesion that would appear in the retina was done under ophthalmoscopic control. The application of freezing did not damage the sclera but causes necrosis of the pigment epithelium and the outer retina. Regeneration of the pigment epithelium and the outer retina yielded a desmosomal adhesion between Mueller's fibers and regenerated pigment epithelium...Report of the first 10 retinal detachments treated with cryopexy was made to the American Academy of Ophthalmology in **1964 by Lincoff, McLean and Nano.**

Two weeks prior to the Academy meeting, Dorhman Pischel, MD visited the lab, saw the cryo experiments and said, "I think someone has done this before. I can't remember things in New York, but will remember when I get back to San Francisco." A week later a note came from Dr. Pischel with a reference to the Eye Journal of Florence, Italy by G. Bietti...[Bietti] did not pursue cryo because he did not buckle and diathermy was easier to apply. My report to the Academy therefore began with '30 years ago Giambattisa Bietti treated 6 patients with cryo applications to seal retinal breaks."

Today, Dr. Lincoff is Professor Emeritus of Ophthalmology, the Newhouse Clinical Scholar and Director of Retinal Research of the New York Presbyterian Hospital-Weill Cornell Medical Center. **In 2011 Dr. Lincoff sat down to talk about his life and experiences for the Museum of Vision Oral History Project.**

