The technique of unsharp masking is thus simple. It is powerful enough to merit routine use in fundus photography whenever sharpness of detail is at premium. It seems particularly valuable in the photographic documentation of the appearance of the retinal nerve fiber layer.

From the Neuro-Ophthalmology Unit, Departments of Neurology, Neurosurgery, and Ophthalmology, University of California, San Francisco. Supported in part by the Alcon Eye Research Foundation, Axel & Margaret Axson Johnsons Stiftelse (L.F.), and United States Public Health Service Training Grant No. EY 00083-01. Dr. Frisen is on leave of absence from the Department of Ophthalmology, University of Göteborg, Sweden, and Fellow in Clinical Neuro-Ophthalmology at the University of California. Manuscript submitted for publication April 16, 1973; manuscript accepted for publication May 8, 1973. Reprint requests: Dr. Frisen, Ogonkliniken, Sahlgrenska Sjukhuset, S-413 45 Göteborg, Sweden.

Key Words: fundus photography, photographic printing, image processing, photographic masking, contrast enhancement, image sharpness.

REFERENCES

A leakproof needle useful for anterior chamber mixing or for multiple injections in acute experiments. STANLEY J. CEVARIO.

Kottler, Brubaker, and Macri 1 reported an apparatus which mechanically mixed aqueous humor during decay kinetics studies. Leakage from this apparatus was prevented by filling the needle hub with modeling clay and sealing the system with epoxy resin. The purpose of this note is to introduce a new principle in the fabrication of an aqueous humor mixer. While the method of mechanical mixing remains the same as the preceding authors, this mixer can be quickly fabricated, is inexpensive, and durable.

The mixer, as modified, consists of a No. 25 (1/10 inch) disposable needle fitted, at the hub, with the rubber tip from a 1 c.c. tuberculin (Monoject) plunger. A stainless steel cleaning wire (approximately 3 inches) from a No. 24 (1/6 or 1 inch) hypodermic needle is passed through the No. 25 needle shaft, rubber tip, and exits at the hub. A loop is made at the hub end of the cleaning wire. A small angle (approximately 5° to 10°) is bent on the cleaning wire at the needle tip in order to ensure proper mixing (Fig. 1). The completed mixer is inserted into the animal eye with the cleaning wire withdrawn, once inside the anterior chamber, the wire is advanced. The rubber tip which fits snugly into the needle hub prevents leakage of aqueous humor from the experimental eye with or without mechanical mixing. Approximately five minutes is required to fabricate this mixer. The danger of an inert substance, modeling clay or grease, entering the anterior chamber is eliminated.

The disposable needle has the advantage of being very sharp and enables penetration of the cornea with minimal trauma to the enucleated or intact eye. It is our practice to utilize a newly fabricated mixer with each experimental eye.
No. 31 Stainless Steel Needle Tube (inside rubber plunger)

Fig. 2. Utility needle for injection purpose or withdrawal of aqueous humor.

No. 24 Stainless Steel Needle

No. 31 Needle Tip

Anterior Chamber

Fig. 3. Enucleated perfusing cat eye illustrating use of aqueous humor mixer, utility needle, and intraocular pressure needle.

Utilizing the same fabrication technique, with a small change in materials, a utility needle for repeated withdrawal of aqueous humor or for injection purposes can be constructed. A No. 24 (\(\frac{3}{4}\) inch) stainless steel needle is flanged inside the hub by a gentle tap from an ice pick or related instrument. The flange will smooth the fusion of needle and hub, eliminate rough spots, and aid insertion of the following No. 31 needle. The rubber tip is then fitted snugly into the hub. A \(\frac{1}{2}\) inch or shorter length of stainless steel tube (1.10 mm. O.D.) is gently inserted into the rubber tip and rests on the inside surface adjacent to the flange (Figs. 2 and 3). The tube functions as a guide for a No. 31 (1\(\frac{1}{2}\) inch) needle which is inserted through the tube, rubber tip, and into the anterior chamber. A fluid can then be injected or withdrawn and upon removal of the needle the self-sealing rubber tip prevents aqueous humor leakage. The insertion of the No. 31 needle requires a little practice, but in a short time one can master the technique. After the No. 31 needle has been inserted through the rubber tip, it is occasionally necessary to twirl the syringe to aid the passage of the needle tip into the No. 24 needle shaft.

A utility needle is described which can be used for repeated injection or withdrawal of fluid in the anterior chamber. The same system is utilized to prepare an anterior chamber fluid mixer.

Utilizing the same fabrication technique, with a small change in materials, a utility needle for repeated withdrawal of aqueous humor or for injection purposes can be constructed. A No. 24 (\(\frac{3}{4}\) inch) stainless steel needle is flanged inside the hub by a gentle tap from an ice pick or related instrument. The flange will smooth the fusion of needle and hub, eliminate rough spots, and aid insertion of the following No. 31 needle. The rubber tip is then fitted snugly into the hub. A \(\frac{1}{2}\) inch or shorter length of stainless steel tube (1.10 mm. O.D.) is gently inserted into the rubber tip and rests on the inside surface adjacent to the flange (Figs. 2 and 3). The tube functions as a guide for a No. 31 (1\(\frac{1}{2}\) inch) needle which is inserted through the tube, rubber tip, and into the anterior chamber. A fluid can then be injected or withdrawn and upon removal of the needle the self-sealing rubber tip prevents aqueous humor leakage. The insertion of the No. 31 needle requires a little practice, but in a short time one can master the technique. After the No. 31 needle has been inserted through the rubber tip, it is occasionally necessary to twirl the syringe to aid the passage of the needle tip into the No. 24 needle shaft.

A utility needle is described which can be used for repeated injection or withdrawal of fluid in the anterior chamber. The same system is utilized to prepare an anterior chamber fluid mixer.


REFERENCE


Optical properties of gels designed for vitreous implantation. Miguel F. Refojo, and Hanan Zauberman.

In cases of severe vitreous traction which do not respond to injections of air or saline, there is need for a material which will tamponade the retina against the choroid during the formation of chorioretinal adhesion, but will not pass through a retinal break. Gases and liquids can penetrate a retinal break; their usefulness as vitreous substitutes is limited. Liquids of high viscosity are less likely to penetrate through retinal holes. However, the ideal physical properties for a vitreous substitute are those of a gel similar to the natural vitre-