

INCIDENCE OF FLUORESCEIN ANGIOGRAPHIC SUBCLINICAL MACULAR EDEMA FOLLOWING PHACOEMULSIFICATION OF SENILE CATARACTS

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THE purpose of this paper is to document the incidence of subclinical macular edema following senile cataract extraction by phacoemulsification and to compare this incidence with previously reported data obtained after conventional intracapsular cataract surgery. This will serve as a baseline for the study of macular edema following phacoemulsification and intraocular lens implantation.

MATERIAL AND METHODS

This study group was comprised of 90 patients older than 45 years with nontraumatic cataracts. Patients were selected only by their ability to return for follow-up examinations, their tolerance of intravenous fluorescein dye, their ability to cooperate for fundus photography, and their willingness to participate in the study. Patients with known macular disease, as determined by medical history, ophthalmoscopy, and fundus photography, were ex-

cluded from the study. Not included in the study were 44 patients who failed to return for follow-up angiograms, ten patients with a pre-existing maculopathy, and two patients who developed urticaria following fluorescein injection.

Phacoemulsification was performed on all patients by FGH. A small, superior conjunctival peritomy incision was prepared. Through a 3-mm limbal incision an anterior capsulotomy was made through which the lens nucleus was prolapsed into the anterior chamber, fragmented, and removed by the Cavitron phacoemulsifier. Residual cortex was extracted using the irrigation-aspiration tip of the instrument. If the posterior capsule could not be thoroughly cleaned, a capsulotomy or capsulectomy was performed as a primary procedure. Miochol was instilled into the anterior chamber, a peripheral iridectomy was then performed, and the wound was closed with one figure-eight suture of 10-0 Ethilon.

One day to one week postoperatively, a fundus fluorescein angiogram was performed: 10 cc of 10% sodium fluorescein (Funduscein) was injected intravenously, followed by rapid sequence angiography for 15 minutes using the Zeiss fundus

Submitted for publication Dec 7, 1978.

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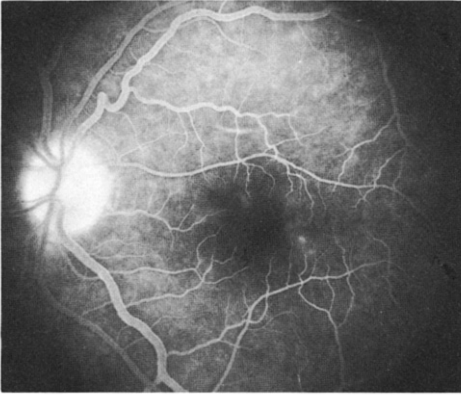


Fig 1.—Grade I: isolated hyperfluorescent spots are seen at 7 and 9 o'clock in the perifoveal capillary bed during the recirculation phase of the angiogram.

camera, Baird Barrier Filter 15, and Kodak Tri-X film. Follow-up angiograms were taken six weeks postoperatively. In those patients whose angiograms demonstrated macular leakage of fluorescein dye, angiography was performed a third time 3-11 months postoperatively. Biomicroscopy of the macula was repeated 15-24 months postoperatively in the group of patients who had had abnormal angiograms.

An angiogram was considered positive for macular edema if *any*

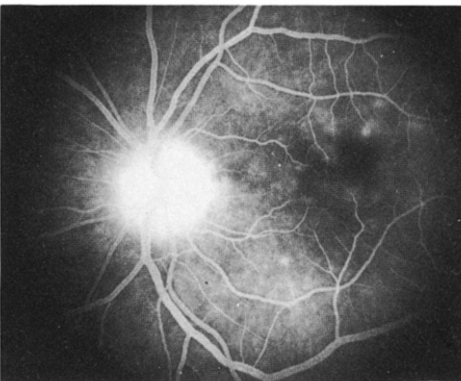


Fig 2.—Grade II: clustered hyperfluorescent spots are seen in each quadrant of the macular capillary bed in the recirculation phase of the angiogram.

punctate hyperfluorescent zone appeared in the macular capillary bed during the capillary filling phase of the angiogram or later. To be considered positive, these hyperfluorescent zones had to demonstrate increased fluorescence during the angiogram, with blurring of their margins as dye diffused from capillary walls into the retina. Comparisons of the angiogram and fundus photographs were made to rule out macular hyperfluorescence due to transmission of choroidal hyperfluorescence through retinal pigment epithelial defects. The angiograms were interpreted independently by two of us (EMS and WGE). Figures 1 through 3 illustrate the degrees of hyperfluorescence found in the positive cases. Grades I to III were determined by the number of macular hyperfluorescent spots counted in the recirculation phase of the angiogram.

RESULTS

Macular Edema

Of the 90 patients in the study, 21 (23.3%) had evidence of perifoveal and macular capillary leakage of fluorescein dye in either the first week or sixth week angiogram. Eight of the 21 patients showed dye leakage within the first postoperative week. Thirteen of the 21 who showed no dye leakage within the first week manifested leakage in the sixth week angiogram. Most positive angiograms were of grade II intensity. Eighteen of the 21 positive patients returned for a third angiogram 3-11 months postoperatively. Of these, eight (44%) had persistent macular fluorescein leakage, whereas ten (56%) had resolved. The peak incidence of

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