PHACOEMULSIFICATION AND THE RETINA: CYSTOID MACULAR EDEMA

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An on-going study of results and complications in a series of 1055 cataract extractions, done by Kelman phacoemulsification with up to five and one-half years' follow-up, showed that the incidence of cystoid macular edema (CME) is significantly less when the posterior capsule is left intact. This applies to capsulotomy at the time of surgery or elective discission later, with or without vitreous disturbance. CME was suspected clinically and confirmed or denied, in most cases, by fluorescein angiography.

INTRODUCTION

THE advent of phacoemulsification, as introduced by Charles Kelman in 1967 and begun on a large scale in the early 1970s, brought an initial wave of interest due to the possibility of cataract extraction through a relatively small incision. This allowed early and complete mobility of the patient with very little risk of wound leak, iris prolapse, or other complications associated with larger incision techniques. Concurrently, understanding of cystoid macular edema (CME) as an important cause of poor aphakic vision was increasing, spurred by techniques of fluorescein angiography.

METHODS

A series of 1055 cataract extractions were analyzed for preoperative conditions, surgical technique, intraoperative complications, and postoperative course. This was done as an on-going, prospective study, beginning with each patient when seen and followed continuously to the present. All surgery was done by phacoemulsificaton by the same surgeon, and, except for seven conversions to a large incision, all after the first 48 cases were consecutive and unselected. All patients who presented for cataract extraction had the same procedure. Age ranged from 2 to 96 years, with a mean of 66 years. Average follow-up was 2.3 years, with a range from a minimum of six months to a maximum of five and one-half years. Follow-up was personally done by the surgeon and was achieved in 97.1%. Technique included emulsification of the nucleus entirely in the posterior chamber, with careful removal of all cortex and cleaning of the posterior capsule. As more experience was gained, most capsules were left intact unless broken unintentionally. Postoperative discission of a slightly cloudy capsule was not done if visual acuity was 20/30 or better; when necessary, it was done at the slit lamp as an office procedure. Intraocular lens implants were also part of the procedure in 199 cases (18%). All possible complications were analyzed, with CME being the single factor presented here. Routine fluorescein angiography on all patients was technically and economically not feasible; CME was suspected any time visual acuity was not 20/30 or better without obvious cause and whenever the macula appeared abnormal except for obvious dry senile macular degenera-

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TABLE 1
VISUAL RESULTS

VISUAL ACUITY	NO. CASES	%
20/40 or better	845	80.2
20/50 - 20/100	110	10.4
20/100 - 20/300	46	4.4
20/400 or less	23	2.1
Undetermined	31	2.9
Total	1055	100.0

tion. It was then confirmed or denied by fluorescein studies performed and analyzed by retinal colleagues. Therefore, this study presents clinical CME, or edema which clinically affected either the visual acuity or the appearance of the macula.

The occurrence of CME was related to multiple factors, including the duration of ultrasound time, difficulty of the procedure, presence or

TABLE 2
NONSURGICAL-RELATED CAUSES OF VISUAL ACUITY LESS THAN 20/40

CAUSE	NO. CASES	%
Glaucoma	19	1.8
Dry senile macular degeneration	95	9.0
Optic atrophy of undetermined cause	16	1.5
Diabetic retinopathy	9	0.5
Amblyopia (most know pre-op)	16	1.5
Corneal scars (old)	3	0.3
Total	158	15.0

TABLE 3
SURGICALLY RELATED COMPLICATIONS

	OCCURENCE (%)	AS CAUSE OF LESS THAN 20/40 VISUAL ACUITY (%)
Hemorrhage	3 (0.3)	
Wound leak	3 (0.3)	
Filtering bleb	1 (0.09)	
Choroidal detachment	3 (0.3)	
Retinal detachment	8 (0.7)	5 (0.5)
Corneal opacity or edema (any degree)	34 (3.2)	
Corneal transplant done or needed	11 (1.0)	11 (1.0)
Glaucoma not found pre-op	4 (0.4)	
CME	30 (2.8)	8 (0.8)
Endophthalmitis	1 (0.09)	1 (0.09)
Total		25 (2.4)

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