

OBSERVATIONS

Optimal Timing of Cataract Surgery and Panretinal Photocoagulation for Diabetic Retinopathy

The Early Treatment Diabetic Retinopathy Study (ETDRS) concluded that panretinal photocoagulation (PRP) should be performed before cataract surgery in patients with proliferative diabetic retinopathy (1). It is also preferable to perform focal photocoagulation for macular edema before PRP (2). Recently, adoption of minimally invasive cataract surgery has reduced the postoperative progression of retinopathy (3). Patients in the ETDRS (1) were enrolled in the 1980s, however, and the surgical procedures included intracapsular and extracapsular cataract extraction; thus, there was a major difference in surgical invasiveness compared with the small-incision phacoemulsification cataract surgery currently performed. Accordingly, it was necessary to review the optimum timing of PRP (4). Therefore, we conducted this hospital-based retrospective cohort study on the timing of intervals for PRP and cataract surgery.

Sixty-six patients (26 male and 40 female; mean \pm SD age 63 ± 6 years [range 48–73]) with similar bilateral cataracts and severe nonproliferative or early proliferative diabetic retinopathy underwent monocular small-incision cataract surgery and bilateral PRP. All treatments were performed by a single experienced surgeon. Subjects were classified into three groups according to the time of the final PRP as follows: group A, ≥ 1 year before cataract surgery ($n = 23$); group B, < 6

months before cataract surgery ($n = 25$); and group C, < 6 months after cataract surgery ($n = 18$). The following patients were excluded because of the potential influence on macular edema: patients with posterior capsule rupture, posterior YAG (yttrium-aluminum-garnet) laser capsulotomy, and rapid preoperative glycemic control such as decreasing in HbA_{1c} values by $\geq 3\%$ from 3 months (5). There were no significant differences among the three groups with regard to age, sex, duration of diabetes, diabetic treatment, preoperative HbA_{1c} values, presence or absence of hypertension and renal dysfunction, and preoperative stage of retinopathy and macular edema. The progression of retinopathy and macular edema was defined as an increase of one or more grades on the ETDRS scale and severity. The grade in the operated-on eye and the fellow eye was assessed preoperatively and for 12 months postoperatively.

There was no significant difference in the postoperative progression of retinopathy (21.7, 24, and 38.9% in groups A, B, and C, respectively; $P = 0.424$, χ^2 test), although macular edema was significantly more frequent in group B than the other groups (26.1, 56, and 22.2%; $P = 0.034$). The percentage of patients with corrected visual acuity of 20/40 or better was significantly lower in group B than the other groups (82.6, 52, and 94.4%; $P = 0.004$).

The present results indicate that performing PRP hurriedly before cataract surgery should be avoided because it may increase the risk of postoperative progression of macular edema. In patients with mild cataract, surgery should only be performed after PRP is followed by stability for ≥ 1 year. In patients with severe cataract or posterior subcapsular cataract that disturbs fundus observation, however, initial cataract surgery should be followed by treatment for macular edema or PRP. It also showed that focal photocoagulation for macular edema before PRP should be performed if macular edema is

present. To confirm our findings, a prospective multicenter study is needed.

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