



Frequency of Retinal Redetachment after Cataract Surgery in Eyes with Previous Scleral Buckling Surgery

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Purpose: To determine the cumulative risk and outcome of retinal redetachment after cataract surgery, in eyes with a history of retinal detachment repair by scleral buckling techniques.

Design: Population-based, retrospective cohort study.

Participants: All phakic patients without previous ocular surgery or significant trauma who underwent scleral buckling surgery for rhegmatogenous retinal detachment between January 1, 2001, and December 31, 2010, at Norrlands University Hospital, Sweden (n = 537).

Methods: International Classification of Diseases 10 diagnosis codes corresponding to rhegmatogenous retinal detachment were used to identify all cases. Medical charts of all patients identified were reviewed to confirm the diagnosis. Any recurrence of retinal detachment and the visual outcome in these cases were examined. The frequency of redetachment and the time span from cataract surgery to redetachment surgery were analyzed.

Main Outcome Measures: Any redetachment surgery after cataract surgery, best-corrected visual acuity (BCVA).

Results: Three hundred and one (56%) male and 236 (44%) female patients were identified. During the follow-up period, 145 of 537 patients (27%) had phacoemulsification surgery, with a median time span of 3.4 years after the retinal detachment repair. Male patients had cataract surgery significantly more often (31% vs. 22%; $P = 0.036$), and at an earlier age, than female patients (65.6 vs. 69.4 years; $P = 0.013$). Recurrence of retinal detachment occurred in 3 patients (3/145; 2.1%), at 2.4, 3.9, and 6.9 years after cataract extraction, and their final BCVA was 20/70, 20/25, and 20/30, respectively. The cumulative percentage of redetachment surgery after phacoemulsification was 1% up to 10 years after the scleral buckling surgery, as calculated by life table analyses. Ten years after cataract surgery, the cumulative percentage of redetachment surgery was 5% in eyes with previous scleral buckling surgery.

Conclusions: In patients with a history of previous scleral buckling surgery, the risk of redetachment after cataract surgery is low. In these patients, phacoemulsification can be performed safely and there is no need for extended postoperative attention. It is, however, important to inform all patients with previous retinal detachment surgery to seek prompt medical care if they experience symptoms of redetachment. This is important even several years after the cataract surgery was performed. *Ophthalmology Retina* 2017;■:1–6 © 2017 by the American Academy of Ophthalmology

Retinal detachment is a recognized postoperative, long-term complication associated with cataract surgery, even though continuous improvement in cataract surgical technique has reduced the risk of cataract surgical complications over time.^{1–6} The incidence of retinal detachment after cataract surgery varies depending on surgical technique and has been estimated to range between 0.6% and 1.7% in the first postoperative year.^{2,7} The cumulative incidence increases almost linearly, from 0.27% at 1 year to 1.79% 20 years after surgery.⁸

The risk for recurrent retinal detachment after cataract surgery in eyes that have previously undergone scleral buckling detachment surgery is less well documented. Nevertheless, this is an important issue when counseling cataract patients with a previous history of retinal

detachment, because it is important to assess the surgical risk along with the potential vision gain. If cataract surgery is considered, the need for and the timing of additional postoperative retinal follow-up visits is also unclear.

The purpose of this study was to determine the rate over time of retinal redetachment after phacoemulsification surgery in patients who had retinal detachment repair by scleral buckling techniques. The visual result after redetachment surgery was also analyzed.

Methods

All patients who had surgery for primary repair of retinal detachment at Norrlands University Hospital in Umeå, Sweden, between January 1, 2001, and December 31, 2010, were included in the

study. This research adhered to the tenets of the Declaration of Helsinki and the local ethics committee approved the study. The admitting area serves a population of approximately 880 000 people,⁹ and all vitreoretinal surgery in this geographic area is performed at the Eye Clinic at Norrlands University Hospital. The patients were identified from computerized medical records using the International Classification of Diseases 10 codes associated with retinal detachment. All information from the records was reviewed to validate the diagnosis.

Eyes with nonrhegmatogenous and/or exudative detachments due to inflammation, injury, or vascular abnormalities and tractional retinal detachments, mostly due to diabetes retinopathy, were excluded. A total of 1549 eyes with rhegmatogenous retinal detachments remained. Also excluded were all pseudophakic eyes at the time of the primary retinal detachment and eyes with previous pars plana vitrectomy, including eyes that had vitrectomy because of redetachment before cataract surgery.

A total of 553 phakic eyes with rhegmatogenous retinal detachment in 538 patients remained in the study. Fifteen of 538 (2.8%) patients had retinal detachment in both eyes during the 10-year period of the study. The eye with the first retinal detachment was included and the fellow was excluded from the study. Also excluded was 1 patient who moved abroad soon after the retinal detachment and was lost to follow-up.

A total of 537 patients (537 eyes) were finally included in the study. Data registration was made on age, sex, left or right eye, age at retinal detachment surgery, date of cataract extraction (if any), date of redetachment and surgical technique used, and history of retinal detachment in the fellow eye. The best-corrected visual acuity (BCVA) was obtained both before the retinal detachment surgery, with detached retina, and at the time of the patient's final/most recent visit to the eye clinic.

The BCVA before cataract surgery (if any) was recorded. All cataract surgery eyes had at least 1 year of follow-up regarding redetachment after the cataract extraction. Follow-up time, both from scleral buckling and from the cataract extraction, was calculated.

All scleral buckling surgery used a 360-degree encircling silicone band with a segmental buckle. Cataract extractions were all performed by small-incision phacoemulsification with insertion of a posterior chamber intraocular lens. There was no posterior capsular tear.

Statistical Methods

Independent sample *t* tests or Mann-Whitney *U* tests were used to analyze differences in age, differences in BCVA, differences between male and female patients, time spans between the different surgeries, and follow-up time. The 2 × 2 or 2 × 3 tables were analyzed using Yates's corrected chi-square tests and Fisher exact test when appropriate. Life table calculations were made to estimate the cumulative percentage of redetachment after cataract surgery, both from the date of retinal detachment repair and from the date of cataract surgery. Statistical analyses were performed using the SPSS software Statistical Package for the Social Sciences, version 24.0 (IBM Corp, Armonk, NY).

The visual acuity (VA) was recorded in Snellen units and converted to a logarithmic scale (logarithm of the minimum angle of resolution [logMAR]) for statistical analysis, as previously described.¹⁰ The range of VA also includes acuities expressed as counting fingers (CF), with CF 2 m corresponding to 0.04 (logMAR = 1.4), CF 1 m to 0.02 (logMAR = 1.8), etc. For VAs less than CF 0.5 m the following values were used: CF in front of the eye = logMAR 2.2, hand movements = logMAR 2.5, light perception = 2.8, and no light perception = 3.

Results

Demographics

The study included 537 phakic patients who had scleral buckling surgery performed by 7 surgeons. Table 1 shows the demographics and VA results. Most patients (56%) were male; male patients were slightly younger than female patients, 58.5 years vs. 60.1 years ($P = 0.13$). Median time span from scleral buckling surgery to final examination date was 9.1 years (interquartile range, 4.8 years; min–max, 3.5–13.8 years).

Phacoemulsification surgery was performed in 145 of 537 eyes (27%) during the follow-up period, and the mean time span between the retinal detachment repair and cataract surgery was 4.0 years (standard deviation, 2.8), median 3.4 years.

Almost two thirds of all cataract extractions (92/145; 63%) were performed on male patients ($P = 0.036$). Male patients were also significantly younger at the time of cataract surgery compared with female patients (65.6 vs. 69.4 years; $P = 0.013$) (Table 1).

Patients with Retinal Redetachments

Retinal redetachment after phacoemulsification surgery occurred in 3 of 145 patients (2.1%), at 2.4 years, 3.9 years, and 6.9 years after the cataract extraction (Table 2). All 3 cataract operations were uncomplicated. The treatment for redetachment was vitrectomy in all patients, and all were successfully reattached with a final BCVA of 20/70, 20/25, and 20/30, respectively—in all cases, better than the BCVA before the cataract surgery (Table 2). None of these 3 patients had retinal detachment in both their eyes. One patient (Case A, Table 2) had yttrium–aluminum–garnet laser capsulotomy 21 months after cataract surgery.

Figure 1 shows the cumulative percentage of attached retinas after cataract surgery, from the date of the primary retinal detachment surgery. The cumulative risk after retinal detachment is 1% up to 10 years. Figure 2 shows the cumulative percentage of retinal attachment from the time of the cataract surgery. Ten years after cataract surgery, the cumulative incidence for retinal redetachment is 5% in an eye with previous scleral buckling surgery.

Discussion

This study shows a low risk of redetachment after phacoemulsification in eyes with previous retinal detachment treated with scleral buckling surgery (3 of 145, 2.1%). This figure is lower than published in previous studies using large-incision, extracapsular cataract extraction techniques (3%–3.4%).^{11,12} Several more recent studies in which phacoemulsification surgery was performed have been published.^{13–15} None of these found any redetachment after phacoemulsification, most probably because of very few patients (including only 33–47 eyes) and short follow-up time (2 years after cataract extraction). The present study, which, to the authors' knowledge, comprises both the largest series and longest follow-up time, thus confirms the low risk of redetachment after phacoemulsification surgery for the individual phakic scleral buckling patient.

We found the cumulative risk of retinal redetachment to be 1% up to 10 years, with an increase when the follow-up is 11 years or more. However, there were only 24 patients with a follow-up exceeding 11 years, which might bias the results. The overall incidence of retinal detachment in the

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