REVIEW/UPDATE

Cataract surgery outcomes in the very elderly

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The prevalence of very elderly patients (aged 85 years and older) with visually significant cataracts continues to rise in the United States. We conducted a focused review of literature using Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines to investigate the impact of very old age on cataract surgery outcomes. The studies suggest that very elderly patients, relative to their younger counterparts, had similar complication rates after adjusting for their higher rates of age-related ocular and systemic comorbidities. In addition, most very elderly patients gained improvement in visual acuity, enjoyed increased quality of life, and had survival rates that extend beyond 1 year after surgery. Although many of the studies were small and lacked statistical power to exclude clinically important differences in outcome, findings generally supported cataract surgery in the very elderly. Further studies are required to augment evidence-based surgical decision-making in elderly persons with ocular comorbidities and visually significant cataracts.

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Cataract extraction is the most commonly performed operative surgery in the United States Medicare population and continues to increase in rate.[1] This corresponds to the aging U.S. general population.[2] There has been considerable interest in whether surgical treatment in the very elderly poses substantial risks beyond those in younger adult patients.[3,4] The limited reviews on this topic are more than a decade old and varied in their definitions of the very elderly.[4] Using the World Health Organization and National Institute of Aging-recognized definitions of the very elderly as aged 85 and older,[5] this focused review examined the outcomes of cataract surgery among the very elderly in context of developments since 2000.

MATERIALS AND METHODS

We systematically searched the literature according to guidelines published by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Figure 1). We used the terms "cataract surgery very elderly," "cataract surgery octogenarians," "cataract surgery nonagenarians," "cataract surgery centenarians," "cataract surgery eighty years," "cataract surgery ninety years," and "cataract surgery one-hundred years" in the following databases: PubMed, Embase, Google Scholar, and Web of Science. We included English language publications from 2000 to 2016 that investigated cataract surgery outcomes in patients aged 85 years and older. We also included studies consisting of at least 50 eyes. Given the known risks for major intraoperative and postoperative complications, as well as the proportion of patients achieving 20/40 or better vision after routine cataract surgery among younger adults, comparative studies involving cohorts smaller than 50 to 100 eyes or patients would have had little statistical power to exclude differences in outcome if one truly existed.[6] We selected the lower cohort number, appreciating the difficulty of enrolling persons 85 years and older into clinical studies. Our primary outcome was postoperative visual acuity; secondary outcomes included ocular and systemic complications, quality of life, and survival time.

Two authors (E.L., C.E.M.) used the Good Research for Comparative Effectiveness (GRACE) checklist to rate the quality of observational studies.[7] Disparities in GRACE ratings were adjudicated by the third author (P.B.G.).

LITERATURE SEARCH

The literature search was completed on August 20, 2016, and updated on October 14, 2017 (Figure 1). Of 3399 records from the original search, 10 met our inclusion criteria (Table 1). These included 6 controlled studies (those with a variables-matched group) and 4 uncontrolled studies that met the inclusion criteria; 4 had a lower limit greater than 85 years of age. We included 1 paper by Mutoh et al.[10]

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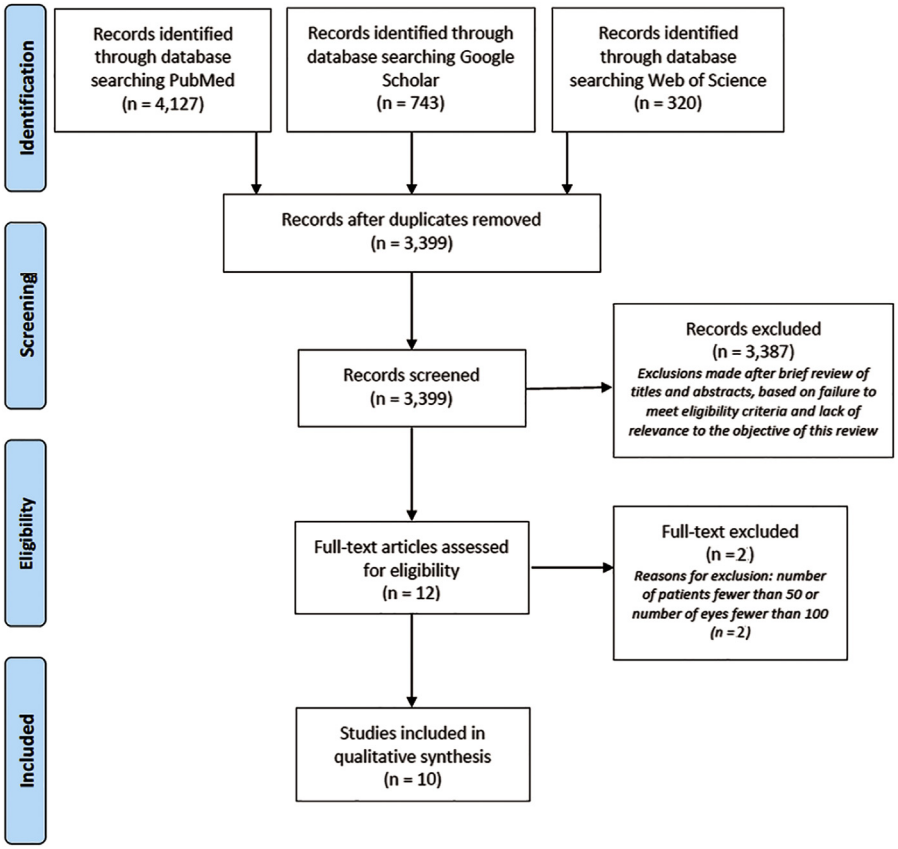

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses literature search flow diagram.

that did not meet our size criterion (70 eyes from 45 patients aged <90 years versus 31 eyes from 21 patients aged >90 years) because no other recent study examined systemic complications. We believed it was important to examine this outcome, even in the context of a smaller sample size.

Visual Acuity

Most very elderly patients who had cataract extraction had clinically improved postoperative visual acuity compared with their preoperative vision.[8–11,13,14] In a controlled study, Lundström et al.[4] reported that very old age was not an independent variable associated with worse visual acuity outcomes when adjusted for the higher incidence of ocular comorbidities in the very elderly. Two other controlled studies found no statistically significant difference in postoperative visual acuities between the older cohort and their control (younger) counterparts despite generally worse preoperative vision among very elderly patients.[10,13] This suggests that very elderly patients achieved a greater gain in visual acuity, especially in the study by Mönestam and Wachtmeister, which adjusted for ocular comorbidities.[13] The longest follow-up was 2 years reported by Lai et al.[8] In their uncontrolled retrospective study of 207 eyes in patients aged 90 years and older, Lai et al.[8] found that (1) cataract surgery in the very elderly improved visual acuity despite ocular and systemic comorbidities and (2) systemic comorbidities did not affect visual outcomes.

Specific ocular comorbidities that adversely impact visual outcomes in the very elderly include poor overall preoperative visual acuity from advanced cataract and comorbid ocular disease such as age-related macular degeneration (AMD) and glaucoma.[8,15] The effect of AMD on postoperative visual acuity has varied. Rosen et al.[11] found no statistically significant difference in postoperative visual acuity improvement between very elderly patients with and without AMD. However, Michalska-Małecka et al.[9] and Syam et al.[14] attributed their cases of postoperative visual acuity deterioration to coexisting advanced AMD. Michalska-Małecka et al.[9] found 100 (82.0%) of 122 eyes experienced improvement in visual acuity after cataract surgery, compared with 2 (1.6%) of 122 eyes that had decreased visual acuity, which the authors attributed mainly to coexisting AMD. Similarly, Syam et al.[14] reported improvement in postoperative visual acuity among their AMD patients, in which 24 (71%) of 34 eyes experienced postoperative improvement in visual acuity versus 4 (11%) of 34 eyes that had deterioration in vision because of underlying severe AMD. None of these studies used a younger control group for comparison of outcomes.[9,11,14]

Ocular Complications

The most common ocular complications occurring during cataract surgery in adults of all age groups are posterior capsule tear, zonular rupture, vitreous loss, and retained lens fragments.[6] We found 4 controlled studies that addressed intraoperative complication rates among very elderly patients.