GLAUCOMA SURGERY IN THE OCTOGENARIAN: FIVE-YEAR OUTCOMES

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INTRODUCTION

The burden of glaucoma has grown with the increasing ageing population. Operating in the elderly presents unique challenges where factors which must be accounted for include significant co-existing medical comorbidities, cognitive and social issues. While recommended intraocular pressures (IOP) have been recommended for different stages of glaucoma, perhaps target post-operative IOP may need to be revisited in the elderly, whilst accounting for predicted life expectancy, risk of blindness and appropriate surgery based on clinical risks and social determinants. The purpose of this study is to determine five-year outcomes of glaucoma surgery in patients 80 years and above.

METHODS

We retrospectively reviewed the records of consecutive patients ≥ 80 years who underwent glaucoma surgery, by multiple surgeons, at the Birmingham and Midland Eye Centre from 1st January 2015 to 31st December 2018. The inclusion criteria included: patients ≥80 years who underwent phacoemulsification surgery enhanced with minimally invasive glaucoma surgery (MIGS) and/or angle surgery, MIGS alone, trabeculectomy, and tube surgery. The exclusion criteria: patients who underwent bleb needling and cyclo-destructive procedures. Outcome measures included patients' survival/mortality rates at 5 years, annual intraocular pressures (IOP) recordings at one to five years, reduction in glaucoma medications, visual acuity (VA) and surgical failure.

Surgical failure was defined as when IOP > 21 mmHg or <20% reduction below baseline or increase in IOP-lowering medication or IOP <5mmHg or reoperation for glaucoma or loss of light perception.

RESULTS

A total of 173 eyes of 148 patients are included in this study. The mean age is 84 years. More than half (59.5%) of these eyes have primary open-angle glaucoma (POAG). The most common surgery in this age group is combined phacoemulsification combined with minimally invasive glaucoma surgery(MIGS) where 61.3% of these eyes underwent, with the most common MIGS procedure being the trabecular micro-bypass stent. The average length of follow-up was 5 years and 4 months. At five years, our cohort showed a patient mortality rate of 30%.

Figure 1 shows the Kaplan-Meier analysis for the overall surgical failure in our cohort. The overall surgical success rate, including the deceased, is 49.7%. Those who remained alive during the study period with surgical success based on our criteria were at 31.2%. At five years our cohort has a 18.5% rate of needing further glaucoma interventions during the study period; more than half of these were selective laser trabeculoplasty (SLT). In figure 2, we categorized the various glaucoma surgeries into three categories: Group A - combined phacoemulsification and glaucoma procedures (GSL +/- MIGS) , Group B - filtration surgeries (trabeculectomies and tube surgeries) and Group C - other procedures (such as MIGS standalone). Figure 3 shows Kaplan-Meier plot for patient survival.

The graphs in figure 4 shows the mean IOP, number of medications and visual acuity at baseline and at consecutive annual follow-up. There is a reduction in IOP and number of glaucoma medications post-operatively with stabilization over the course of the follow-up period. In our cohort, 12.5% of eyes were on systemic carbonic anhydrase inhibitor pre-operatively while in the post-operative period at 5 years, none were on this medication. VA remained stable pre- and post-operatively. Only two patients progressed to no light perception (NPL) in our cohort.

RESULTS

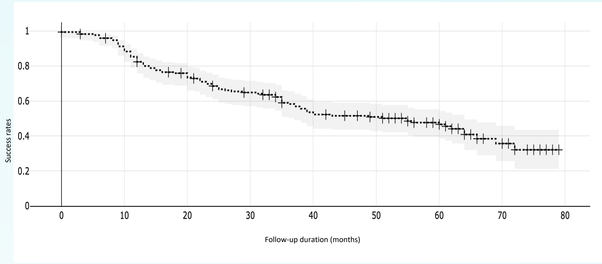


Figure 1. Kaplan-Meier survival plot of cumulative success rates until the last follow-up visit.

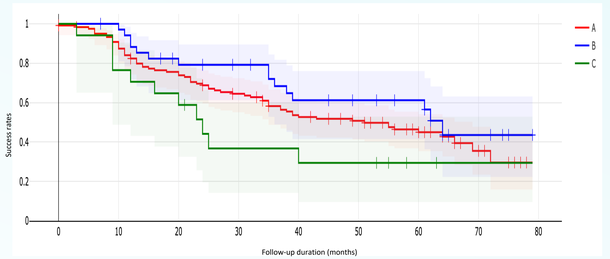


Figure 2. Kaplan-Meier survival plot of cumulative success rates according to Group A (combined phacoemulsification and glaucoma procedures GSL +/- MIGS), Group B (filtration surgeries – trabeculectomies and tube surgeries) and other procedures (such as MIGS standalone).

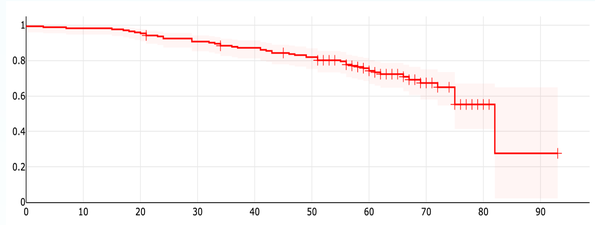


Figure 3. Kaplan-Meier survival curve for patients >80 years who underwent glaucoma surgery in our cohort.

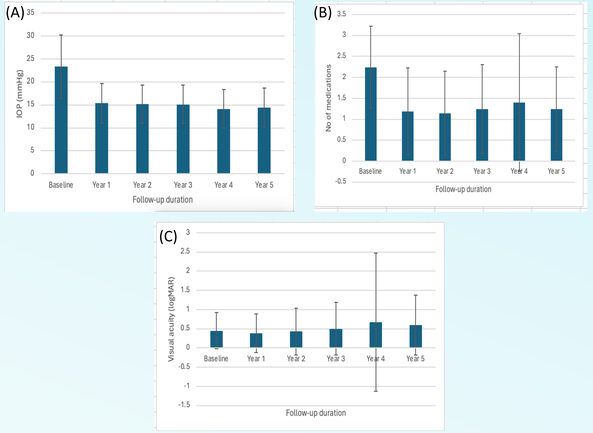


Figure 4: Mean IOP (A), number of glaucoma medications (B) and visual acuity (C) at baseline and each follow-up visit.

CONCLUSION

Two thirds of patients over 80 years who require surgical management of glaucoma in our unit undergo cataract surgery combined with angle-based glaucoma surgery. More than a quarter of patients over 80 years who undergo glaucoma surgery die within 5 years. In our cohort, one third remained alive with successful surgical outcome at five years. There is a reduction in both pre-and post-operative IOP and number of glaucoma medications, with no significant reduction in VA. As glaucoma becomes more common in our ageing population, this study provides a glimpse of the trajectory of surgical outcomes on glaucoma patients.