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LITERATURE REVIEW

QUALITY OF LIFE AFTER CATARACT SURGERY IN PATIENTS WITH AGE-RELATED MACULAR DEGENERATION: A LITERATURE REVIEW

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ABSTRACT

***Objective**: Age-related macular degeneration (AMD) is a common ocular disease that affects millions of people worldwide. Cataract surgery is one of the most performed surgical procedures in the world and is effective to improve visual function and quality of life (QOL) in individuals with cataracts. Both cataract and AMD are conditions that occur in late age. However, the presence of AMD may complicate the postoperative outcomes and quality of life (QOL) of these patients. This review aims to examine the impact of cataract surgery on the QOL of patients with AMD.*

***Methods**: A search of the literature was conducted using electronic databases. Studies were included if they evaluated QOL outcomes in patients with AMD who underwent cataract surgery.*

***Result**: The results of the review suggest that cataract surgery can improve visual acuity and QOL in patients with AMD. However, the degree of improvement is influenced by the severity of AMD. Patients with mild to moderate AMD tended to have greater improvements in QOL and visual acuity compared to those with advanced AMD. Incidentally, it is still cost effective to perform cataract surgery in patients with advanced AMD.*

***Conclusion**: Overall, cataract surgery is found to be able to improve QOL and visual acuity in patients with AMD. Nevertheless, individual characteristics including severity of AMD must be considered to optimize the outcomes. Further research, particularly with longer follow up times, is needed to determine the long-term effects of cataract surgery on QOL in patients with AMD.*

***Keywords :** Cataract surgery, age-related macular degeneration, quality of life*

INTRODUCTION

Age-related macular degeneration (AMD) is a common ocular disease that affects millions of people worldwide.[1–4] It is a condition that occurs in late age, particularly after 60 years, and accounts for more than 8 percent of blindness worldwide.[1]

Cataract surgery is one of the most performed surgical procedures in the world and is effective to improve visual function and quality of life (QOL) in individuals with cataracts.[5–7]

Recently, it has been discovered that visual acuity is not sufficient to be the sole criterion in assessing the impact of ocular conditions in patients. Other visual functions are also important, i.e. color vision, night vision, spatial vision, visual field, and contrast sensitivity.

Quality of life, measured with visual function questionnaires or further calculated into utility values, helps measure the outcomes of therapeutic interventions.[8] These questionnaires are answered according to patients' subjectiveness. Hence, two patients with the same visual acuity improvement may subjectively experience a different quality of life difference.

Both cataracts and AMD are conditions that occur in late age. Performing surgery on cataract patients with AMD has been a controversial subject. The benefit expected from cataract extraction on patients with macular degeneration has been questioned. Studies have shown lower visual acuity outcomes and patient satisfaction in patients undergoing cataract surgery with AMD compared to no coexistent eye disease.[9–11]

This review aims to examine the impact of cataract surgery on the quality of life of patients with age-related macular degeneration. We hope to offer realistic expectations and comprehensive information for both surgeons and patients with AMD on whether to have cataract surgery.

METHODS

A search of the literature was conducted using electronic databases. Studies were included if they evaluated QOL outcomes in patients with AMD who underwent cataract surgery.

Among 26 studies found, we selected 13 studies based on their abstracts that were in line with our search. Eleven of them were written in English. We included five studies published in the last ten years.

Papers included conducted examinations which consisted of brief medical and ocular history, best corrected visual acuity (BCVA), and other visual functions. They record patients' answers on the questionnaires provided. Every paper uses different questionnaires and measurement methods which will be explained further in the next section.

RESULTS

Overall, patients with AMD who underwent cataract surgery showed improvement in both visual function and quality of life issues.[6–8,12,13]

When explored further, there was a difference in the amount of benefit received by patients in different degree groups. Armtrecht et al concluded that the greatest benefits were obtained by patients with moderate cataracts, in both mild and moderate maculopathy groups. They found evidence of improvement in certain quality of life aspects for patients with mild

cataracts, mainly trouble with vision in general, also in reading small print and newspapers/books.[14]

Taipale et al explored the outcomes of cataract surgery exclusively in patients with severe vision impairment caused by AMD. They found that patients with bilateral advanced AMD had significantly improved National Eye Institute Visual Functioning Questionnaire (NEI-VFQ) overall score both at 3-month and 1-year follow-up. Patients reported improvement in NEI-VFQ subscale scores in near activities, role difficulties, mental health, dependency, and peripheral vision.[12]

Vollman et al compared the outcomes of cataract surgery on patients with AMD and patients with no other retinal pathologies. They compared the changes in visual acuity and visual function using also the NEI-VFQ. They found that both groups receive significant improvements in visual acuity and visual function postoperatively. Incidentally, they discover that the increases received by patients with AMD were significantly less compared to the control group. Furthermore, they determined 20/40 preoperative visual acuity in the Snellen chart as the cut-off for patients with AMD who can still receive similar outcomes to those without retinal pathology.[7]

Ma et al investigated visual acuity changes and quality of life regarding visual function after cataract surgery in patients with bilateral advanced AMD. They measured BCVA and QOL using the Chinese-version Low Vision Quality of Life (CLVQOL) questionnaire on 51 patients and followed them for 3 months.[6]

They discovered that there was a significant increase in BCVA and CLVQOL scores, both composite and in all four subscales. They found a greater increase in CLVQOL in patients with more severely affected preoperative eyes, in particular in general vision and lighting, psychological adjustment, reading, fine work, mobility, and activities of daily living.[6]

Ma et al also calculated the cost-utility of cataract surgery for patients with advanced AMD. They found that BCVA in both the surgery eye and weighted average BCVA were improved significantly after cataract surgery.[8]

They discovered that utility values for patients and doctors both increased significantly with cataract surgery. Patients received 1.17 quality-adjusted life years (QALYs) with cataract surgery. In the study, they found the cost per QALY for cataract surgery in patients with bilateral advanced AMD was USD 1,400. This was regarded as cost-effective with the World Health Organization threshold of USD 18,235 per QALY in China.[8]

Borkenstein et al have done a longer follow-up: at 3, 6, and 48 months after surgery on patients with advanced dry AMD. This study has the longest follow-up period that we have

found. They used a questionnaire listing routine activities involving central vision and pertaining to independent living. They discovered that in 9 out of 11 patients followed, after 48 months, there was a stable (even further improved) increase in both BCVA and functional gains. To be noted, the other two patients converted into wet AMD.[13]

DISCUSSION

AMD is classified based on its severity into mild, moderate, and severe AMD. Severe AMD is further categorized into wet and dry forms of AMD. The wet form is said to be responsible for 90% of vision loss in patients with AMD.[7] Incidentally, the dry form accounts for the majority of AMD, with its development of geographic atrophy.[13] Dry form of AMD causes central scotoma, which disturbs many routine daily activities that are important for patients' autonomy in life.[15]

We analyzed that it does not seem to be sufficient to measure the impact of an intervention, in this case, cataract surgery, based only on objective examinations such as visual acuity. We also need subjective feedback from patients who receive treatment.

We infer from our review that cataract surgery intervention improves not only visual acuity but also QOL regarding improvement in visual function in patients with AMD. However, the degree of improvement is influenced by the severity of AMD. Patients with mild to moderate AMD tend to have greater improvements in QOL and visual acuity compared to those with advanced AMD. Patients with moderate cataracts showed greater benefits than those with mild cataracts. Incidentally, it is still cost-effective to perform cataract surgery in patients with advanced AMD.

There is still a challenge in the clinical settings for surgeons to assess the predictive benefits of patients' conditions.[14] Vollman et al and Ma et al found different results regarding degree of benefits received according to severity of preoperative visual function. Vollman et al found that the more severe patients' visual acuity, less benefit they get from cataract extraction.[7] Yet Ma et al found that there was a greater increase in function in patients with more severely affected preoperative eyes.[6] Regardless, both results still show that cataract surgery gives significant benefits for patients.

Although the studies included in this review used different tools and questionnaires, the findings are consistent in that they all believed that cataract surgery is beneficial in patients with AMD. With different specific populations included in each study, we concluded that in all stages of AMD, cataract extraction is beneficial. The benefits patients receive may vary according to the degree of both AMD and cataracts, and patients' characteristics.

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CONCLUSION

We conclude cataract surgery is justified to improve the quality of life in cataract patients with AMD. Furthermore, cataract surgery improves patients' ability to take care after themselves, live independently; and relieves burden of disease in society. A longer follow-up period with larger cohorts and a more comprehensive visual function examination are needed to explore the long-term risk of cataract surgery in patients with AMD.

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