

Case Study

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# Low Vision Management in a Case of Stargardt's Disease

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## ABSTRACT

**Objective:** To describe the low vision management of a 26-year-old female diagnosed with bilateral Stargardt's disease, a progressive macular degeneration condition, and to evaluate the effectiveness of various low vision aids in improving her visual functioning.

**Methods:** A detailed low vision assessment was performed on a 26-year-old patient with a history of gradual visual decline over 8 years. Her visual acuity, refractive error, and the impact of her visual impairment on daily tasks were evaluated. Low vision devices, including a hand-held magnifier, clip-on telescope, and absorptive lenses, were trialed to assess improvements in near and distance vision tasks. The patient's comfort with glare reduction and lighting conditions was also assessed.

**Results:** The patient's visual acuity was 0.50 logMAR in the right eye and 0.56 logMAR in the left eye. She showed significant improvement in near vision (N8) with a hand-held magnifier (1.5X) and in distance vision (0.20 logMAR) with a clip-on telescope (1.5X). Absorptive lenses with a yellow filter were well accepted, significantly reducing glare sensitivity. The patient reported improved comfort in both near and distance tasks and was able to maintain independence in daily living activities.

**Conclusion:** This case demonstrates the importance of early low vision rehabilitation in managing Stargardt's disease. Magnification devices and glare-reducing filters, combined with appropriate training, can significantly improve visual functioning and quality of life. Regular follow-up and adaptation of low vision aids are essential as the disease progresses. This study highlights the effectiveness of low vision interventions in managing the challenges associated with Stargardt's disease.

## KEYWORDS

Stargardt's Disease, Low Vision Aids, Magnification, Glare Reduction, Rehabilitation, Central Vision Loss, Visual Impairment

## INTRODUCTION

A 26-year-old female presented to our Low Vision Clinic, referred from the Retina Clinic with a provisional diagnosis of bilateral Stargardt's disease. She reported a gradual and progressive diminution of vision over the past 8 years. The patient had no history of ocular trauma, systemic illness, or previous use of glasses. There was no family history of visual loss or similar ocular conditions.

### Presenting Complaints

The patient's main complaints were:

- Blurring of distance vision
- Difficulty identifying small print
- Difficulty in bright daylight

### Ocular and Systemic History

The patient had no history of prior ocular or systemic diseases. She was a student at the bachelor's level and was not using any visual aids. Family history revealed five siblings, with no known visual impairments in other family members. Her children also had no visual problems.

### Visual Acuity

Upon presentation:

- **Right Eye (RE):** 0.50 logMAR
- **Left Eye (LE):** 0.56 logMAR Her near vision was N12 unaided at 33 cm.

### Slit Lamp Examination

- The anterior segments were normal with no notable abnormalities.

### Fundus Examination

Fundus examination under mydriasis revealed characteristic features of Stargardt's disease, including:

- Central macular changes
- Atrophic macular lesions typically associated with Stargardt's disease.

### Low Vision Examination

The patient, accompanied by her brother, reported difficulty in various daily activities:

- **Near tasks:** Difficulty reading newspapers and college books.

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- **Distance tasks:** Difficulty recognizing faces, watching television, and identifying bus/tempo numbers.
- **Lighting:** Comfortable with reduced light and fluorescent lamps but experienced glare, particularly in sunlight and from car headlights.
- **Mobility:** Encountered difficulties navigating unfamiliar outdoor spaces, but no history of bumping into objects.
- **Daily Living Skills:** The patient reported no significant difficulties in home management, self-help skills, or identifying money/food.

### **Refractive Error**

- **Right Eye (RE):** +1.00/-0.50 x 180
- **Left Eye (LE):** +1.00/-0.50 x 180 There was no significant improvement in visual acuity with refractive correction.

### **Binocularity and Visual Field**

- **Extraocular Motility:** Full range of motion with no abnormalities.
- **Cover Test:** No ocular deviation.
- **Visual Field:** Normal, as tested by confrontation.

### **TRIAL OF LOW VISION AIDS**

#### **Near Vision Devices:**

- The patient was provided with a hand-held magnifier (1.5X) for reading tasks. This improved near vision to N8 at 33 cm, which was deemed optimal for her near tasks.

#### **Distance Vision Devices:**

- A 1.5X clip-on telescope for distance tasks significantly improved her visual acuity to 0.20 logMAR. The patient reported good results with the telescope for tasks like identifying objects and people in the distance.
- She was also trained in spotting, tracking, and scanning techniques to maximize the telescope's utility.

#### **Absorptive Lenses:**

- The patient tried various absorptive lenses, including polarized filters. She showed the best acceptance with a yellow filter under daylight illumination, which helped with glare management and light sensitivity.

### **Rehabilitation Plan**

- Spectacle correction with a clip-on telescope (1.5X).

- Bar magnifier (1.5X) for near vision tasks.
- Yellow filter incorporated into spectacles for glare reduction.
- Fluorescent table lamp for reading tasks.
- Follow-up every three months for ongoing low vision assessment.

## DISCUSSION

Stargardt's disease, a form of macular degeneration, is characterized by the progressive degeneration of cone cells at the macula, while rod cells typically remain intact. It is usually inherited in an autosomal recessive pattern and begins in childhood or adolescence. The disease manifests as difficulty with tasks requiring central vision, such as reading, recognizing faces, and color discrimination. As the disease progresses, individuals may develop problems with glare sensitivity and light adaptation, which can further affect their ability to perform daily activities.

Low vision is defined as a reduction in visual function that cannot be corrected by surgery, medical intervention, or conventional spectacles. While visual acuity is an important component, it is not always an accurate reflection of an individual's functional ability. In Stargardt's disease, patients often experience significant challenges due to central vision loss. However, they typically retain their peripheral vision, which can be leveraged using eccentric viewing techniques and low vision aids such as magnifiers and telescopes <sup>[1,2]</sup>.

### Low Vision Devices in Stargardt's Disease:

- Magnification devices (e.g., hand-held magnifiers and telescopes) have been shown to significantly improve the quality of life for patients with Stargardt's disease by enhancing near and distance vision.
- Absorptive lenses and polarized filters help reduce glare, a common symptom in Stargardt's disease, improving visual comfort.
- Training in eccentric viewing techniques is essential for patients, as it helps them use their peripheral vision effectively when their central vision is compromised.
- **Glare and Light Adaptation:** Many Stargardt's patients experience significant discomfort with bright light and glare, which can impair their ability to perform tasks. The use of filters, such as yellow lenses, can alleviate these symptoms and improve visual comfort.

## CONCLUSION

Patients with Stargardt's disease, though experiencing significant central vision loss, can benefit greatly from low vision aids. Devices like magnifiers, telescopes, and absorptive lenses, combined with appropriate training, can help maintain independence and improve quality of life. Early intervention with low vision rehabilitation services is critical in managing the disease and should be part of an ongoing care plan. Regular follow-up is necessary to reassess visual needs as the disease progresses <sup>[3,4,5]</sup>.

## LIMITATIONS OF THE STUDY

- **Contrast Sensitivity Testing:** Contrast sensitivity was not assessed in this patient, which could have provided additional insights into her functional vision challenges.

## REFERENCES

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