

# Management of Graft versus Host Disease and presbyopia with multifocal mini-scleral contact lenses

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## Introduction

- This case study demonstrates the importance of complete management on a Graft Versus Host Disease (GVHD) patient. Ocular side effects of systemic disease management such as corticosteroids use can lead to various additional ocular side effects<sup>(1)</sup>.

## Case Presentation

### SUBJECTIVE

- A 25-year-old male patient, leukemia survivor with a history of hematopoietic stem cell transplantation diagnosed with GVHD presents in office following cornea specialist referral.

### OBJECTIVE

- Complaints consist of burning, itching, intense photophobia and ocular discomfort.
- Therapy at initial visit includes autologous serum drops 8x/day, Prednisolone acetate 1% BID, eye ointment qHS, cyclosporine 0.05% QID and systemic corticosteroid.

### ASSESSMENT

- Topographies were unreliable due to severe OSD and inability to maintain eyes open (Figure 1).
- The slit lamp exam revealed inferior lacrymal plugs OU, cauterized superior puncta OU, diffuse hyperemia grade 2 OU, superficial punctate keratopathy grade 2 and mucoid secretion in tears. Diagnosis is severe dry eyes secondary to GVHD.

### PLAN

- The option of mini-scleral contact lens (SCL) was considered to manage OSD.<sup>(2,3)</sup>
  - The patient was fitted with 15.2 mm SCL (OneFit 2.0, Blanchard Laboratory, Sherbrooke, Canada) using Roflufocon D material (Optimum Xtra)

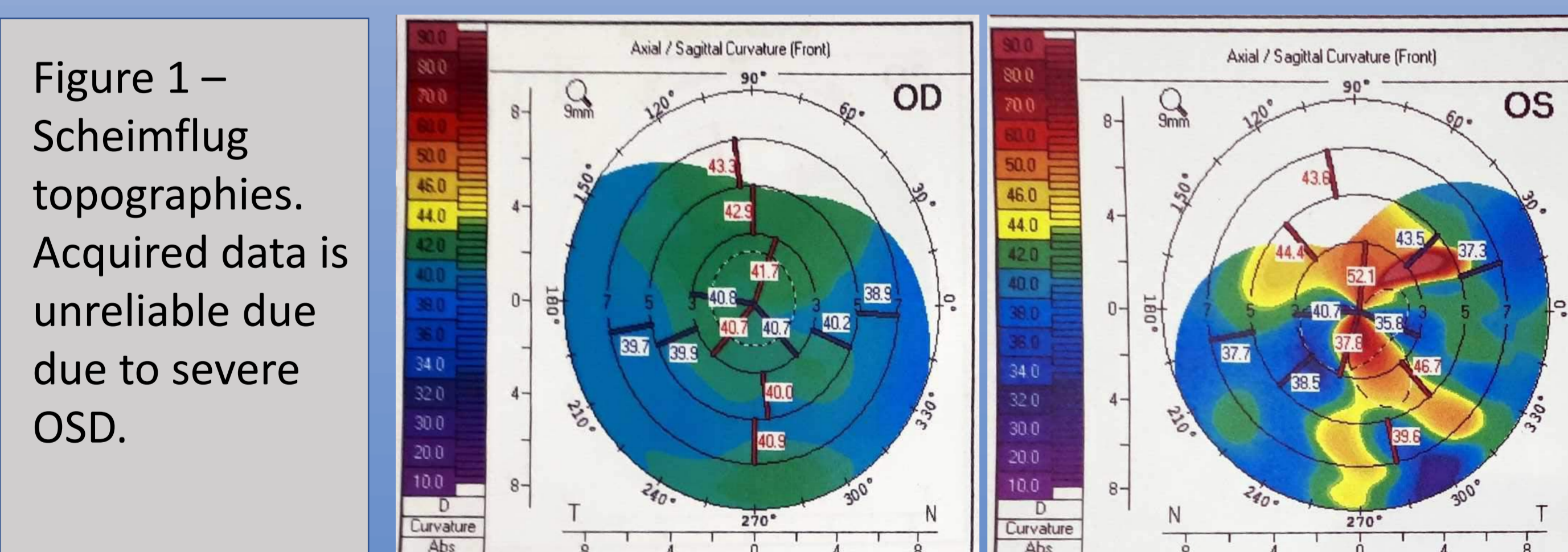
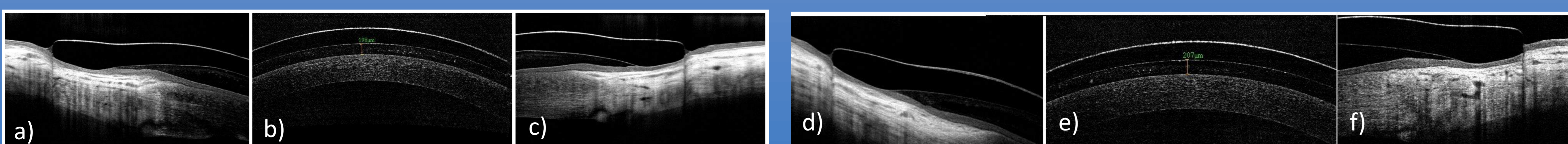


Figure 2 – Optovue anterior segment OCT  
a) Temporal limbus OD b) Central OD c) Nasal limbus OD  
d) Nasal limbus OS e) Central OS f) Temporal limbus OS



## References

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## Clinical Outcomes

### At delivery (T=0)

Central clearance (CC): 250 um (non-preserved saline)  
BCVA OD 6/7.5<sup>+2</sup> and OS 6/6<sup>+2</sup>

### First follow-up (T = 1 month)

*Complaint:* haze OU after 4 hours of wear every day.

CC : After eight hours 200 um (Figure 2)  
BCVA 6/9 OU

### Slit lamp:

Light central edema 2<sup>nd</sup> to hypoxia  
Slight conjunctival compression 360 degrees OU.

### Management:

Material changed to Hexafocon B (Boston XO2)  
Peripheral edges were flattened by one step

### Second follow-up (T = 2 months):

*Complaints:* deposits issues and blurred vision

### Slit Lamp Examination:

Edema resolved / significant CL surface deposits (lipids 2<sup>nd</sup> to autologous serum instillation during lens wear)

### Management:

Cleaning regimen revisited(peroxide); artificial tears vs serum during lens wear; weakly Progent treatment; Also, cotton-swab moistened with cleaning solution was used to clean the lenses surface during the day<sup>(5)</sup>.

### Third follow-up (T = 3 months) :

*Complaint:* hazy vision / light sensitivity

### Slit Lamp Examination:

### Management:

Referral to MD for cataract extraction.

### Fourth follow-up / post-op (T = 6 months) :

*Complaints :* near vision inadequate

Hazy vision is not present anymore. Vision at distance is acceptable. Monofocal IOL does not provide satisfying near vision with current lenses

### Management:

Over-refraction completed at distance and near  
Same lens parameters but with multifocal design added (near-centered +2.25D) Design used involved non-dominant eye having a larger center-near zone than dominant eye<sup>(6)</sup>.

### Final outcome

Final VA is at 6/6 OU at distance and 0.40/0.37M OU.

At this time, he maintains topical therapy with cyclosporine 0.05% BID, non-preserved tears 5-6x/day and autologous serum drop BID (before and after lens wear). Topical corticosteroid has been discontinued.

## Discussion

- Graft-versus-Host Disease (GvHD) occurs due to an uncontrolled inflammatory reaction following hematopoietic stem cell transplantation in 40-60% of cases affecting components involved in the maintenance of the ocular surface (cornea, eyelid, lacrimal and meibomian glands, conjunctiva) leading to severe ocular surface disease.<sup>(1,7)</sup>
- Management strategies of ocular GvHD include lubrication, lid hygiene, topical anti-inflammatory drops, use of autologous serum to maintain epithelium health and use of contact lenses as ocular surface protection barrier.<sup>(1)</sup>
- Smaller diameter SCL was chosen to increase oxygen transmissibility and reduced interaction with scleral irregularities and toricity, resulting in easier-to-achieve conjunctival alignment, increased lens stability, reduction of decentration and reduced need for toric haptics.<sup>(2)</sup>
- Although larger lens diameter is thought to be more appropriate in the treatment of OSD due to bigger coverage of the sclera, Alipour & Al (2012) have demonstrated in their study that use of mini scleral contact lenses was safe and provided effective treatment of severe dry eye disease and associated ocular discomfort.<sup>(3)</sup>
- Although rare, corneal edema can happen due to low oxygen transmissibility. In our case, lens material was changed to increase oxygen transmissibility and prevent recurrence of edema.<sup>(4)</sup>
- High Dk materials are more hydrophobic and tend to attract more lipid deposits. Combined with OSD and the use of serum drops, it has resulted in an increase of lipid deposition in our case. Management adopted in this case was effective.
- During the management of a GvHD patient, ocular side effects of long-term use of systemic and topical corticotherapy must be considered. Examples include glaucoma, increase in infectious keratitis risk and PSC.<sup>(1)</sup>
- PSC was not considered visually significant early in the case. After the elimination of other sources of blurriness, it has been considered as visually significant despite visual improvement with previous treatment.
- Following pseudophakia, presbyopia can be managed with the use of a multifocal lens design to improve the patient's well-being.

## Conclusion

- Use of scleral lenses can significantly improve the quality of vision and life of GVHD patients.
- Practitioners must be alert for side effects of long-term use of corticosteroids such as cataract.
- Following treatment, adding a multifocal design on a well-centered SCL was simple and life-changing for our newly pseudophakic patient.
- Management of severe OSD has allowed the patient reintegrate part-time work on a computer after two years of disability.

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