THE OHIO STATE UNIVERSITY
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Scleral Lens for Management of Ocular Surface Disease in Chronic GVHD

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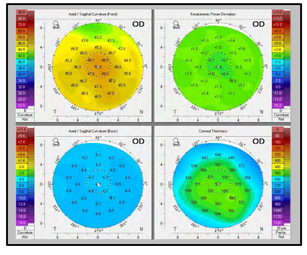
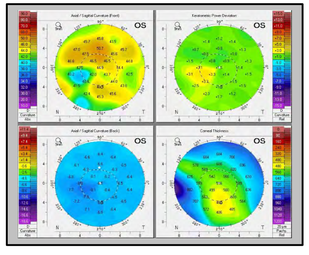
INTRODUCTION

Allogeneic hematopoietic stem cell transplantation (HSCT) is the transplantation of donor stem cells from bone marrow (BMT), peripheral blood or umbilical cord blood. It is used to treat hematologic and lymphoid malignancies and other blood disorders. Induced organ toxicity and graft versus host disease (GVHD) are serious complications following allogeneic HSCT. GVHD occurs when the donor stem cells attack the recipient host cells and is a major cause of ocular morbidity, immune deficiency and mortality. Treatment of GVHD includes systemic immunosuppression and local therapy.[1-4]

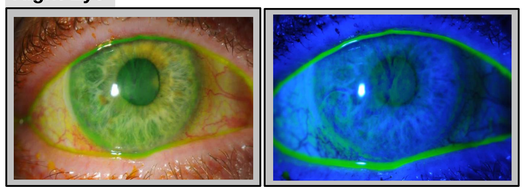
Background

Case Presentation	
Demographic	66 y/o Caucasian female
Reason for Visit	Referral from ophthalmology for scleral lens evaluation
Chief Complaint	Chronic dry eye and decreased vision OU
Systemic History	Acute myelogenous leukemia, BMT (2010), cGHVD, chronic kidney disease, removal of lower lobe of lung, hysterectomy, hypertension
Ocular History	OS: corneal perforation, pseudophakia OU: keratoconjunctivitis sicca (KCS), herpes simplex keratitis (HSK) with secondary neurotrophic keratitis, primary open angle glaucoma (POAG)
Ocular Medications	OU: Alphagan TID, Trusopt BID, Fluorometholone Forte qAM, artificial tears PRN
Slit Lamp Examination	OS: corneal neovascularization OU: periorbital hyperpigmentation, 2+ conjunctival hyperemia, mucous debris, corneal scarring, irregular corneal epithelium, instant TBUT
Fundus	OD: 0.90 C/D, macula normal OS: 0.70 C/D, macula normal
Visual Acuity	OD: 20/70sc, 20/50 cc OS: 20/400sc, 20/150 cc

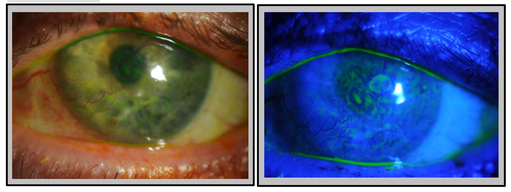




Right Eye



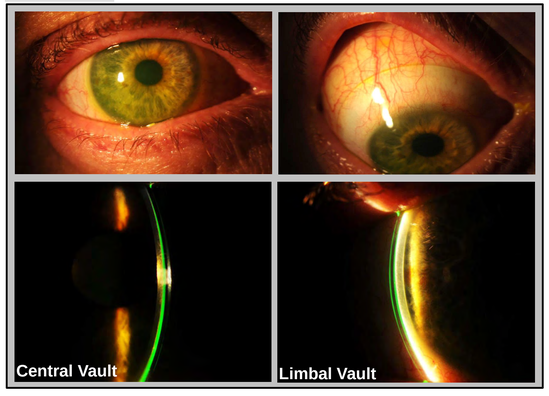
Left Eye



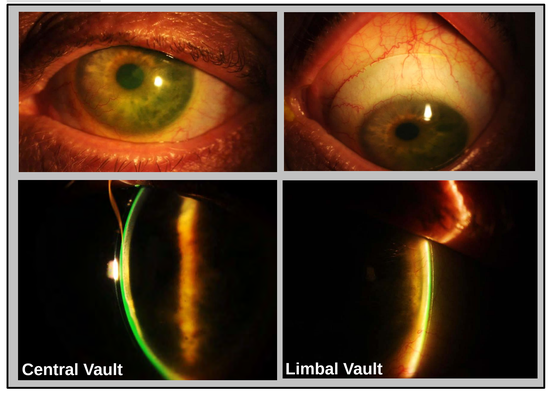
METHODS and RESULTS

The patient is symptomatic of chronic dry eye and decreased vision OU. A diagnostic scleral lens fit is conducted. The goal of the scleral lens fit is to provide ocular surface protection, improve visual function and relieve the patient's dry eye symptoms.

Right Eye



Left Eye



Three months following initial dispense of the scleral lenses, the patient reports significant improvement in dry eye symptoms and quality of vision in both eyes. Clinically, there is marked improvement in VA, mild decrease in conjunctival injection and significant decrease in debris OU.

Eye	Brand	OAD (mm)	BC (mm)	Power	CT (mm)	OZD (mm)	PC radius/ width (mm)	Material	Vault	BCVA
OD	Visionary Optics, Europa	20	7.03	-4.25	0.40	10.00	PC 1: 6.89/2.00 PC 2: 11.00/1.00 PC 3: 13.00/1.50 PC 4: 15.00/0.50	Boston XO2	200 microns	20/30-2
OS	Visionary Optics, Europa	20	7.41	-0.50	0.40	10.50	PC 1 7.27/2.00 PC 2 11.00/0.95 PC 3 13.00/1.30 PC 4 15.00/0.50	Boston XO2	200 microns	20/60+2

DISCUSSION

GVHD may present as acute (aGVHD) or chronic (cGVHD). Pathologic manifestation of cGVHD involves the skin, liver, upper respiratory tract, lung and mucous membranes.[1-3]

Ocular involvement occurs in 60-90% of GVHD patients and presents as a spectrum of clinical manifestations.[2] Ocular GVHD may affect the lids, lacrimal gland, conjunctiva, and cornea. Posterior segment involvement is possible, but rare. Lacrimal gland involvement has been reported as the most common manifestation of ocular GVHD.[2] Periorbital hyperpigmentation, acquisition of ocular allergy from donors with allergic disorders and cicatricial conjunctivitis have also been reported. The altered immunity state of a patient with GVHD also leaves them susceptible to ocular infection(s), including HSK.[1-7]

Chronic OSD results in significantly decreased comfort and quality of vision in patients with cGVHD.[1-11] Local therapy in ocular GVHD aims to improve ocular lubrication, decrease inflammation and maintain the mucosal integrity of the conjunctiva. Immunosuppressive therapy is considered as first line treatment for management of ocular cGVHD, but can increase risk of secondary ophthalmic complications.[2,5-6,8-10]

CONCLUSIONS

Allogeneic HSCT is now considered the standard of care for patients with hematologic and lymphoid malignancies and other blood disorders. GVHD remains a major cause of ocular morbidity in patients following HSCT.[2]

Scleral lenses are used in management of KCS by protecting the ocular surface and promoting epithelial regeneration.[5-6] Patients with cGVHD suffer pronounced impairment in vision-related quality of life due to dry eye symptoms.[11] Scleral lenses improve symptoms of foreign body sensation, pain, photophobia, decreased vision and provide significant improvement in quality of life.[5-6,9]

Incorporating scleral lenses as long term therapy for management of OSD in adjunct to medical interventions has proven effective in patients with cGVHD.[1,5-7,10]

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