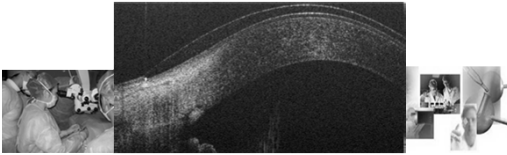


2015 BMT Pharmacists Conference
Bandage Contact Lens Therapy for Severe
Ocular GVHD



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Learning Objectives

- Describe signs, symptoms, and current management of ocular GVHD
- Recognize risks and benefits of bandage contact lens therapy
- List outcomes of the most recent clinical trial for bandage contact lens and ocular GVHD
- Identify new optical technologies to study the inflammation of the ocular GVHD

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Disclosures

I have no conflicts of interest to disclose

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Graft-versus-Host Disease (GVHD)

- GVHD is a major complication of allogenic tissue/hematopoietic stem cell transplantation
- 60% of GVHD patients have ocular involvement with significant compromise in quality of life due to ocular symptoms (such as severe photophobia, eye pain and decreased visual acuity)

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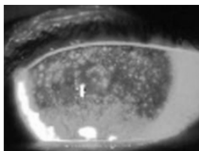
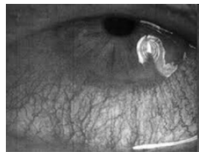
Dry eye disease (DED) and GVHD

- DED is the most commonly found eye condition in GVHD
- DED is a diagnostic sign of chronic GVHD
- Limited success for DED treatment in GVHD patients

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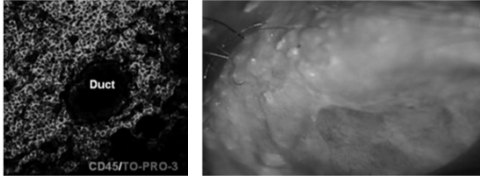
Ocular surface in GVHD

- Poor tear film
- Irregular corneal epithelium
- Conjunctiva inflammation
- Significantly impact the quality of life
- No reliable measure to accurately quantify symptoms



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GVHD of the ocular surface



An abundant inflammatory cell infiltration at periductal areas of lacrimal gland chronic GVHD
Obstructed orifices of meibomian gland and Zeiss gland on eye lid margin with severely fibrotic tarsal conjunctiva

Ogawa et al. SCIENTIFIC REPORTS | 3 : 3419 | DOI: 10.1038/srep03419

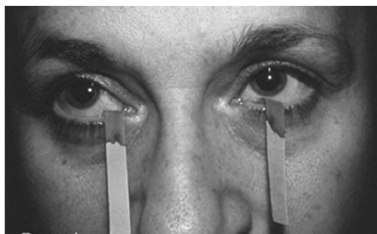
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Ocular GVHD: debilitating problem



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Our current understanding of GVHD



The Schirmer Test

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Evaluating GVHD

Multicenter validation trial (Inamoto, 2012)

- NIH eye score
- Patient-reported global rating
- Lee eye subscale
- Ocular Surface Disease Index
- Schirmer test

Measurement scale	No. of items	Score
National Institutes of Health (NIH) eye score	1	(0) No symptoms (1) Mild dry eye symptoms not affecting ADL (requiring eye drops < 3x per day) OR asymptomatic signs of keratoconjunctivitis sicca (2) Moderate dry eye symptoms partially affecting ADL (requiring eye drops > 3x per day or punctal plugs) WITHOUT vision impairment (3) Severe dry eye symptoms significantly affecting ADL (special ointment to release pain) OR unable to work because of ocular symptoms OR loss of vision caused by keratoconjunctivitis sicca
Patient-reported global rating of eye symptoms	1	Please circle the number that shows how severe your symptoms have been in the last week: Your eye problem at its WORST? None As bad as you can imagine 0 1 2 3 4 5 6 7 8 9 10
Eye subscale of Lee symptom scale	3	Summary of the following 3 items (0 – 100) Dry eyes Need to use eye drops frequently Difficulty seeing clearly Not at all Slightly Moderately Quite a bit Extremely 0 1 2 3 4
Ocular surface disease index (OSDI)	12	Summary of 12 items (0 – 100)
Schirmer test	1	mm in 5 minutes
Clinician or patient-reported symptom change ("Anchor")		0% 25% 50% 75% 100% None Slightly Moderately Quite a bit Extremely



Validation of Scales

Agreement in response between the measurement scales (kappa statistic)

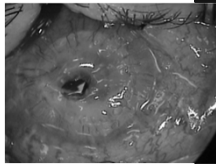
	National Institutes of Health (NIH) eye score	Global rating of eye symptoms	Lee eye subscale	Ocular surface disease index
Global rating of eye symptoms	0.18 (slight)			
Lee eye subscale	0.26 (fair)	0.42 (moderate)		
Ocular surface disease index	0.14 (slight)	0.37 (fair)	0.47 (moderate)	
Schirmer test	0.18 (slight)	0.10 (slight)	0.03 (slight)	-0.02 (no)

Inamoto et al, 2011



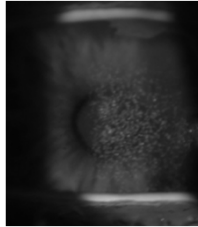
Treatment of ocular GVHD

- Systemic treatment
 - multisystem involvement
- Local therapeutic approach
 - Topical lubrication (increase tears)
 - Punctal occlusion (decrease tear loss)
 - Topical immunosuppression
 - Protect damage that leads to vision loss



Mild ocular GVHD

- Few punctate epithelial erosions
- No significant decrease in vision
- Lubrication (tears or ointment) as needed



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Local treatment: punctal occlusion

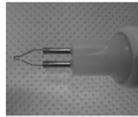
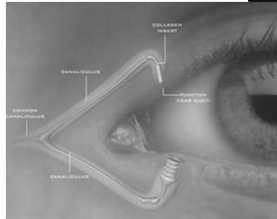
Dissolving plugs

- Collagen and other polymers
- days- months

Silicone Plugs

- Reversible, could fall out, may cause irritation

Cautery (permanent)



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Topical therapeutics

- Topical Steroid (may cause cataract or glaucoma)
- Topical Immunosuppression
 - Cyclosporine A (Restasis)
 - Investigational IL1-Ra (Kineret)
- Serum tears (not easily available, risk of contamination and infection)



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Boston PROSE Lenses (conventional tx)

- Effective to relieve symptoms
- Expensive (Over \$3000)
- Limited availability
- Extended initial fitting (approximately 2 weeks for individualized fitting of the lenses)



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Therapeutic Soft Bandage Lenses

Clinical experience for treatment of GVHD patients

- Disposable soft contact lenses used for a diseased or injured cornea to protect or treat it. Commonly used after ocular surgery.
- Effective to immediately relieve symptoms in ocular GVHD
- Inexpensive (Less than \$30/mo)
- Easily available
- Can be dispensed the same day
- Need daily antibiotic drops

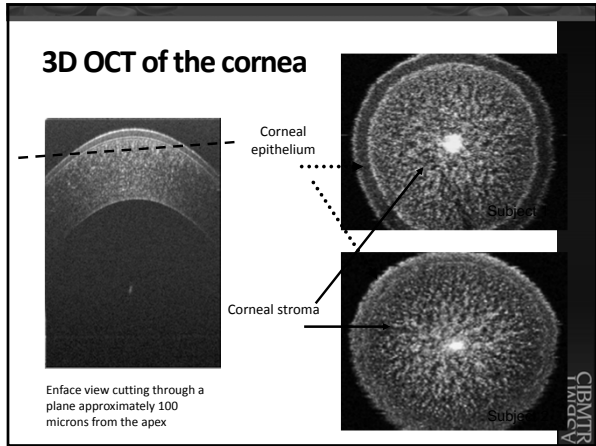


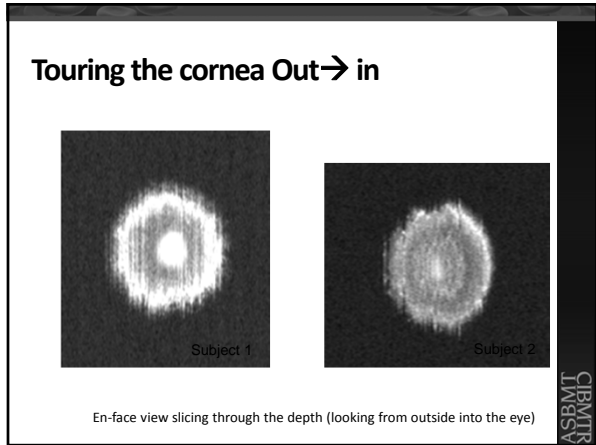
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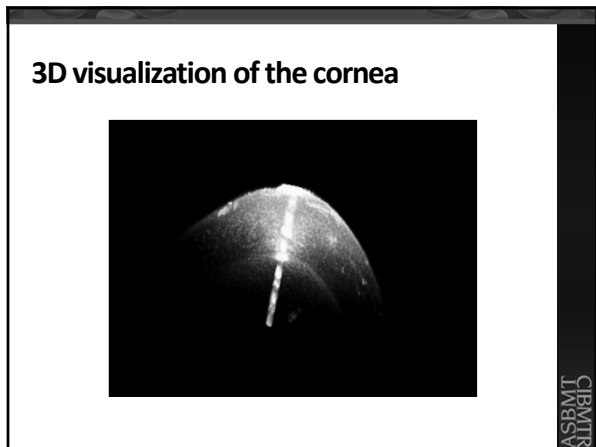
A collaborative investigation

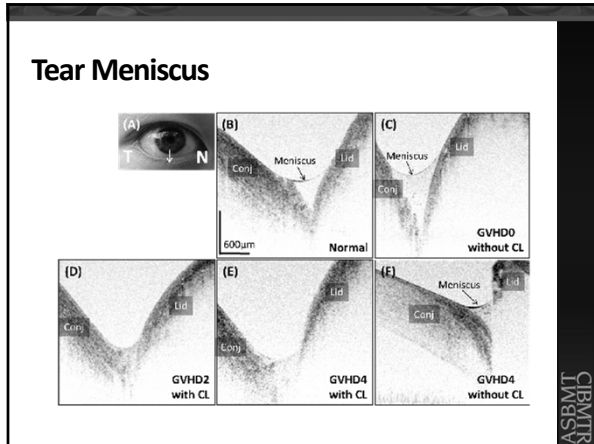
- UW Eye Institute
 - Shen and team (BCL treatment)
- Seattle Cancer Care Alliance
 - Professor Stephanie Lee (GVHD)
- UW Bioengineering
 - Professor Ricky Wang and team (OCT)

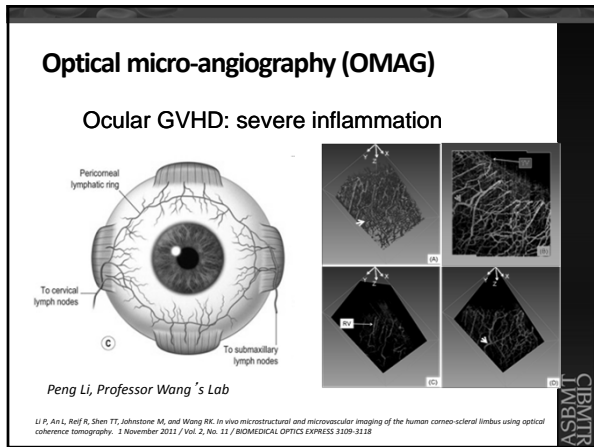
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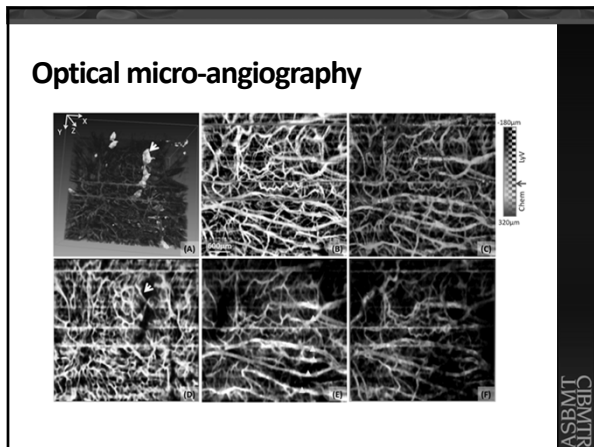




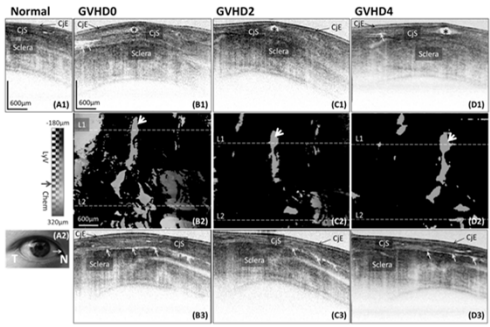




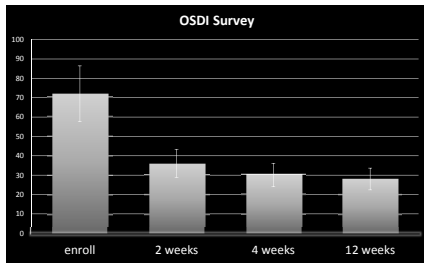




Lymphatic and chemosis

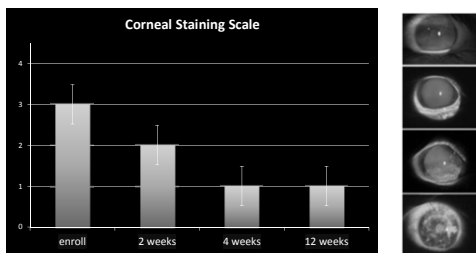


BCL treatment outcomes



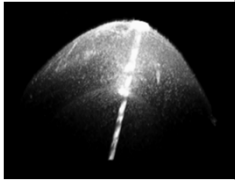
ocular surface disease index improves with treatment

Corneal surface result



Summary

- Soft BCL offers significant symptomatic relief in chronic GVHD patients
- Corneal surface improved with BCL therapy
- OCT can be an effective tool to understand ocular surface conditions
- Future benefit to general DED should be evaluated



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Audience Response Question #1

Schirmer test, only “objective” scale in measuring tear production, correlates to patient-reported symptom changes accurately

- a. True
- b. False

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Audience Response Question #2

Treatments for ocular GVHD may include:

- a. Lubrication eye drops
- b. Topical anti-inflammatory drops
- c. Punctal occlusion
- d. Bandage Contact lens
- e. All of the above

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