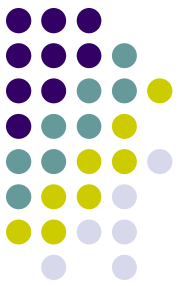


Superior Limbic Keratoconjunctivitis

^

?

What is the 'full name' of SLK?

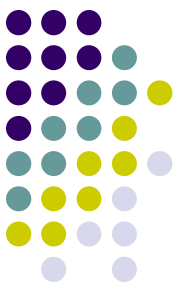


Superior Limbic Keratoconjunctivitis

of Theodore

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Superior limbic keratoconjunctivitis **of Theodore**. I mention this in case you see it sometime, you'll know it's still SLK.



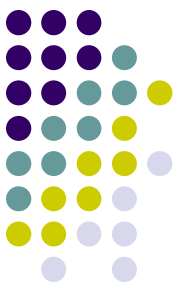
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In a nutshell, what is SLK?



Superior Limbic Keratoconjunctivitis

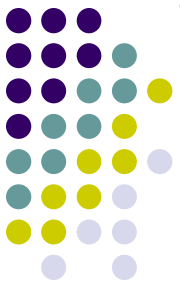
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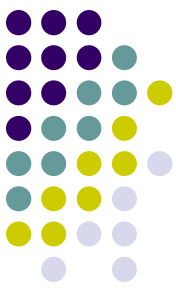
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What do SLK pts c/o?



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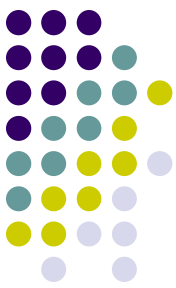
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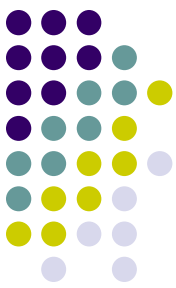
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DES-like complaints: Foreign-body sensation; burning



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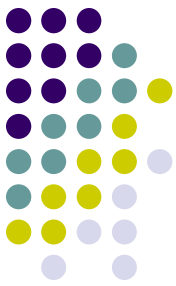
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What do SLK pts c/o?

DES-like complaints: Foreign-body sensation; burning

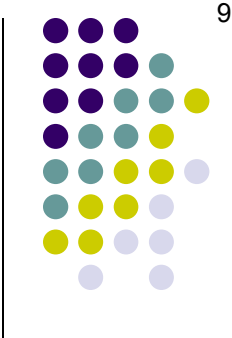
Do they complain of vision loss?

Usually no



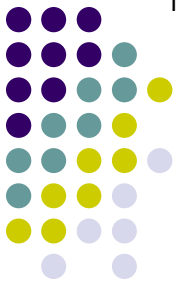
Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	

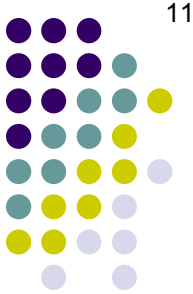


Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion

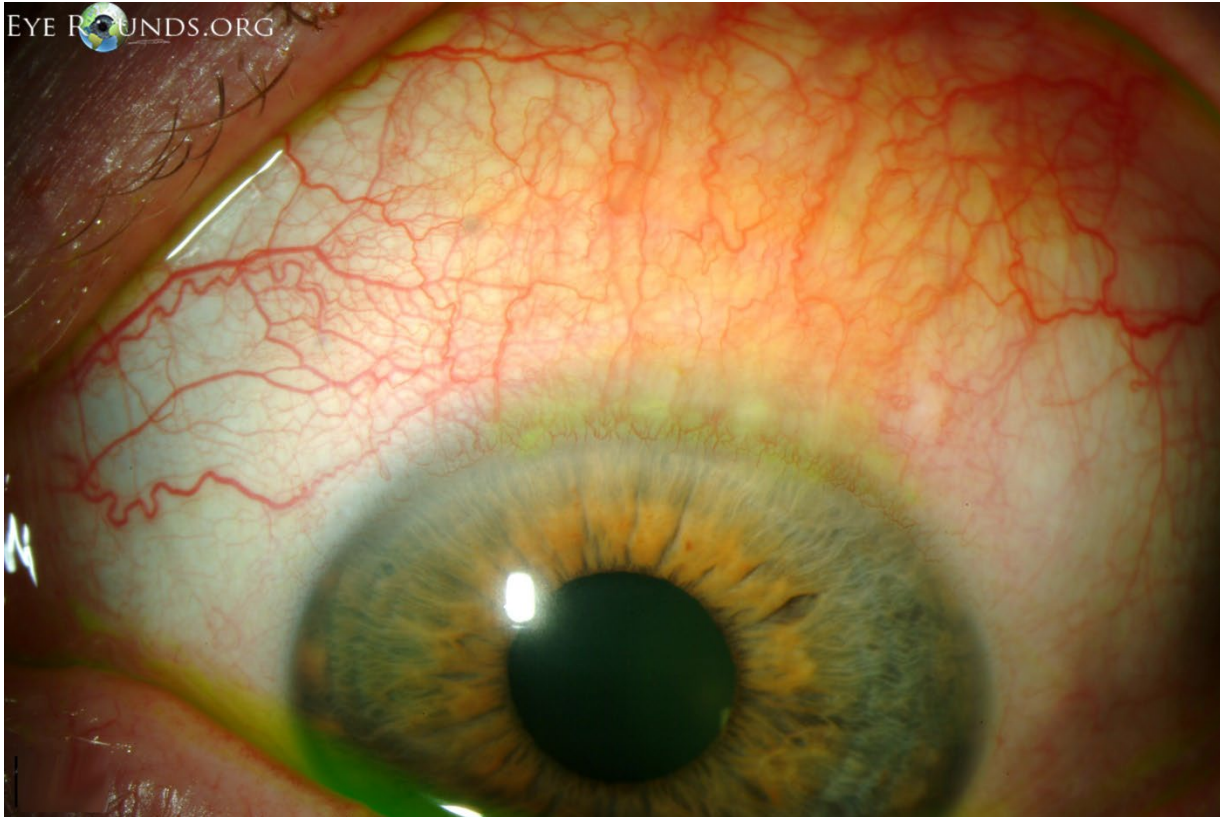


Superior Limbic Keratoconjunctivitis



SLK: Superior conj injection

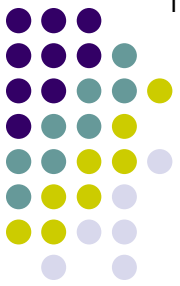
Superior Limbic Keratoconjunctivitis



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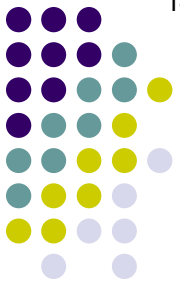
Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	



Superior Limbic Keratoconjunctivitis

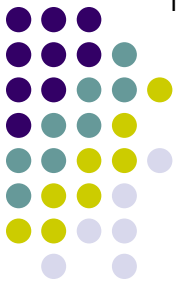
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<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy



Superior Limbic Keratoconjunctivitis

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What does this mean, the superior conj is 'redundant'?

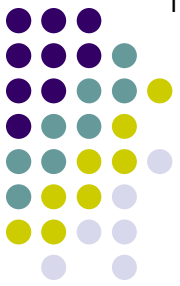


Superior Limbic Keratoconjunctivitis

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<i>Bulbar conj finding #1</i>	Injection of superior portion
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What does this mean, the superior conj is 'redundant'?

It means there is excess/loose conj present



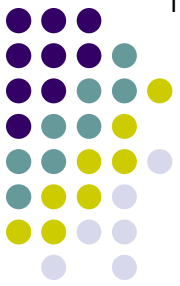
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How do you check for this clinically?



Superior Limbic Keratoconjunctivitis

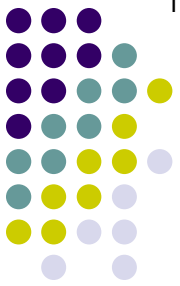
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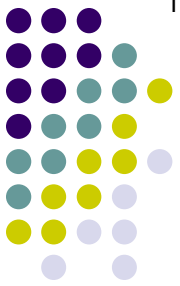
How do you check for this clinically?

At the slit lamp, use a cotton-tip to see if you can mobilize the superior conj and 'pull' it over the cornea (this cannot be done with normal conj)



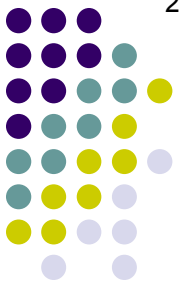
Superior Limbic Keratoconjunctivitis

	SLK
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<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	



Superior Limbic Keratoconjunctivitis

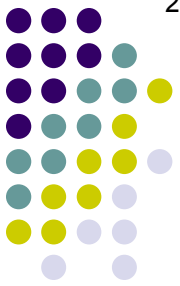
	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining



Superior Limbic Keratoconjunctivitis

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<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
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What does rose bengal stain?

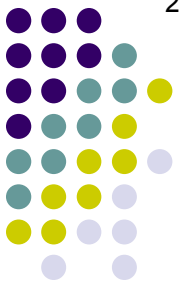


Superior Limbic Keratoconjunctivitis

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What does rose bengal stain?

The *Cornea* book says it stains corneal and conj epi cells for which the 'protective mucin coating has been disrupted.'

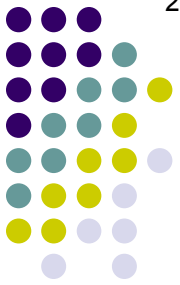


Superior Limbic Keratoconjunctivitis

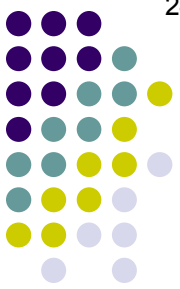
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<i>Bulbar conj finding #1</i>	Injection of superior portion
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<i>Bulbar conj finding #3</i>	Rose bengal staining

What does rose bengal stain?

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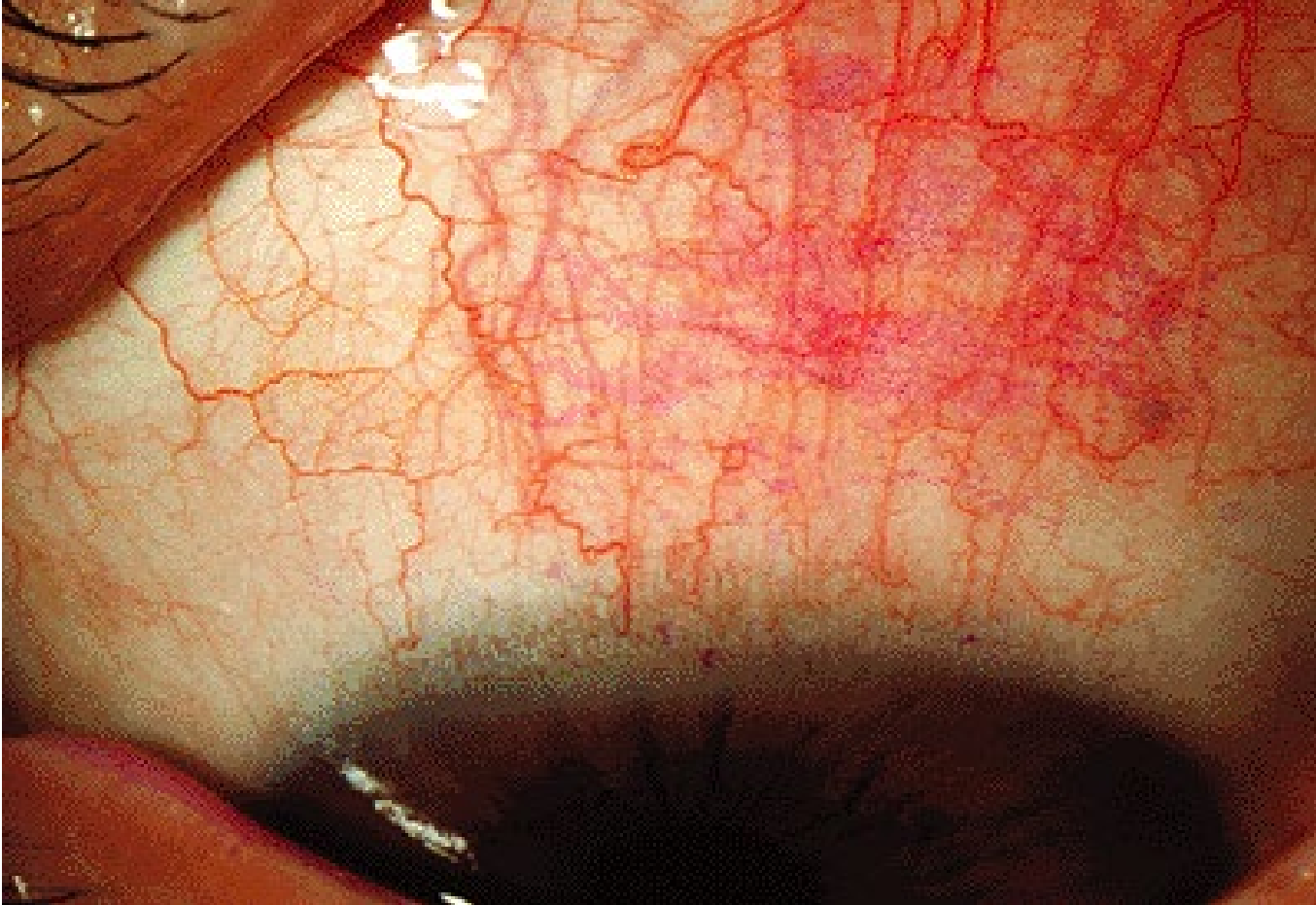
Superior Limbic Keratoconjunctivitis

**B**

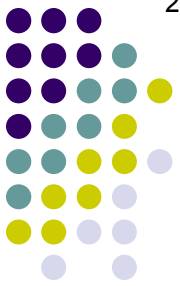
Superior limbic keratoconjunctivitis. A, Superior conjunctival injection.
B, Superior rose bengal staining.

SLK: Superior rose bengal staining

Superior Limbic Keratoconjunctivitis



SLK: Superior rose bengal staining



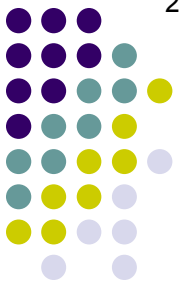
Superior Limbic Keratoconjunctivitis

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Another stain has pretty much the same properties. What is it?



Superior Limbic Keratoconjunctivitis

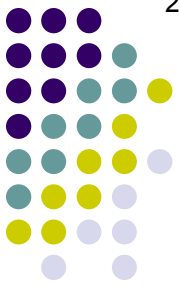
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Lissamine green



Superior Limbic Keratoconjunctivitis

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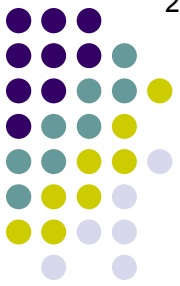
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Lissamine green

Is lissamine green also used in the diagnosis and management of SLK?



Superior Limbic Keratoconjunctivitis

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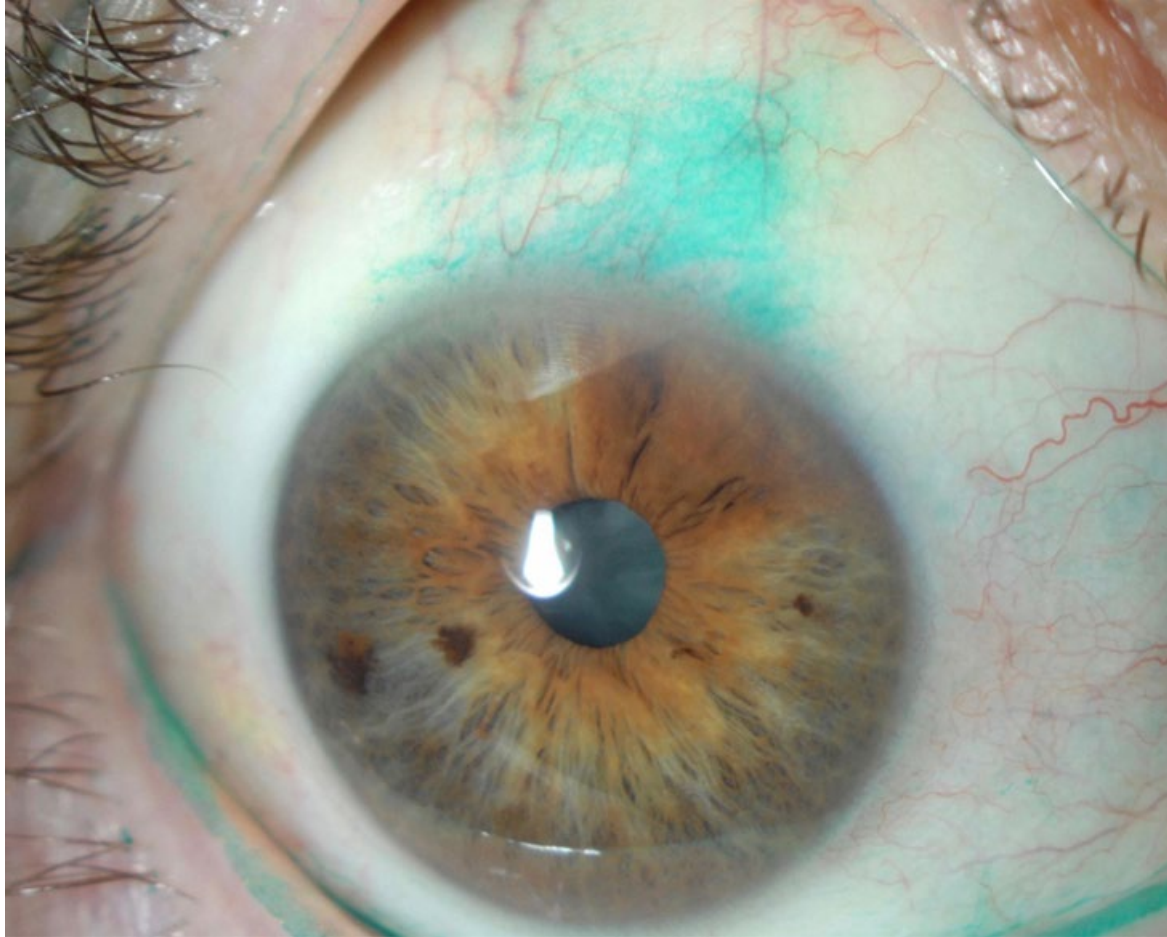
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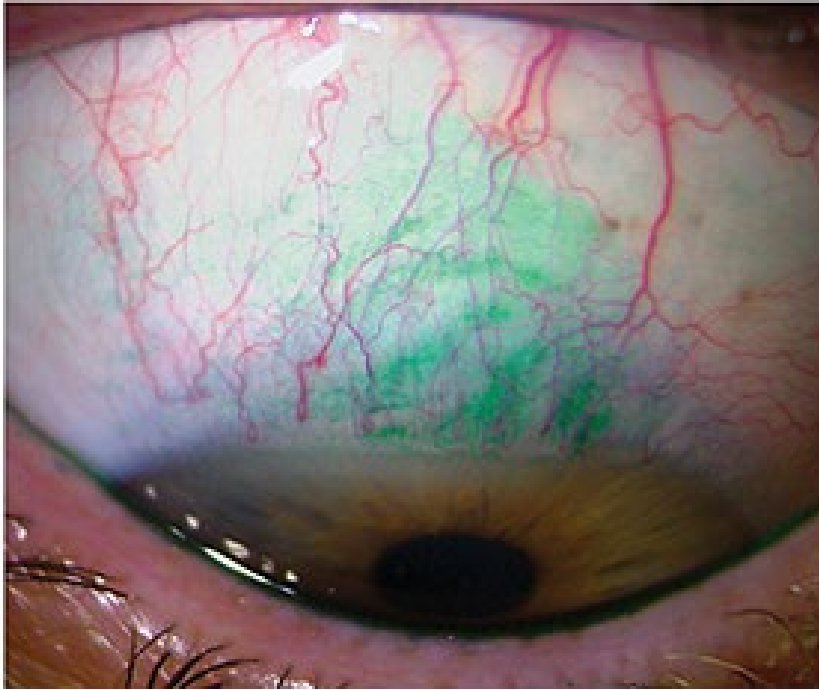
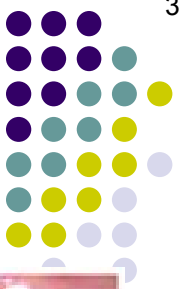
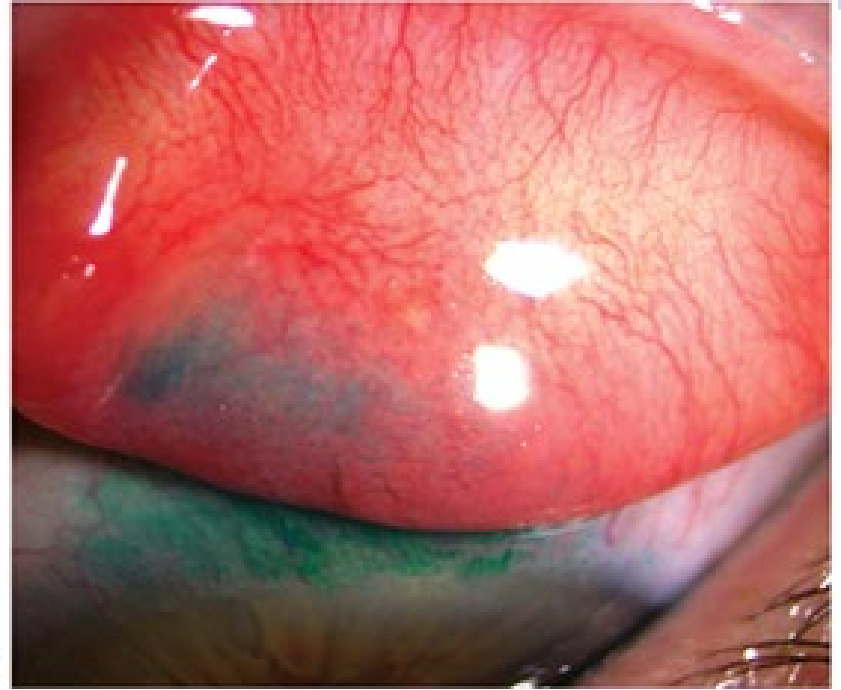
It is indeed

Superior Limbic Keratoconjunctivitis



SLK: Superior lissamine green staining

Superior Limbic Keratoconjunctivitis

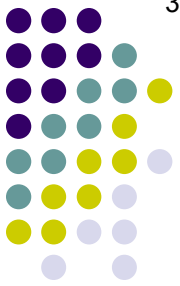
**A****B**

Note the lissamine green staining extends to the palpebral conj (B)

SLK: Superior lissamine green staining

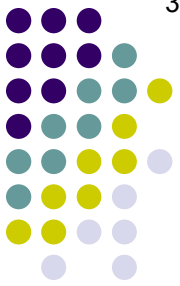
Superior Limbic Keratoconjunctivitis

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<i>Bulbar conj finding #1</i>	Injection of superior portion
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<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	

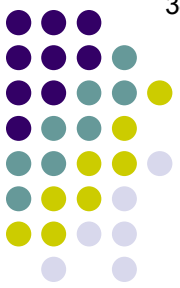


Superior Limbic Keratoconjunctivitis

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<i>Tarsal conj finding</i>	Papillary reaction



Superior Limbic Keratoconjunctivitis

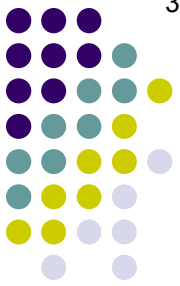


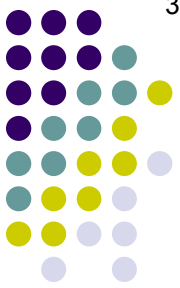
SLK: Superior tarsal conj papillary rxn

Superior Limbic Keratoconjunctivitis

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<i>Tarsal conj finding</i>	Papillary reaction

In this context, what is a papilla?

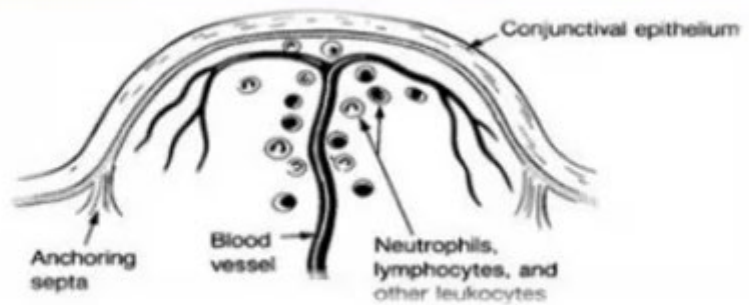
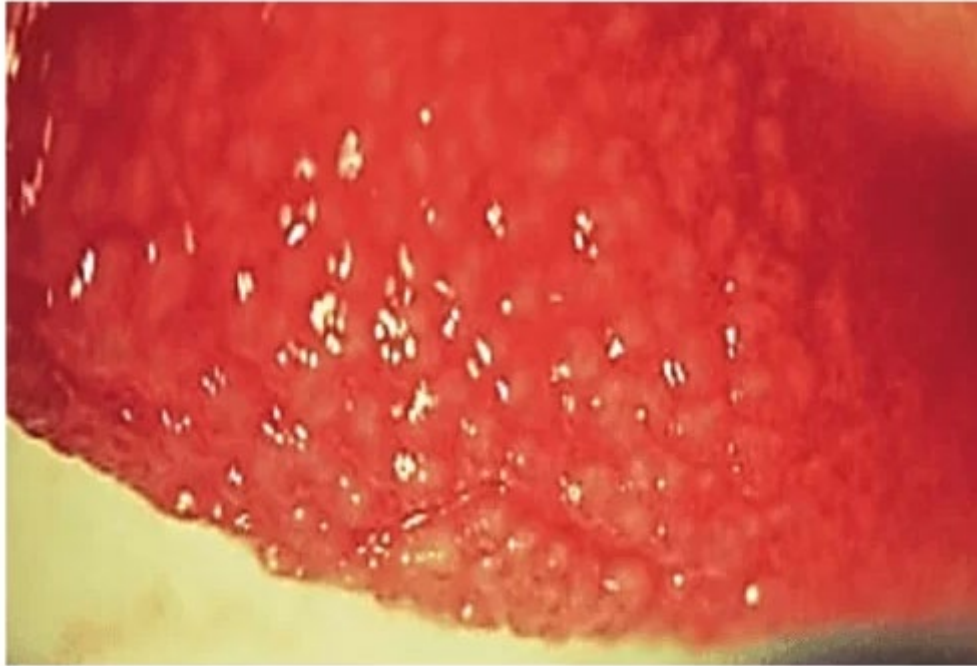




Superior Limbic Keratoconjunctivitis

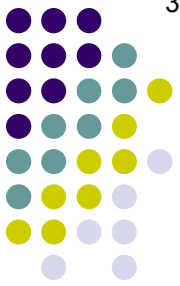
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<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<p><i>In this context, what is a papilla?</i> A dilated conj blood vessel with a cuff of edema and inflammatory cells</p>	

Superior Limbic Keratoconjunctivitis



Papillae

Conjunctival papillae



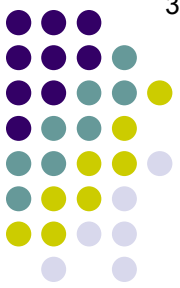
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In this context, what is a papilla?

A dilated conj blood vessel with a cuff of edema and inflammatory cells

What class of condition should come to mind first when papillae are present? (It's not SLK)



Superior Limbic Keratoconjunctivitis

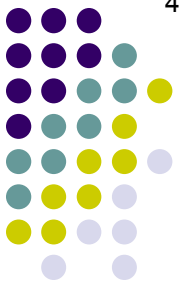
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Allergic disease



Superior Limbic Keratoconjunctivitis

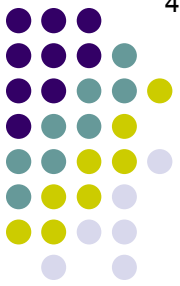
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What class of condition should come to mind first when papillae are present? (It's not SLK)

Allergic disease (category of bug infection is second)



Superior Limbic Keratoconjunctivitis

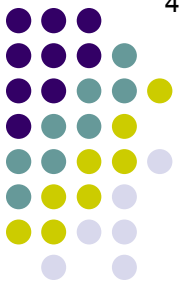
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<i>Tarsal conj finding</i>	Papillary reaction

In this context, what is a papilla?

A dilated conj blood vessel with a cuff of edema and inflammatory cells

What class of condition should come to mind first when papillae are present? (It's not SLK)

Allergic disease (bacterial infection is second)



Superior Limbic Keratoconjunctivitis

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<i>Tarsal conj finding</i>	Papillary reaction

In this context, what is a papilla?

A dilated conj blood vessel with a cuff of edema and inflammatory cells

What class of condition is this? What are some conditions that can present? (It's not SLK)

Allergic disease (bacterial)

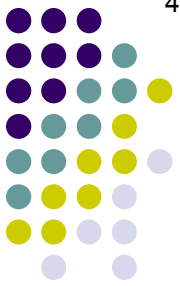
What are some allergic conditions classic for papillae?

--?

--?

--?

(there are others)



Superior Limbic Keratoconjunctivitis

	SLK
Bulbar conj finding #1	Injection of superior portion
Bulbar conj finding #2	Superior redundancy
Bulbar conj finding #3	Rose bengal staining
Tarsal conj finding	Papillary reaction

In this context, what is a papilla?

A dilated conj blood vessel with a cuff of edema and inflammatory cells

What class of condition is SLK? What are some allergic conditions classic for papillae?

Allergic disease

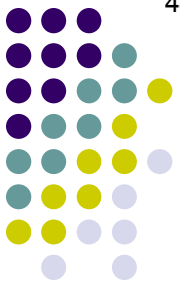
What are some allergic conditions classic for papillae?

-- [redacted] allergic conjunctivitis [redacted] abb.

-- [redacted] keratoconjunctivitis [redacted] abb.

-- [redacted] keratoconjunctivitis [redacted] abb.

(there are others)



Superior Limbic Keratoconjunctivitis

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Bulbar conj finding #1	Injection of superior portion
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In this context, what is a papilla?

A dilated conj blood vessel with a cuff of edema and inflammatory cells

What class of condition is this? What conditions can present? (It's not SLK)

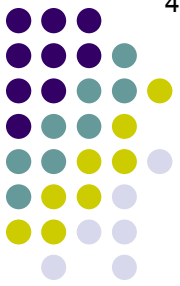
Allergic disease

What are some allergic conditions classic for papillae?

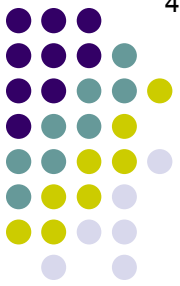
- Seasonal allergic conjunctivitis (SAC)
- Vernal keratoconjunctivitis (VKC)
- Atopic keratoconjunctivitis (AKC)
- (there are others)

Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	



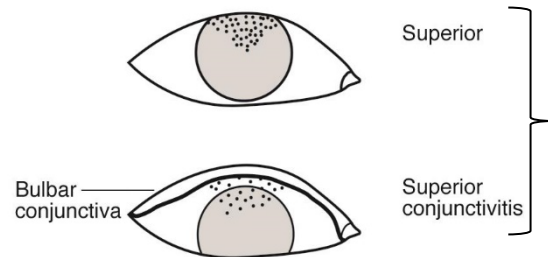
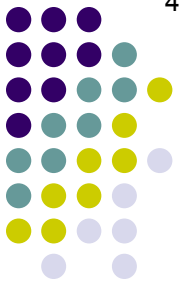
Superior Limbic Keratoconjunctivitis



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<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K

(Punctate epithelial erosions/keratitis)

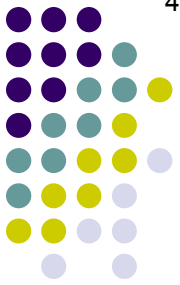
Superior Limbic Keratoconjunctivitis



SLK

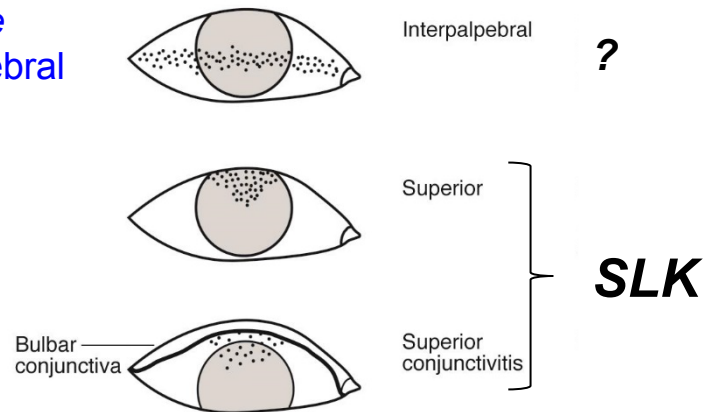
So, superior corneal and conj staining is strongly suggestive of SLK.

Punctate staining patterns of the ocular surface

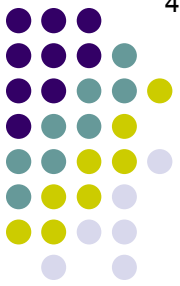


Superior Limbic Keratoconjunctivitis

What two conditions are suggested by interpalpebral staining?

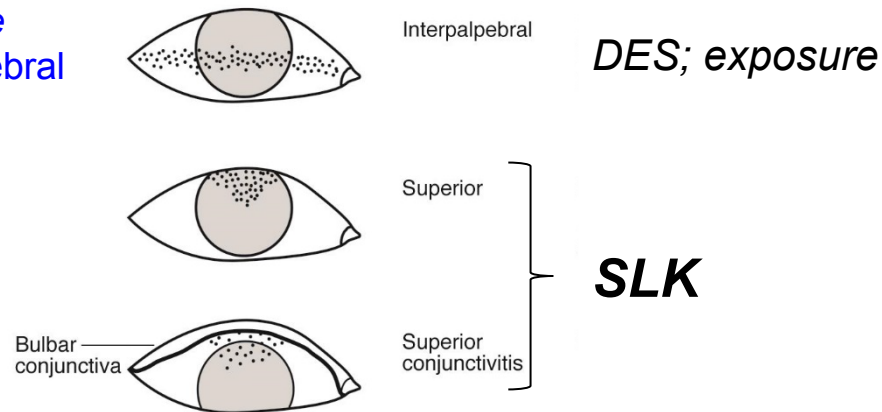


Punctate staining patterns of the ocular surface



Superior Limbic Keratoconjunctivitis

What two conditions are suggested by interpalpebral staining?

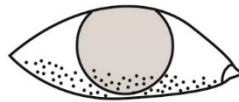


Punctate staining patterns of the ocular surface



Superior Limbic Keratoconjunctivitis

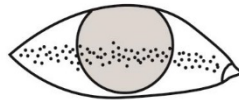
What two conditions are suggested by inferior staining?



Inferior

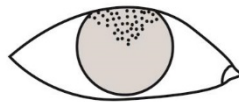
?

What two conditions are suggested by interpalpebral staining?



Interpalpebral

DES; exposure



Superior

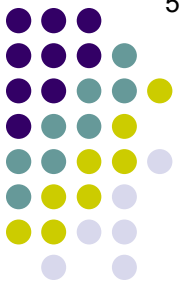
Bulbar
conjunctiva



Superior
conjunctivitis

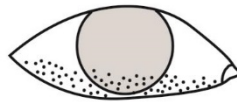
SLK

Punctate staining patterns of the ocular surface



Superior Limbic Keratoconjunctivitis

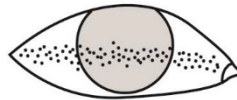
What two conditions are suggested by inferior staining?



Inferior

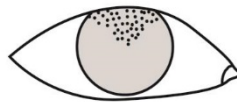
Blepharitis; lagophthalmos

What two conditions are suggested by interpalpebral staining?



Interpalpebral

DES; exposure



Superior

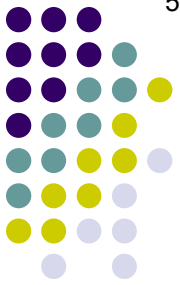


Bulbar
conjunctiva

Superior
conjunctivitis

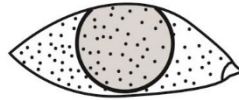
SLK

Punctate staining patterns of the ocular surface



Superior Limbic Keratoconjunctivitis

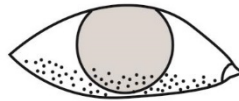
What two conditions are suggested by diffuse staining?



Diffuse

?

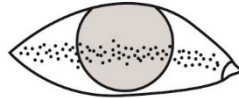
What two conditions are suggested by inferior staining?



Inferior

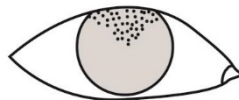
Blepharitis; lagophthalmos

What two conditions are suggested by interpalpebral staining?



Interpalpebral

DES; exposure



Superior

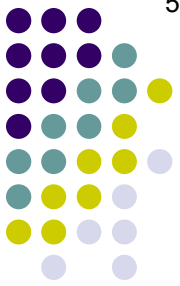


Bulbar
conjunctiva

Superior
conjunctivitis

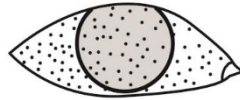
SLK

Punctate staining patterns of the ocular surface



Superior Limbic Keratoconjunctivitis

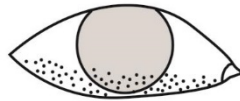
What two conditions are suggested by diffuse staining?



Diffuse

Viral conjunctivitis; toxins

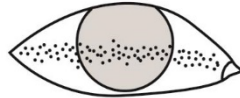
What two conditions are suggested by inferior staining?



Inferior

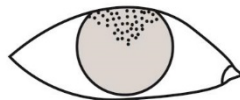
Blepharitis; lagophthalmos

What two conditions are suggested by interpalpebral staining?



Interpalpebral

DES; exposure



Superior

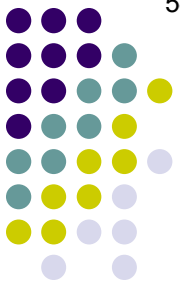


Bulbar
conjunctiva

Superior
conjunctivitis

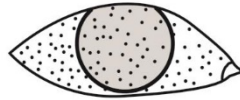
SLK

Punctate staining patterns of the ocular surface



Superior Limbic Keratoconjunctivitis

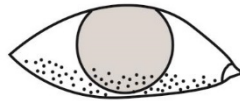
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Diffuse

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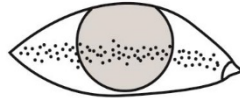
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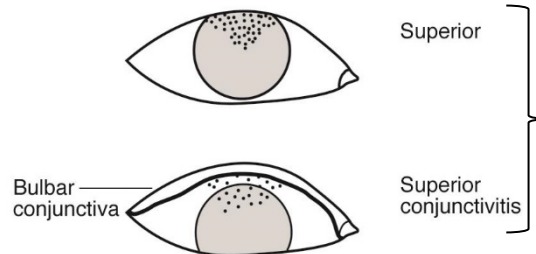
Blepharitis; lagophthalmos

What two conditions are suggested by interpalpebral staining?



Interpalpebral

DES; exposure



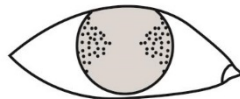
Superior

SLK



Superior conjunctivitis

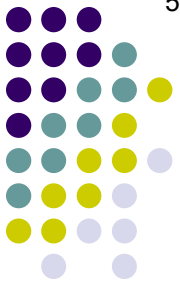
What is associated with staining at 3 and 9 o'clock?



3 and 9 o'clock

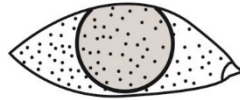
?

Punctate staining patterns of the ocular surface



Superior Limbic Keratoconjunctivitis

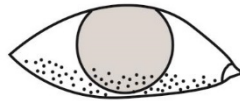
What two conditions are suggested by diffuse staining?



Diffuse

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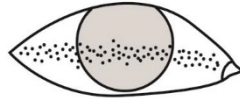
What two conditions are suggested by inferior staining?



Inferior

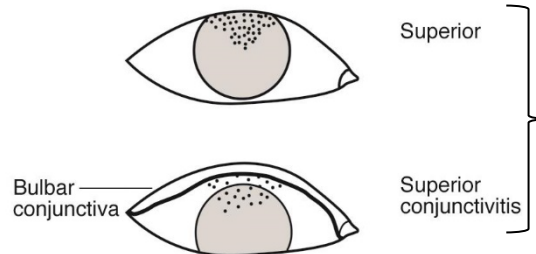
Blepharitis; lagophthalmos

What two conditions are suggested by interpalpebral staining?



Interpalpebral

DES; exposure



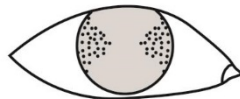
Superior

SLK



Superior conjunctivitis

What is associated with staining at 3 and 9 o'clock?



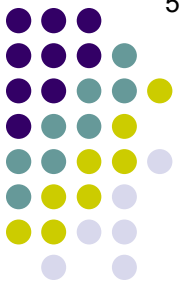
3 and 9 o'clock

CL wear

Punctate staining patterns of the ocular surface

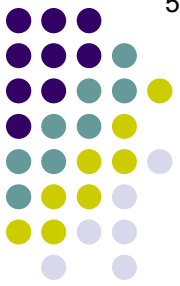
Superior Limbic Keratoconjunctivitis

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<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	



Superior Limbic Keratoconjunctivitis

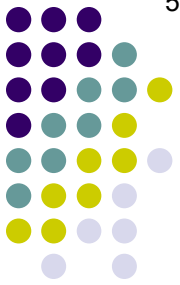
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<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly



Superior Limbic Keratoconjunctivitis



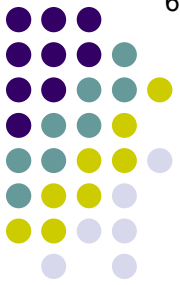
SLK: Superior corneal filaments



Superior Limbic Keratoconjunctivitis

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<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly

In this context, what are filaments?

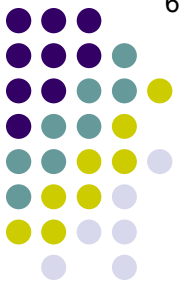


Superior Limbic Keratoconjunctivitis

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In this context, what are filaments?

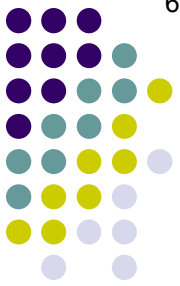
Strands of devitalized epithelial cells and mucus attached to the corneal surface



Superior Limbic Keratoconjunctivitis

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<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly

So, SLK pts have irritated redundant superior **bulbar conj**, irritated superior **tarsal conj**, and superior **corneal abnormalities**. What's the mechanism for all this?

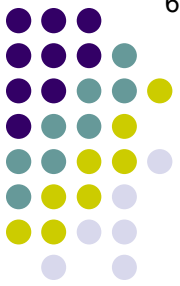


Superior Limbic Keratoconjunctivitis

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*So, SLK pts have irritated redundant superior **bulbar conj**, irritated superior **tarsal conj**, and superior **corneal abnormalities**. What's the mechanism for all this?*

The mechanical theory is the most widely accepted. According to this theory, the superior lid is too tightly apposed to the globe, and the resulting excessive contact and rubbing produces the signs/symptoms of SLK.



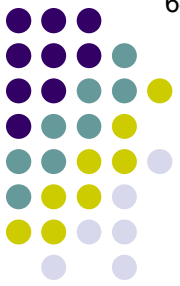
Superior Limbic Keratoconjunctivitis

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So, SLK pts have irritated redundant superior **bulbar conj**, irritated superior **tarsal conj**, and superior **corneal abnormalities**. What's the mechanism for all this?

The mechanical theory is the most widely accepted. According to this theory, **the superior lid is too tightly apposed to the globe**, and the resulting excessive mechanical irritation causes the signs/symptoms of SLK.

Why do SLK pts have overly tight superior lids?



Superior Limbic Keratoconjunctivitis

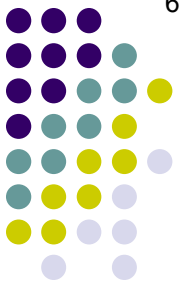
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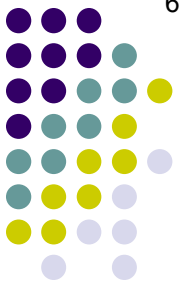
Why do SLK pts have overly tight superior lids?
Good question! We'll address it shortly.

Superior Limbic Keratoconjunctivitis



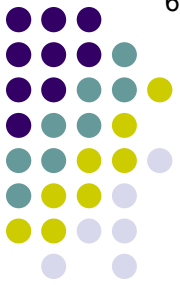
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<i>Tarsal conj finding</i>	Papillary reaction
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<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	

Superior Limbic Keratoconjunctivitis

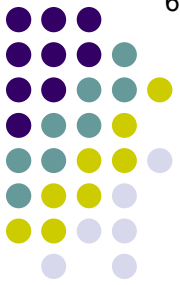


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<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M

Superior Limbic Keratoconjunctivitis

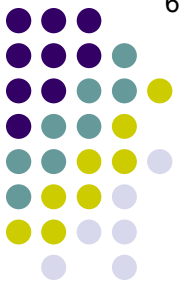


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<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M
<i>Age</i>	



Superior Limbic Keratoconjunctivitis

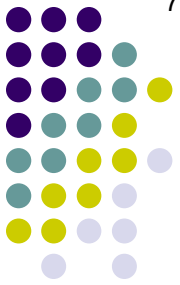
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<i>Bulbar conj finding #1</i>	Injection of superior portion
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<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s



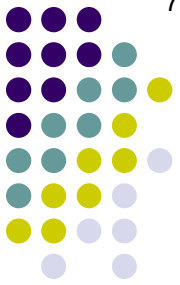
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<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	(as in uni- vs bilateral)

Superior Limbic Keratoconjunctivitis

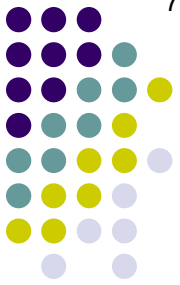


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<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral



Superior Limbic Keratoconjunctivitis

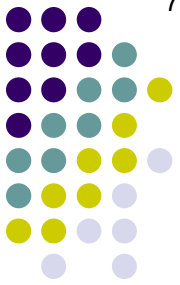
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<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	(Glandular condition)



Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction

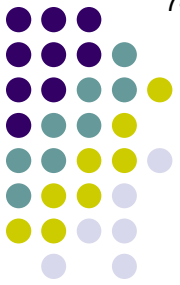
Superior Limbic Keratoconjunctivitis



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<i>Tarsal conj finding</i>	Papillary reaction

What percent of SLK pts have thyroid dysfunction?

Association #1	Thyroid dysfunction



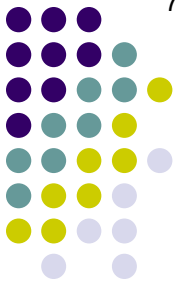
Superior Limbic Keratoconjunctivitis

	SLK
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<i>Tarsal conj finding</i>	Papillary reaction

What percent of SLK pts have thyroid dysfunction?

The *Cornea* book is unclear on this score. In text it refers to a study demonstrating that '90% of SLK pts had thyroid ophthalmopathy.'

Association #1	Thyroid dysfunction



Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction

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Association #1	Thyroid dysfunction



Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction

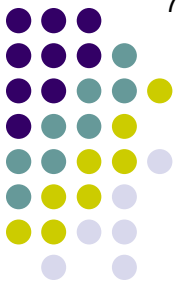
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If asked about this on the Boards, I would respond to the effect that 'a significant proportion of SLK pts have concurrent thyroid dz.'

Caveat emptor.

Association #1	Thyroid dysfunction



Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
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<i>Tarsal conj finding</i>	Papillary reaction

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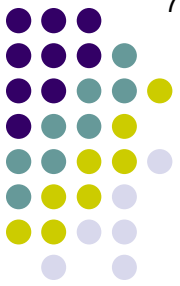
But in the book's Clinical Practice Guidelines, it states "It is important to

Is this association strong enough to warrant working up SLK pts for thyroid dz?

If asked about this on the Boards, I would respond to the effect that 'a significant proportion of SLK pts have concurrent thyroid dz.'

Caveat emptor.

Association #1	Thyroid dysfunction



Superior Limbic Keratoconjunctivitis

	SLK
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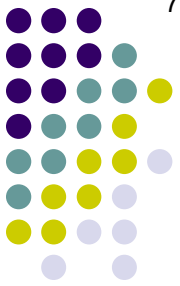
Is this association strong enough to warrant working up SLK pts for thyroid dz?

Yes—all SLK pts should have , , and checked

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Caveat emptor.

Association #1	Thyroid dysfunction



Superior Limbic Keratoconjunctivitis

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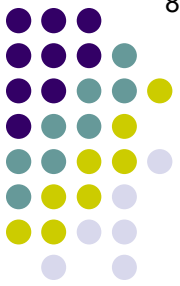
Is this association strong enough to warrant working up SLK pts for thyroid dz?

Yes—all SLK pts should have TSH , FT₄ , and thyroid antibodies checked

If asked about this on the Boards, I would respond to the effect that 'a significant proportion of SLK pts have concurrent thyroid dz.'

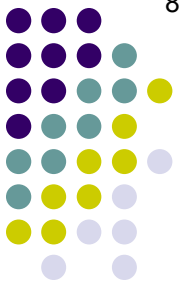
Caveat emptor.

Association #1	Thyroid dysfunction



Superior Limbic Keratoconjunctivitis

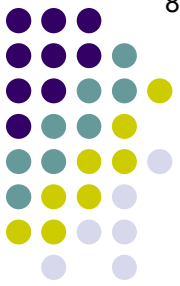
	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly
<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	(Another glandular condition)



Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
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<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	ATS

(ATS = Aqueous tear deficiency)

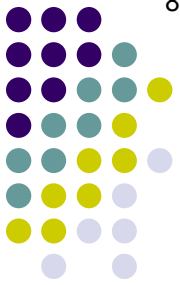


Superior Limbic Keratoconjunctivitis

	SLK
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<i>Cornea finding #2</i>	Filaments superiorly

Notice how thyroid dysfunction and ATS fit with the mechanical theory of SLK:

<i>Laterality</i>	Bilateral >> unilateral
Association #1	Thyroid dysfunction
Association #2	ATS



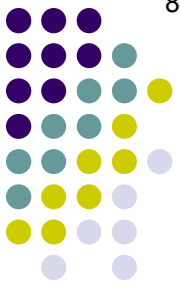
Superior Limbic Keratoconjunctivitis

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<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly

Notice how thyroid dysfunction and ATS fit with the mechanical theory of SLK:

--Thyroid dysfunction → one word → two words → increased contact

<i>Laterality</i>	Bilateral >> unilateral
Association #1	Thyroid dysfunction
<i>Association #2</i>	ATS



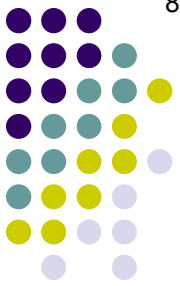
Superior Limbic Keratoconjunctivitis

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<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly

Notice how thyroid dysfunction and ATS fit with the mechanical theory of SLK:

--Thyroid dysfunction → exophthalmos → tight apposition → increased contact

<i>Laterality</i>	Bilateral >> unilateral
Association #1	Thyroid dysfunction
<i>Association #2</i>	ATS



Superior Limbic Keratoconjunctivitis

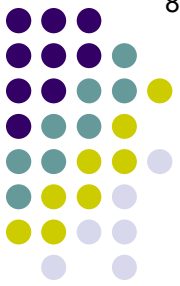
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Notice how thyroid dysfunction and ATS fit with the mechanical theory of SLK:

--Thyroid dysfunction → exophthalmos → tight apposition → increased contact

--ATS → two words → two words → increased contact

<i>Laterality</i>	Bilateral >> unilateral
Association #1	Thyroid dysfunction
Association #2	ATS



Superior Limbic Keratoconjunctivitis

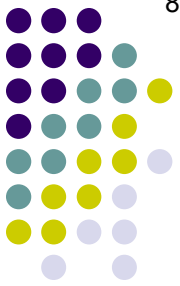
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Notice how thyroid dysfunction and ATS fit with the mechanical theory of SLK:

--**Thyroid dysfunction** → exophthalmos → tight apposition → **increased contact**

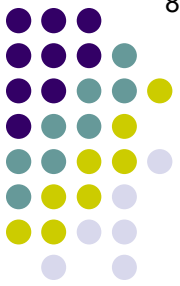
--**ATS** → dry eyes → increased friction → **increased contact**

<i>Laterality</i>	Bilateral >> unilateral
Association #1	Thyroid dysfunction
Association #2	ATS



Superior Limbic Keratoconjunctivitis

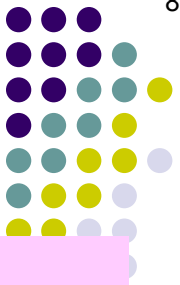
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<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	ATS
<i>VA loss</i>	(How severe?)



Superior Limbic Keratoconjunctivitis

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<i>Bulbar conj finding #1</i>	Injection of superior portion
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<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	ATS
<i>VA loss</i>	Little to none

Superior Limbic Keratoconjunctivitis



SLK

What are the two overarching goals in treating SLK?

--?

--?

Association #1

Thyroid dysfunction

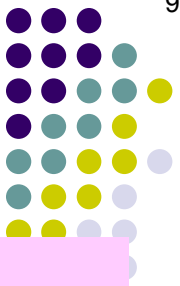
Association #2

ATS

VA loss

Mild

Superior Limbic Keratoconjunctivitis



SLK

What are the two overarching goals in treating SLK?

--Reduce...

--Reduce...

Association #1

Thyroid dysfunction

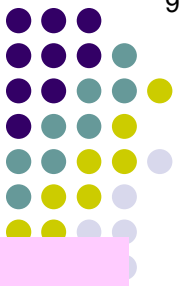
Association #2

ATS

VA loss

Mild

Superior Limbic Keratoconjunctivitis



SLK

What are the two overarching goals in treating SLK?

- Reduce...surface inflammation
- Reduce...friction between the superior bulbar conj and superior tarsal conj

<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	ATS
<i>VA loss</i>	Mild

Superior Limbic Keratoconjunctivitis

SLK

What are the two overarching goals in treating SLK?

--Reduce...surface inflammation

--Reduce...friction between the superior bulbar conj and superior tarsal conj

There are a number of medical treatment options. These include:*

--?

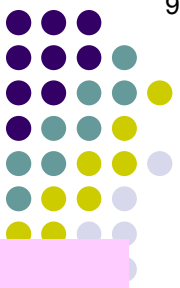
--?

--?

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild

*Which is a sure sign none of them is particularly effective.

Superior Limbic Keratoconjunctivitis



SLK

What are the two overarching goals in treating SLK?

- Reduce...surface inflammation
- Reduce...friction between the superior bulbar conj and superior tarsal conj

There are a number of medical treatment options. These include:*

- Preservative-free ATs
- Topical anti-inflammatory meds
- Large (enough to cover the involved conj) diameter BCL

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild

Superior Limbic Keratoconjunctivitis

SLK

What are the two overarching goals in treating SLK?

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There are a number of surgical options as well. These include:*

- ?
- ?
- ?

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild

*Ditto

Superior Limbic Keratoconjunctivitis

SLK

What are the two overarching goals in treating SLK?

- Reduce...surface inflammation
- Reduce...friction between the superior bulbar conj and superior tarsal conj

There are a number of medical treatment options. These include:*

- Preservative-free ATs
- Topical anti-inflammatory meds
- Large (enough to cover the involved conj) diameter BCL

There are a number of surgical options as well. These include:*

- [redacted] of the redundant superior conj
- [redacted] of the redundant superior conj
- [redacted] two words of the redundant superior conj

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild

Superior Limbic Keratoconjunctivitis

SLK

What are the two overarching goals in treating SLK?

- Reduce...surface inflammation
- Reduce...friction between the superior bulbar conj and superior tarsal conj

There are a number of medical treatment options. These include:*

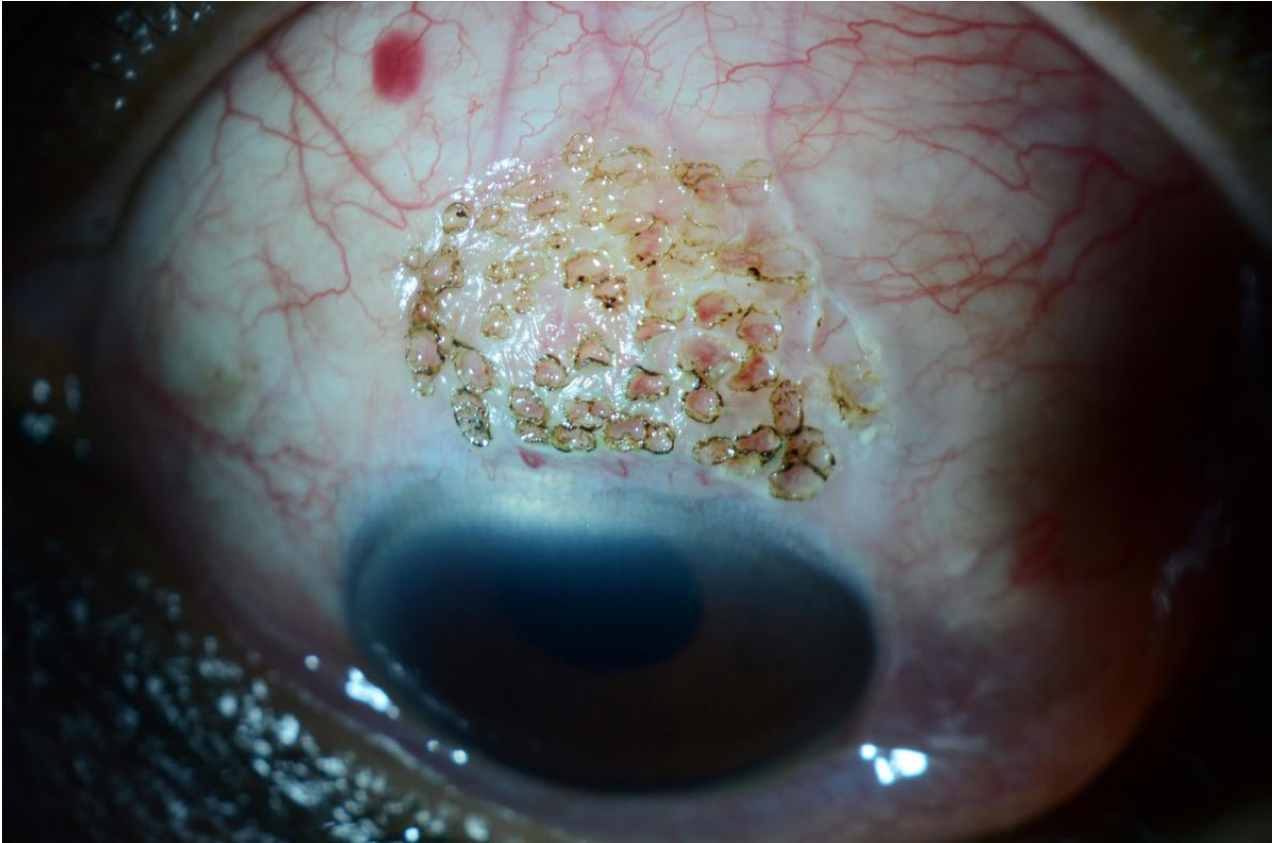
- Preservative-free ATs
- Topical anti-inflammatory meds
- Large (enough to cover the involved conj) diameter BCL

There are a number of surgical options as well. These include:*

- Resection of the redundant superior conj
- Cauterization of the redundant superior conj
- Sutured fixation of the redundant superior conj

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild

Superior Limbic Keratoconjunctivitis



SLK: s/p cauterization

Superior Limbic Keratoconjunctivitis

SLK

What are the two overarching goals in treating SLK?

- Reduce...surface inflammation
- Reduce...friction between the superior bulbar conj and superior tarsal conj

There are a number of medical treatment options. These include:*

- Preservative-free ATs
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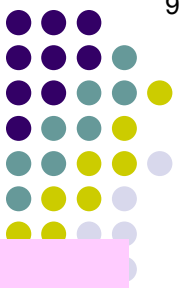
There are a number of surgical options as well. These include:*

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- Cauterization of the redundant superior conj
- Sutured fixation of the redundant superior conj

What is the long-term prognosis for SLK?

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild

Superior Limbic Keratoconjunctivitis



SLK

What are the two overarching goals in treating SLK?

- Reduce...surface inflammation
- Reduce...friction between the superior bulbar conj and superior tarsal conj

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- Cauterization of the redundant superior conj
- Sutured fixation of the redundant superior conj

What is the long-term prognosis for SLK?

It tends to be self-limiting, burning out after a number of years (kinda like TED...)

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild

Superior Limbic Keratoconjunctivitis

SLK

What are the two overarching goals in treating SLK?

- Reduce...surface inflammation
- Reduce...friction between the superior bulbar conj and superior tarsal conj

There are a number of medical treatment options. These include:*

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What is the long-term prognosis for SLK?

It tends to be self-limiting, burning out after a number of years (**kinda like TED...**)

Association #1	Thyroid dysfunction
Association #2	ATS
VA loss	Mild





There is a condition called
contact lens-induced keratoconjunctivitis (CLIK)
that has a similar clinical appearance to SLK.
However, they are not the same entity,
and can and should be differentiated.

Let's see how they stack up...

Superior Limbic Keratoconjunctivitis



	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	?
<i>Gender</i>	F>>M	?
<i>Age</i>	20s – 70s	?
<i>Laterality</i>	Bilateral >> unilateral	?
<i>Association #1</i>	Thyroid dysfunction	?
<i>Association #2</i>	ATS	?
<i>VA loss</i>	Little to none	?

Same

Same?

Superior Limbic Keratoconjunctivitis



	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	?
<i>Gender</i>	F>>M	
<i>Age</i>	20s – 70s	
<i>Laterality</i>	Bilateral >> unilateral	
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis



	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F>>M	
<i>Age</i>	20s – 70s	
<i>Laterality</i>	Bilateral >> unilateral	
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
Cornea finding #2	Filaments superiorly	No filaments
Gender	F>>M	?
<i>Age</i>	20s – 70s	
<i>Laterality</i>	Bilateral >> unilateral	
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
Cornea finding #2	Filaments superiorly	No filaments
Gender	F>>M	F = M
<i>Age</i>	20s – 70s	
<i>Laterality</i>	Bilateral >> unilateral	
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
Cornea finding #2	Filaments superiorly	No filaments
Gender	F>>M	F = M
Age	20s – 70s	?
<i>Laterality</i>	Bilateral >> unilateral	
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?



Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
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Gender	F>>M	F = M
Age	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
Cornea finding #2	Filaments superiorly	No filaments
Gender	F>>M	F = M
Age	20s – 70s	teens - 20s
Laterality	Bilateral >> unilateral	?
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

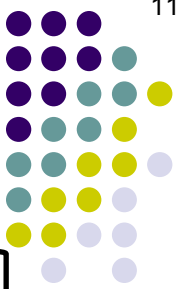
Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F >> M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Association #1</i>	Thyroid dysfunction	
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis



	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
Cornea finding #2	Filaments superiorly	No filaments
Gender	F>>M	F = M
Age	20s – 70s	teens - 20s
Laterality	Bilateral >> unilateral	Unilateral >> bilateral
Association #1	Thyroid dysfunction	?
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis



	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F >> M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Association #1</i>	Thyroid dysfunction	No thyroid association
<i>Association #2</i>	ATS	
<i>VA loss</i>	Little to none	

Same

Same?

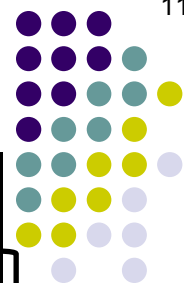
Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F >> M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Association #1</i>	Thyroid dysfunction	No thyroid association
<i>Association #2</i>	ATS	?
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis



	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F >> M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Association #1</i>	Thyroid dysfunction	No thyroid association
<i>Association #2</i>	ATS	No ATS
<i>VA loss</i>	Little to none	

Same

Same?

Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F>>M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Association #1</i>	Thyroid dysfunction	No thyroid association
<i>Association #2</i>	ATS	No ATS
<i>VA loss</i>	Little to none	?

Same

Same?

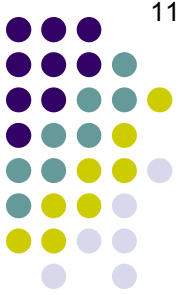
Superior Limbic Keratoconjunctivitis

	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F >> M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Association #1</i>	Thyroid dysfunction	No thyroid association
<i>Association #2</i>	ATS	No ATS
<i>VA loss</i>	Little to none	Significant

Same

Same?

Superior Limbic Keratoconjunctivitis

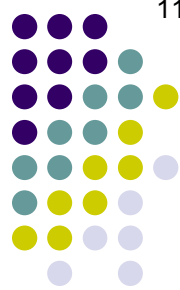


	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F>>M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Assoc</i>	ATS	No association
<i>Association #2</i>	★ ATS ★	★ No ATS ★
★ <i>VA loss</i>	Little to none	Significant

The Cornea book emphasized this difference, so you should too!



Superior Limbic Keratoconjunctivitis



	SLK	CLIK	
Bulbar conj finding #1	Injection of superior portion	Injection of superior portion	
Bulbar conj finding #2	Superior redundancy	Superior redundancy	
Bulbar conj finding #3	Rose bengal staining	Rose bengal staining	
Tarsal conj finding	Papillary reaction	Papillary reaction	
Cornea finding #1	Superior PEE/K	Superior PEE/K	
Cornea finding #2	Filaments superiorly	No filaments	
Gender	F>>>M	F = M	
Age	20s – 70s	teens - 20s	
Laterality	Bilateral >> unilateral	Unilateral >> bilateral	
Association #1	Thyroid	What is the cause of VA loss in CLIK?	
Association #2	ATS	No ATS	
VA loss	Little to none	Significant	



Superior Limbic Keratoconjunctivitis



	SLK	CLIK
<i>Bulbar conj finding #1</i>	Injection of superior portion	Injection of superior portion
<i>Bulbar conj finding #2</i>	Superior redundancy	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction	<i>that extend into the visual axis</i>
<i>Cornea finding #1</i>	Superior PEE/K	Superior PEE/K^V
<i>Cornea finding #2</i>	Filaments superiorly	No filaments
<i>Gender</i>	F >> M	F = M
<i>Age</i>	20s – 70s	teens - 20s
<i>Laterality</i>	Bilateral >> unilateral	Unilateral >> bilateral
<i>Association #1</i>	Thyroid	<i>What is the cause of VA loss in CLIK?</i> Punctate keratopathy
<i>Association #2</i>	ATS	No ATS
<i>VA loss</i>	Little to none	Significant



Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior port
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K

In a nutshell, what is the pathophysiology of CLIK?

<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	ATS
<i>VA loss</i>	Little to none

CLIK

Injection of superior portion

Superior redundancy

Rose bengal staining

Papillary reaction

Superior PEE/K

No filaments

F = M

teens - 20s

Unilateral >> bilateral

No thyroid association

No ATS

Significant

Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior port
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K

In a nutshell, what is the pathophysiology of CLIK?
It is a local limbal

<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	ATS
<i>VA loss</i>	Little to none

CLIK

Injection of superior portion
Superior redundancy
Rose bengal staining
Papillary reaction
Superior PEE/K

No filaments

F = M

teens - 20s

Unilateral >> bilateral

No thyroid association

No ATS

Significant

Superior Limbic Keratoconjunctivitis

	SLK
<i>Bulbar conj finding #1</i>	Injection of superior port
<i>Bulbar conj finding #2</i>	Superior redundancy
<i>Bulbar conj finding #3</i>	Rose bengal staining
<i>Tarsal conj finding</i>	Papillary reaction
<i>Cornea finding #1</i>	Superior PEE/K

In a nutshell, what is the pathophysiology of CLIK?
It is a local limbal stem-cell deficiency

<i>Gender</i>	F>>M
<i>Age</i>	20s – 70s
<i>Laterality</i>	Bilateral >> unilateral
<i>Association #1</i>	Thyroid dysfunction
<i>Association #2</i>	ATS
<i>VA loss</i>	Little to none

CLIK

Injection of superior portion

Superior redundancy

Rose bengal staining

Papillary reaction

Superior PEE/K

No filaments

F = M

teens - 20s

Unilateral >> bilateral

No thyroid association

No ATS

Significant