

INTRODUCTION

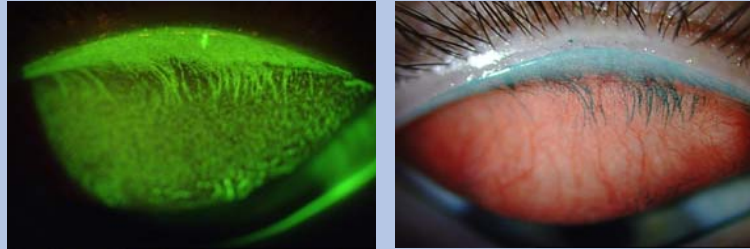
- ◆ The upper eye lid is in close apposition to the ocular surface and it “brushes” over the conjunctival surface during the normal process of blinking.
- ◆ This brushing of the cornea and conjunctival surface with the lid results in a “windscreen wiper” type movement, with a resultant upper lid margin staining (ULMS).¹
- ◆ Recently, some studies have related subjective discomfort to the presence of ULMS and this may be a useful diagnostic sign in contact lens wearers who exhibit symptoms of dry eye disease.²
- ◆ The purpose of this study was to report some atypical manifestations of ULMS that occur in silicone hydrogel (SH) contact lens wearers who complain of ocular surface dryness.

METHODS

- Adapted SH lens wearers wearing a variety of SH materials were evaluated for ULMS using fluorescein (FI) and lissamine green (LG) stains (FL- Ful-Glo, Akorn Inc. 0.6 mg strips; LG - Rose Stone Enterprises, CA. 1.5 mg strips).
- Sequentially in both eyes, a drop of sodium fluorescein was instilled into the inferior palpebral conjunctiva by wetting a FI strip with sterile saline. After 3 mins a second drop was instilled. A minute later, the upper eye lid was everted, and the wiper area of the upper lid examined with the slit lamp on 8X and 12X magnification, using a cobalt blue filter.
- The ULMS was examined from the nasal location of the punctum to the temporal canthus of the upper lid.
- Subjects completed 5 clinical visits over a 4 week period.
- Digital images were obtained with both stains at all visits.

RESULTS

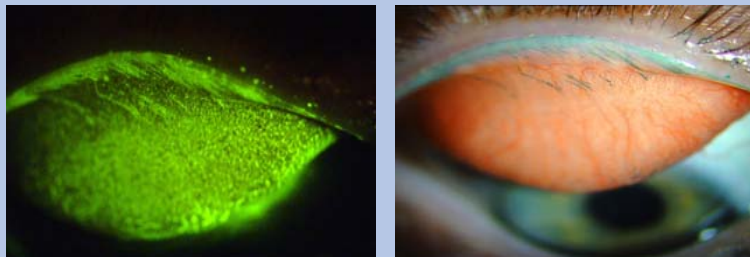
Atypical ULMS was present in 4 out of 38 SH lens wearers and the patterns are seen below



Feathery extensions were seen, which varied between subjects



Feathery extensions noted with FI. Stain Feathery extensions noted with LG Stain



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RESULTS

- Using FI and LG stain, we have identified atypical clinical patterns of ULMS in subjects wearing SH materials.
- Atypical ULMS extending beyond the ‘wiper area’ was mostly associated with typical ULMS in the ‘wiper region’ and the typical staining pattern was often associated with a comb shaped appearance or thick horizontal band.¹
- At most of the visits, each subject showed febrated extensions from the superior margin of the subtarsal fold onto the upper tarsal plate, when the lid was everted.
- The extent of these feathery extensions varied between subjects, with a mean (\pm SD) length of $2 \text{ mm} \pm 0.80$.
- In addition, the angle made by these extensions with Marx’s line on the upper lid margin varied between subjects, ranging from approximately 90 degrees to being much more acute.

CONCLUSIONS

- The staining patterns shown on the subjects’ upper lid margins and tarsal plates suggest that ULMS may include more complex variants.
- The putative tissue damage revealed through the staining, points to a mechanism not simply restricted to the upper lid margin.
- Whether this is because of direct mechanical effect of the lid-lens interactions or more complex tissue-lens interactions remains to be investigated.

REFERENCES

- 1) Bramwell E. The Upward Movement of the Eyes. Brain 1928;5, (1-17).
- 2) J Varikooty *et al.* Clinical Manifestations of Upper Lid Staining in Adapted Silicone Hydrogel Lens Wearers. Optom Vis Sci 2006;83: E –abstract 065256

ACKNOWLEDGEMENTS

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