

# The Impact of Orthokeratology Lenses on Meibomian Gland Atrophy

Dave Kading, OD, FAAO and Sarah Henderson, OD

Specialty Dry Eye and Contact Lens Research Center, Seattle, WA

## Introduction

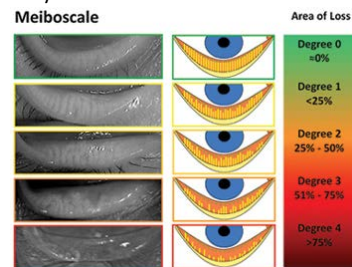
As orthokeratology (OK) becomes more popular among eye care practitioners, it's important to assess the impact these lenses may have on the ocular surface long-term. Having a better understanding of any effects could lead to better managing these patients, especially if they are symptomatic prior to beginning orthokeratology.

This study sought to determine if there is a relationship between meibomian gland atrophy in orthokeratology contact lens wear as compared to non-contact lens wearers.



## Methods & Materials

Meibography scans were taken on the TearScience LipiView imaging device of **18** subjects and a total of **36** eyes wearing orthokeratology lenses. The mean age is 11.17 years old, ranging from 7.4 to 15.9 years. Mean wear time of orthokeratology lenses OU at the time of the scan was 1.44 years. Meibomian gland atrophy was graded using the Heiko Pult Meiboscale from 0-4 (0: no gland loss, 1: 0-25% gland loss, 2:26-50% gland loss, 3:51-75% gland loss, 4:>75% gland loss). These subjects were compared to a control group with 36 eyes in 18 subjects. Average age of these subjects was 10.93 years old, ranging from 6.81-14.25 years. Meibography was also collected on these individuals, and graded using the same score. Only one practitioner graded meibography for consistency.



Heiko Pult Meiboscale

## Results

The average meibomian gland atrophy in orthokeratology wearers was 1.43 compared to average meibomian gland atrophy in non-contact lens wearers being 1.26.

*There was an 11.8% increase in meibomian gland atrophy in OK lens wearers as compared to non-OK wearers.*



## Discussion

Current research suggests that orthokeratology lenses may lead to an increased meibomian gland atrophy. Kyung-Sun et al. suggests that although there are potential changes to the tear film quality and meibomian glands, there were not significant changes from OK lenses and it is still a safe modality. Our study further suggests this.

While the research is inconsistent, Contact Lens Spectrum found in 2016 that myopia control prescribing among primary eye care physicians has increased from 24% to 37% in reader respondents over the course of 1 year. This indicates that since more practitioners are treating myopia progression, **it is highly important to monitor the potential impact to the ocular surface, specifically to screen for the increased risk of dry eye secondary to meibomian gland changes.**

One limitation of this study is that outside confounding variables were not controlled for. While the data from this study may suggest that orthokeratology lenses influence meibomian gland structure, further research should be conducted to assess a more direct correlation between orthokeratology contact lens wear and meibomian gland atrophy.

## Conclusion

Meibomian gland atrophy was greater in orthokeratology wearers than non-contact lens wearers in this study. While this may not show a direct causation relationship, more research is necessary to improve our understanding of meibomian gland atrophy is affected by orthokeratology lenses.

## References

1. Reiko, A et al. Contact Lens Wear Is Associated with Decrease of Meibomian Glands
2. Jafri, B et. Al. Asymmetric Keratoconus Attributed to Eye Rubbing.

## Acknowledgements

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## Contact Information

For more information, please contact Dr. Sarah Henderson at [drhenderson@specialtyeye.com](mailto:drhenderson@specialtyeye.com).

