

# Efficacy of Self-Administration of a Personal Mechanical Eyelid Device for the Treatment of Dry Eye Disease, Blepharitis and Meibomian Gland Disease

pdf (<https://jdryeyedisease.com/index.php/JDED/article/view/25/15>)

**Published:** Jan 21, 2020

**DOI:** <https://doi.org/10.22374/jded.v3i1.25> (<https://doi.org/10.22374/jded.v3i1.25>)

**Keywords:**

Meibomian gland disease, Dry eye disease, Blepharitis, NuLids™, mechanical eyelid device

**David Schanzlin, MD**

Gordon-Schanzlin New Vision Institute, San Diego, CA

**John Olkowski MD**

EyeSight Hawaii Vision Institute, Honolulu, HI

**John Coble, OD**

Eyecare of Greenville, Greenville, TX

**Wendy Gross, OD**

Gordon-Schanzlin New Vision Institute, San Diego, CA

**Michael Dash, OD**

# Abstract

## Purpose

A prospective study to evaluate the safety and efficacy of a novel mechanical eyelid device (NuLids™ by NuSight Medical, LLC, Rancho Santa Fe, CA) used at home for the treatment of dry eye disease (DED), blepharitis (anterior and posterior) and meibomian gland disease (MGD).

## Methods

Seventy-four (74) eyes of thirty-seven (37) patients were self-treated with the NuLids™ device at home. Inclusion criteria included blepharitis, MGD and/or DED. After an initial training session, each eyelid was treated for 15 seconds (total of 1 minute per treatment session per day). The following tests were collected before the first treatment and after the final treatment: OSDI survey, BCVA, Tear Osmolarity Test (Tear Lab), Tear Break Up Time (TBUT), Meibomian Gland Score (MGS), Meibomian Glands Yielding Liquid Secretions (MGYLS), Sicca Ocular Staining Score. Satisfaction with treatment survey was taken after treatment.

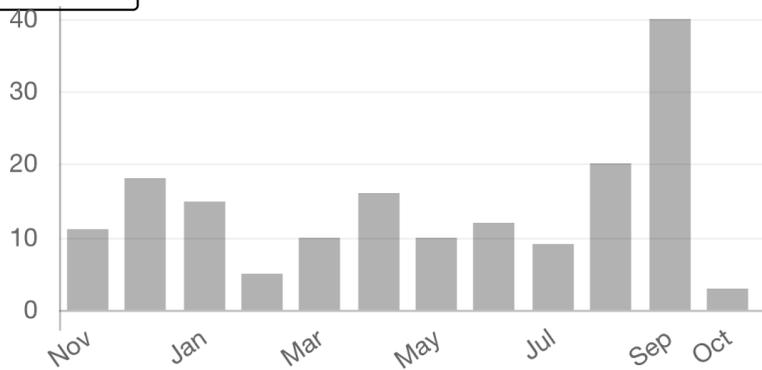
## Results

All measured parameters had a statistically significant improvement. Symptoms improved based on an average decrease in OSDI score from  $54.2 \pm 19.5$  (mean  $\pm$  SD) to  $26.7 \pm 18.4$  ( $P < 0.001$ ). Tear osmolarity improved from  $315 \pm 15.7$  to  $306 \pm 13.9$  ( $P = 0.002$ ). TBUT was noted to improve from pre-treatment of  $4.8 \pm 1.7$  seconds to post-treatment of  $7.9 \pm 4.1$  seconds ( $P < 0.001$ ). MGS improved from  $8.9 \pm 5.1$  to  $7.0 \pm 5.9$  ( $P = 0.01$ ). MGYLS improved from  $8.7 \pm 6.2$  to  $15.8 \pm 6.9$  ( $P = 0.002$ ). Sicca Ocular Staining Score improved from  $2.7 \pm 2.1$  to  $1.4 \pm 1.5$  ( $P = 0.002$ ). There were no adverse events. No corneal or conjunctival trauma. No patients dropped out of the trial due to discomfort. 91% of participants agreed or strongly agreed that the device was easy and convenient to use. Of those previously using manual lid scrubs, 82% felt the NuLids device was easier and more comfortable to use. 89% described little or no discomfort. 95% were satisfied or very satisfied with the overall treatment.

## Conclusions

A mechanical device was safely used by patients at home for 1 minute daily for 30 days to treat DED, blepharitis, and MGD. There was a statistically significant improvement in signs and symptoms of DED as shown by improved OSDI, tear osmolarity, TBUT, MGS, MGYLS, and Ocular Staining Score. High patient satisfaction along with the low risk of adverse events supports the use of this device as a valid tool to treat DED, blepharitis, and MGD.

### Downloads



### Issue

Vol. 3 No. 1 (2020): JDEOSD (<https://jdryeyedisease.com/index.php/JDED/issue/view/6>)

### Section

Articles

Copyright of articles published in all DPG titles is retained by the author(s). The author(s) grants DPG the rights to publish the article and identify itself as the original publisher. The author grants DPG exclusive commercial rights to the article. The author grants any party the rights to use the article freely for non-commercial purposes provided that the original work is properly cited.

### Author Biography

**John Olkowski MD, EyeSight Hawaii Vision Institute, Honolulu, HI**

#### **Education**

- Georgetown University, Washington, DC - BS. -1977-1981
- Georgetown University School of Medicine - MD. – 1981-1985
- Providence Hospital, Washington, DC, *Internship in Medicine* – 1985-1986
- George Washington University, Washington, DC, *Residency in Ophthalmology* – 1986-1989

- Tufts-New England Medical Center, Boston, MA, *Cornea Fellowship* – 1989-1990

### **Board Certified in Ophthalmology** - 1990

#### Professional Experience

- Kaiser Permanente - Hawaii, Dept. of Ophthalmology, *Cornea Specialist*, 1990-1998
- Medical Director / Chief Surgeon, EyeSight Hawaii Vision Institute, 1999 – present
- Medical Director, Eye Surgery Center of Hawaii, 2010 - present
- Founder, EyeSight Hawaii - Maui, 2016 - present
- Founder / Board, NuSight Medical, 2015 - present

### **Professional Appointments**

- Assistant Clinical Professor, University of Hawaii's John A. Burns School of Medicine, 1992 - present
- Associate Director, Hawaii Lions Eye Bank, 1993 - present

## References

Farand KF, Friman M, Stillman I, Schaumberg DA. Prevalence of Diagnosed Dry Eye Disease in the United States Among Adults Aged 18 Years and Older. *Am J Ophthalmol*, 2017 Oct;182:90–98.

Lemp MA, et al. Distribution of aqueous deficient and evaporative dry eye in a clinic-based patient cohort: a retrospective study. *Cornea* 2012; 31:472–478.

The International Workshop on Meibomian gland Dysfunction. *Invest Ophth Vis Sci*. 2011; 52:1917–2085

Bron A, Benjamin L, Snibson GAJ. Meibomian gland disease. Classification and grading of lid changes. *Eye* 5:395 (1991)

Geerling G, Tauber J, Baudouin C, et al. The international workshop on meibomian gland dysfunction: report of the subcommittee on management and treatment of meibomian gland dysfunction. *Invest Ophthalmol Vis Sci* 2011; 52: 2050–2064

Nelson JD, Shimazaki J, Benitez-del-Castillo JM, et al. The international workshop on meibomian gland dysfunction: report of the definition and classification subcommittee. *Invest Ophthalmol Vis Sci* 2011; 52: 1930–1937.

Gupta PK, Stevens M, Kashyap N, Priestley Cornea April 2018;37(4)426–30.

Wolff E. The muco-cutaneous junction of the lid margin and the distribution of the tear fluid. Trans Ophthalmol Soc U K 1946; 66:291–308.

Bron AJ, Tiffany JM, Gouveia SM, et al. Functional aspects of the tear film lipid layer. Exp Eye Res 2004; 78:367–70.

The definition and classification of dry eye disease: Report of the definition and classification subcommittee

of the international dry eye WorkShop 2007 Ocul Surf 2007;5(2):75–92.

Tsubota K, Yamada M. Tear evaporation from the ocular surface. Invest Ophthalmol Vis Sci 1992;33:2942–50.

Blackie CA, Korb DR. The diurnal secretory characteristics of individual meibomian glands. Cornea

;29(1):34–8.

Foulks G, Bron AJ Meibomian gland dysfunction: A clinical scheme for description, diagnosis, classification, and grading. Ocul Surf 2003 Jul;1(3):107–26.

Lindsley K, Matsumura S, Hatef E, Akpek EK. Interventions for chronic blepharitis (Review). Cochrane Database Syst Rev 2012;16:5.

Sullivan BD, Crews LA, Messmer EM, et al. Correlations between commonly used objective signs and symptoms for the diagnosis of dry eye disease: Clinical implications. Acta Ophthalmol doi: 10. 16. 289.

Pult H, Riede-Pult BH, Nichols JJ. Relation between upper and lower lids' meibomian gland morphology, tear film, and dry eye. Optom Vis Sci 2012;89(3): E310–5.

## Information

---

For Readers (<https://jdryeyedisease.com/index.php/JDED/information/readers>)

---

For Authors (<https://jdryeyedisease.com/index.php/JDED/information/authors>)

---

For Librarians (<https://jdryeyedisease.com/index.php/JDED/information/librarians>)

---

## THE JOURNAL OF DRY EYE AND OCULAR SURFACE DISEASE

The Journal of Dry Eye and Ocular Surface Disease (JDEOSD) publishes research and scholarly contributions that inform the development, implementation, and evaluation of practice, research, education and leadership in dry eye disease research. JDEOSD provides a platform for researchers, academics and practitioners to share knowledge in the form of high-quality research papers, review papers and case studies.

### Important Links

About the Journal (<http://jdryeyedisease.com/index.php/JDED/about>)

Editorial Team (<http://jdryeyedisease.com/index.php/JDED/about/editorialTeam>)

Submissions (<http://jdryeyedisease.com/index.php/JDED/about/submissions>)

Contact (<http://jdryeyedisease.com/index.php/JDED/about/contact>)

### Contact

**Email:** [jbirkby@thedougmargin.com](mailto:jbirkby@thedougmargin.com)

**Phone:** +1 289-238-7917 (tel:+1 289-238-7917)

**Website:** [jdryeyedisease.com](http://jdryeyedisease.com)

**Address:** 115 King Street West, Suite 220, Dundas, ON L9H 1V1

Platform &  
workflow by  
OJS / PKP

(<https://jdryeyedisease.com/index.php/JDED/about/aboutThisPublishingSystem>)