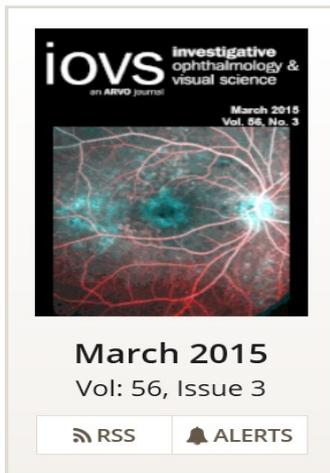


Prospective Trial of Intense Pulsed Light for the Treatment of Meibomian Gland Dysfunction



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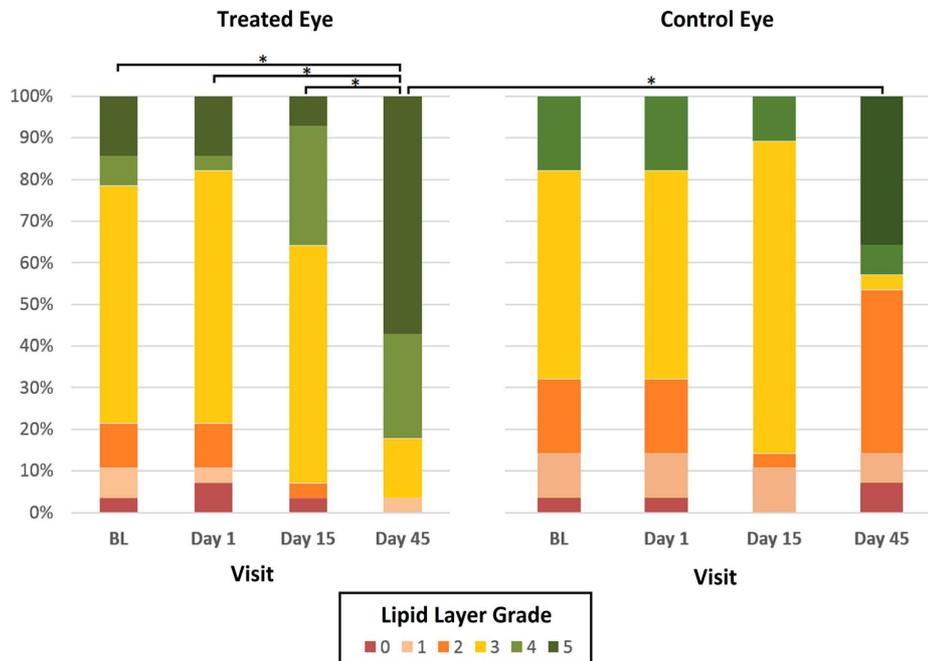
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PURPOSE. To evaluate the effect of intense pulsed light (IPL) applied to the periocular area for meibomian gland dysfunction (MGD) in a prospective, double-masked, placebo-controlled, paired-eye study.

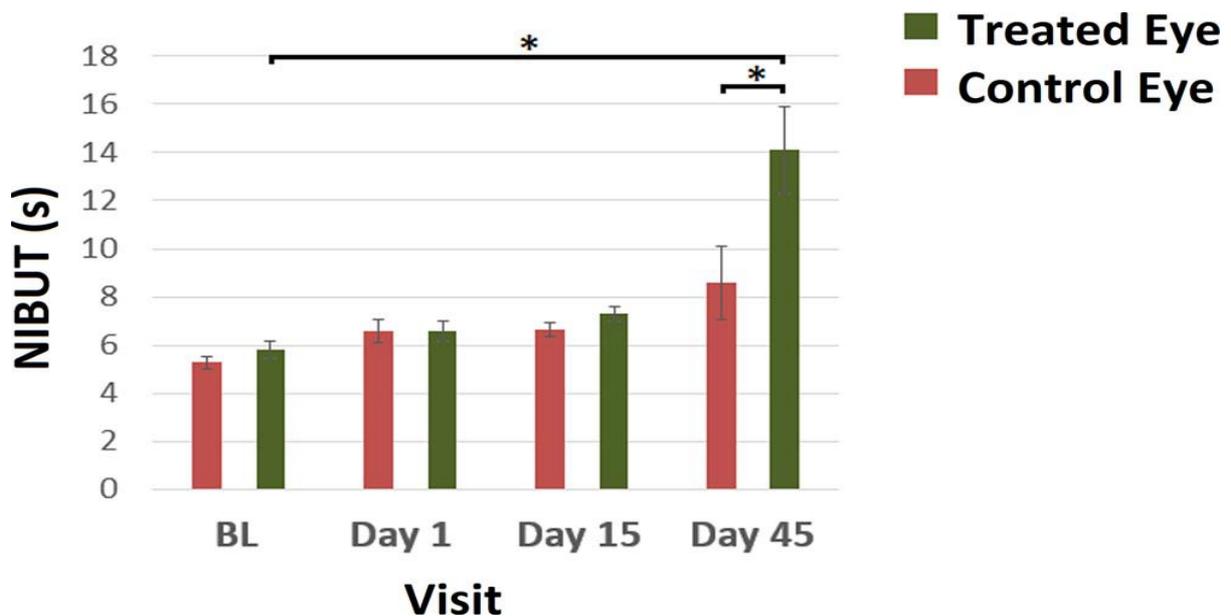
METHODS. Twenty-eight participants underwent IPL treatment (E-Eye, E-Swin, France), with homogeneously sequenced light pulses delivered to one eye and placebo treatment to the partner control eye at 1, 15, and 45 days following baseline (BL) evaluation. Lipid layer grade (LLG), noninvasive tear break-up time (NIBUT), tear evaporation rate (TER), tear meniscus height (TMH), and subjective symptom score using visual analogue scales (VAS) were compared with BL and control values at each visit.

RESULTS. Lipid layer grade improved significantly from BL to Day (D) 45 in the treated eye ($P < 0.001$), but not the control eye ($P = 0.714$), with 82% of treated eyes improving by at least one LLG. Noninvasive tear break-up time also improved significantly from BL to D45 in the treated ($P < 0.001$) but not in the control eye ($P = 0.056$) and was significantly longer than in the control eye at D45 (14.1 \pm 9.8 seconds versus 8.6 \pm 8.2 seconds, $P < 0.001$). The tear evaporation rate was not different in the treated eye compared with the control eye at any visit. Tear meniscus height did not change from BL in either eye ($P > 0.05$). Visual analog scale symptom scores improved from BL in the treated ($P = 0.015$), but not the control eye ($P = 0.245$), with 86% of participants noting reduced symptoms in the treated eye by D45.

CONCLUSIONS. Intense pulsed light with multiple sculpted pulses shows therapeutic potential for MGD, improving tear film quality and reducing symptoms of dry eye. (<https://www.anzctr.org.au> number, ACTRN12614000162617.)



Lipid layer grade (0= worst) frequencies in the treated (left) and control eye (right) at BL, D1, D15, and D45. At D45, LLG in the treated eye was higher than at BL ($P < 0.001$), D1 ($P < 0.001$), and D15 ($P = 0.002$). Day 45 LLG was better in the treated eye compared with the control eye ($P = 0.002$). The control eye was not different from BL at any visit ($P = 0.802$). *Significant difference in distribution of LLG at $P < 0.005$.



Noninvasive tear break-up time of the treated and control improved from BL, with only one eye treated, bodes well for eye at each of the four visits. Noninvasive tear break-up time was higher at D45 relative to BL in the treated eye ($P < 0.001$), but not in the control eye ($P = 0.56$). Additionally, NIBUT was significantly higher in the treated eye compared with the control eye at D45 ($P < 0.001$). *Significant difference between groups at $P < 0.005$. Error bars denote SEM.