Pre-Treatment Tear Film and Meibomian Gland Parameters as Predictors of Response to Intense Pulsed Light Therapy in MGD Patients

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Purpose: Intense Pulsed Light (IPL) is effective for meibomian gland dysfunction (MGD). This study retrospectively analyzed pre-treatment differences in tear film and meibomian gland parameters between IPL responders and non-responders.

Methods: Patients who received ≥3 IPL treatments for MGD at Itoh Clinic (2022–2023), had complete data, and were followed for over three months were included (N=872). Parameters analyzed included SPEED score, plugging, lid margin vascularity, meibum grade, fluorescein tear break-up time (FBUT), corneal/conjunctival staining (CFS), non-contact meibography findings, and Schirmer values. IPL was considered effective if SPEED improved by ≥4 and meibum grade by ≥1.

Results: Seventy-three patients (mean age: 52.5 years, 26 males, 47 females) were included. The effective group (n=116) had lower plugging and vascularity grades but higher upper eyelid meibum grades and meiboscores than the ineffective group (n=30) (P=0.008, <0.001, 0.001, 0.011). Dropout and extreme thinning on non-contact meibography were significantly more frequent in the upper than lower eyelid in the effective group (P<0.05). No significant differences were found in FBUT, CFS, or Schirmer values.

Conclusion: Meibography is essential for predicting IPL treatment prognosis. Severe gland dropout and thinning in the upper eyelids are key predictors of IPL efficacy for MGD.

Title and Abstract

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