

List of IPL studies for DED and MGD

List of authors	Country	N(pts)	IPL Device Used	Design	Short summary	Link
Wu et al., 2020	CH	62	M22 (Lumenis) versus E>Eye (E-Swin)	Prospective; Randomized Controlled	IPL has significant clinical value in treating patients with MGD. OPT treatment (Lumenis) was more effective in improving MG function in lower eyelids and partial tear film signs than IRPL treatment (E-Swin).	https://link.springer.com/article/10.1007/s10792-020-01337-0
Ge et al., 2020	CH	60	M22 (Lumenis)	Prospective; Randomized Controlled	Cataract patients before phacoemulsification were randomly divided to IPL pre-a and post-treatment, or conventional surgery (no IPL). In most outcome measures, patients treated with IPL had better outcomes after 1 and 3 months.	https://bmcophthalmol.biomedcentral.com/track/pdf/10.1186/s12886-020-01357-5
Fishman et al., 2020	US	N/A	M22 (Lumenis)	In Vitro	IPL with parameters as those of Toyos' protocol causes the death of Demodex in vitro	https://partnerzone.lumenis.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=23605&PortalId=0
Gao et al., 2019	CH	82	M22 (Lumenis)	Prospective; Randomized Controlled	IPL improved signs of DED and decreased the level of key inflammatory markers more than treatment with tobramycin/dexamethasone plus warm compresses.	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6848864/
Huang et al., 2019	CH	43	M22 (Lumenis)	Prospective; Randomized Controlled	IPL combined with intra-ductal Meibomian Gland Probing improved signs and symptoms of DED more than IPL alone or MGP alone	https://bmcophthalmol.biomedcentral.com/articles/10.1186/s12886-019-1219-6
Ruan et al., 2019	CH	33	M22 (Lumenis)	Prospective; non-randomized Controlled	IPL combined with Meibomian Gland Expression (MGX) improved signs and symptoms of Blepharitis-Associated Keratoconjunctivitis more than MGX alone	https://www.hindawi.com/journals/joph/2019/3143469/
Toyos et al., 2019	US	19	M22 (Lumenis)	Prospective; Single arm	IPL treatment directly on the upper eyelids improved signs and symptoms of DED.	https://partnerzone.lumenis.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=23603&PortalId=0
Choi et al., 2019	KR	30	M22 (Lumenis)	Prospective; Single arm	IPL treatment improved meibomian gland function, stabilized the tear film, and decreased ocular surface inflammation.	https://www.nature.com/articles/s41598-019-44000-0
Arita et al., 2019	JP	45	M22 (Lumenis)	Prospective; Randomized Controlled	both IPL+MGX and MGX improved symptoms and signs of DED, but the improvement was more pronounced in the IPL+MGX arm.	https://www.sciencedirect.com/science/article/pii/S1542012418302222?via%3Dihub

Arita et al., 2019	JP	31	M22 (Lumenis)	Prospective; Single arm	Symptoms and quality of tear film improved after IPL + MGX	https://journals.lww.com/corneajrnl/Fulltext/2018/12000/Multicenter_Study_of_Intense_Pulsed_Light_Therapy.15.aspx
Zhang et al., 2019	CH	40	M22 (Lumenis)	Prospective; Randomized Controlled	Both IPL and topical tea tree oil (TTO) decreased the Demodex count. Rate of total eradication was higher with IPL, compared to TTO	https://www.tandfonline.com/doi/abs/10.1080/02713683.2018.1536217
Rong et al., 2018	CH	28	M22 (Lumenis)	Prospective; Paired-eye	Meibomian gland yielding secretion score and tear break-up time improved both in the treated side and the untreated side. Up to 6 months, improvements were larger in the treated side. At 9 months, there was no difference between the two sides.	https://partnerzone.lumenis.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=22790&PortalId=0
Seo et al., 2018	KR	17	M22 (Lumenis)	Prospective; Single arm	Symptoms and signs of DED improved after IPL +MGX. Some signs maintained improvement after 12 months. Other signs returned to baseline after 6 months.	https://partnerzone.lumenis.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=22792&PortalId=0
Yin et al., 2018	CH	35	M22 (Lumenis)	Prospective; Randomized Controlled	Gland morphology improved in pts treated with IPL, but not in pts treated daily with lid hygiene	https://www.tandfonline.com/doi/full/10.1080/02713683.2017.1406525
Rong et al., 2018	CH	44	M22 (Lumenis)	Prospective; Paired-eye	Improvements in Meibomian gland yielding secretion score and Tear breakup Time were higher in the treated (IPL) side than in the untreated (sham) side. Changes in symptoms (SPEED) and Corneal Fluorescein Score scores were similar in the two sides.	https://partnerzone.lumenis.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=22791&PortalId=0
Liu et al., 2017					The levels of key tear inflammatory markers were reduced in both sides, but the reduction was more pronounced in the treated (IPL) side, compared to the untreated (sham) side.	https://www.ajo.com/article/S0002-9394(17)30375-6/fulltext
Dell et al., 2017	US	44	M22 (Lumenis)	Prospective; Single arm	Symptoms and signs of DED improved after IPL + MGX. The change in tear breakup time was larger in eyes with low baseline values.	https://www.dovepress.com/prospective-evaluation-of-intense-pulsed-light-and-meibomian-gland-exp-peer-reviewed-fulltext-article-OPHT
Dell et al., 2017	US				Intense Pulse Light (IPL) is widely accepted as a treatment for skin rosacea. A number of recent studies demonstrated that, in patients suffering	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5488788/

					from Meibomian gland dysfunction (MGD), IPL therapy also reduces signs and symptoms of DED.	
Wang et al., 2018	CH				Intense pulsed light (IPL) is a good option for erythema and telangiectasia of rosacea. Demodex, which is light and heat sensitive, is an important risk of Rosacea. Sometimes, IPL can induce rosacea aggravation	https://partnerzone.lumenis.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=22794&PortalId=0