

A safe and effective non-ablative treatment with multiple applications for the ocular surface

Plasma emission for blepharitis, dry eye and other ocular disease

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**Reviewed by Magda
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Dry eye disease (DED) is a ubiquitous disorder in patients who are candidates for corneal refractive surgery and implantation of premium intraocular lenses to treat presbyopia and cataracts, according to investigators Magda Rau, MD, from Augenklinik Cham and Refractive Privatklinik in Cham, Germany, and Vicente Rodriguez, MD, an ophthalmologist in Las Palmas, Gran Canaria, Spain.

Epidemiologic evidence has suggested that DED is primarily evaporative in nature¹ and often associated with meibomian gland dysfunction (MGD). A 70.2% prevalence rate of MGD was reported in a Caucasian population,² data underscoring the importance of establishing effective treatments for DED.

A new treatment modality for DED applies technology originally used in dermatologic and aesthetic procedures and

its use has been extended to ophthalmology. Jett Plasma Lift Medical (Jett Medical Devices) is a non-ablative treatment that uses plasma emission to “alleviate the condition or completely cure blepharitis, MGD and associated DED,” according to the investigators.

The Jett Plasma Lift Medical technology, Dr Rau and Dr Rodriguez explained, is based on the principle that direct current can depolarise membranes and cause reversible electroporation, during the latter of which the barrier of the cell membrane is overridden. This process can change the polarity of the cell membrane, which results in permeability of nutrients and an associated anti-inflammatory effect, and improve the liquefaction of the volume of the meibomian gland, dissolve the plug on the gland opening and balance the tear film.

Plasma treatment procedure for MGD

The short treatment is performed using a handheld silver applicator to address the bulbar conjunctiva of the four eyelids (2 minutes), the periocular/palpebral skin

IN SHORT

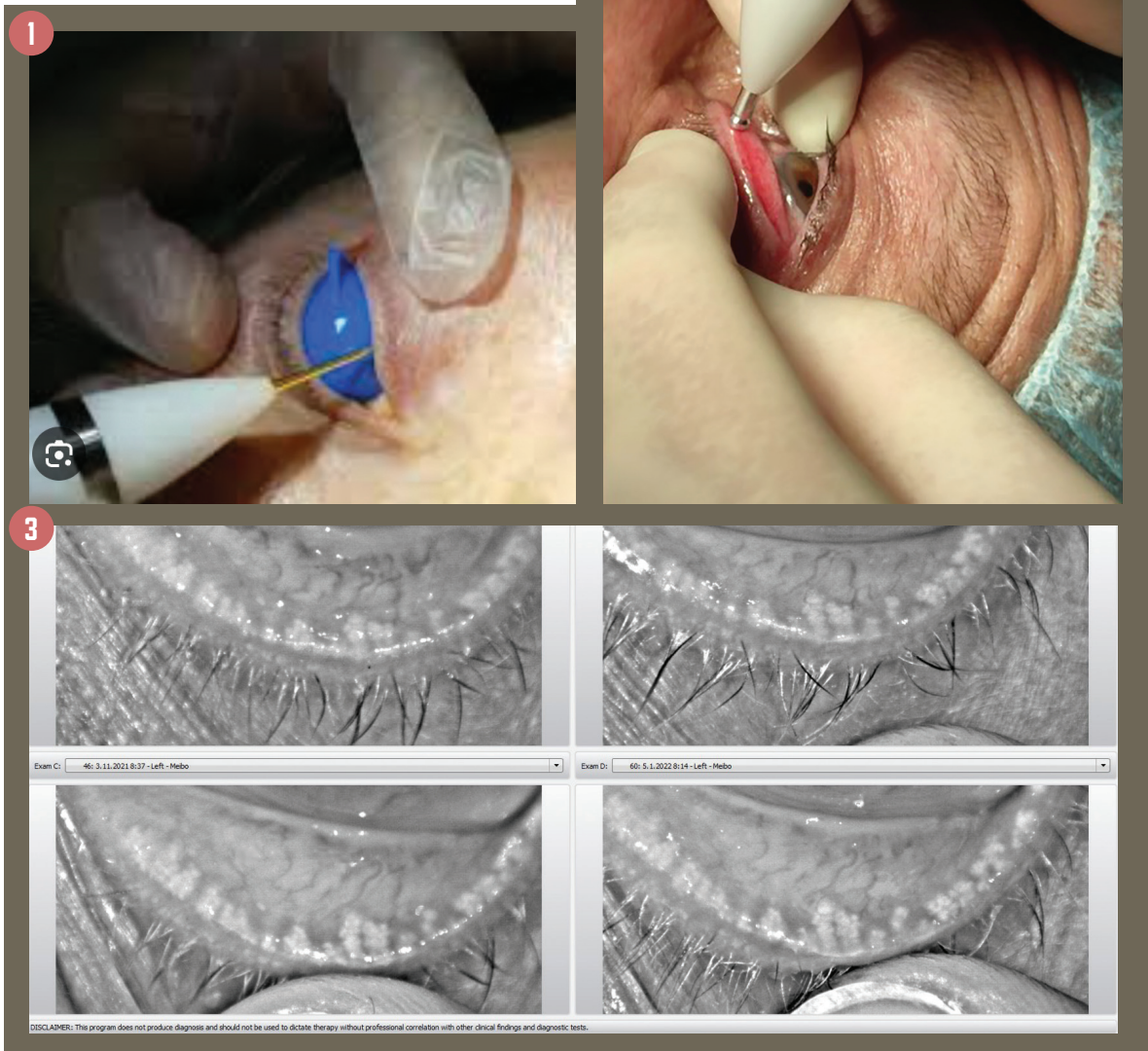
Plasma emission technology can change the polarity of the cell membrane, which results in permeability of nutrients and an associated anti-inflammatory effect.

FIGURE 1. The plasma emission device has multiple ocular applications.

FIGURE 2. The tool can be used to address the bulbar conjunctiva of the four eyelids, the periocular/palpebral skin and the eyelid margins.

FIGURE 3. Evaluation with the Jennis-Meibo scale shows improvement in the actively treated group.

(Images courtesy of Magda Rau, MD)



(1 minute), and the eyelid margins (30 seconds). (Figures 1, 2)

They explained that because the conjunctival treatment must be painless, the energy level at the outset is set to two; if the patient is comfortable, it can be increased to level three or a maximal level of four. For treatment on the skin, an energy level of up to seven is possible.

Prospective, randomised clinical trial

Dr Rau and colleagues from the Czech Republic conducted a study, the results of which were reported at the 2022 European Society of Cataract and Refractive Surgeons annual meeting in Milan.

The study goal was to evaluate the efficacy and safety of treatment of blepharitis and MGD using the Jett Plasma Lift Medical technology. The primary goal was to determine the changes in the Ocular Surface Disease Index (OSDI), which uses a scale of 0 to 100, with higher scores indicating greater disability.

The investigators also evaluated the tear film break-up time (TBUT), tear meniscus values and meibomography results.

The study included 77 patients (age range 34-88 years) who underwent plasma emission applied using the silver applicator. The patients underwent four treatments over 4 weeks, spaced 1 week apart. The patients were evaluated at follow-up visits at 1 week and 1 and 3 months. A control group was composed of 22 patients, who were treated with an energy level of zero.

Treatment effects

Dr Rau reported a 97.4% improvement

in the OSDI at a final check-up. The average pretreatment score in the actively treated patients was 38.92, which decreased to 24.44 (an improvement of 37%) after three treatments. During check-ups, scores decreased further to about 19. The controlled group improved from an average of 28.9 to 23.53, a 19% improvement. (Figure 3)

The TBUT improved from an average value of 7.5 seconds (range, 3.5-14 seconds) at baseline in the actively treated patients; with subsequent treatments the average times to break-up increased to 8.7, 9.3, and 10.3 seconds, for an average improvement of 21%.

During subsequent check-ups, the TBUT improved up to 10.4 seconds, for an improvement of 40%.

No significant changes in the tear meniscus values were seen.

Meibomography showed a 51.35% improvement in the actively treated group at the first check-up.

The authors concluded, "This study confirmed the efficacy and safety of treatment with the Jett Plasma Lift medical device used to alleviate or completely cure blepharitis, MGD, and associated DED." ■



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2. Murakami DK, Blackie CA, Korb DR. The prevalence of meibomian gland dysfunction in a Caucasian clinical population. *Invest Ophthalmol Vis Sci.* 2015;56:2508.

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Dr Rau and colleagues reported a 97.4% improvement in the OSDI at a final examination among patients who received four treatments over 4 weeks.