

Norlase<sup>®</sup> µSec Technology: An Effective Treatment for Central Serous Chorioretinopathy - A Practitioner's Perspective



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As a team of retina specialists operating in Lima, Peru, we regularly encounter a wide range of retinal conditions, including Central Serous Chorioretinopathy (CSR). CSR is a challenging retinal condition characterized by fluid accumulation beneath the retina, leading to potentially severe visual disturbances that can significantly impact a patient's quality of life.<sup>1</sup> We frequently take on challenging referral cases from the general ophthalmic practices surrounding our location, making CSR a relatively common presentation.

Over the years, we've used a diverse range of treatment modalities to manage CSR, such as eye injections, oral medications and laser treatments. With the introduction of the Norlase LEAF<sup>®</sup> laser, a slit-lamp mounted, singlespot laser with  $\mu$ Sec tissue-sparing technology, we've been able to improve the way we treat and manage CSR. After we tried  $\mu$ Sec, we quickly saw the advantages of this technology and implemented it into our treatment algorithm, employing it as our first-line treatment modality.  $\mu$ Sec technology is an ideal-and our preferred solution-for treating CSR due to its numerous practice and patient benefits.

## $\mu \text{SEC}$ IMPROVES EFFICACY AND EMPOWERS VERSATILITY IN PRACTICE

When we first integrated the Norlase LEAF into our practice, we noted several advantageous features, including improved efficacy, consistent power delivery, and a high degree of both portability and versatility. In addition to practical benefits, patient treatment is faster and more effective.

**1. Improved Efficacy:** The µSec technology resolves leakage of retinal fluid more quickly than previous

micropulse-style lasers we've used. As a result, we now schedule follow-up appointments at 4 weeks post-treatment, whereas previously, we adhered to a standard 6-week follow-up protocol. Faster resolution and follow-up not only improves the patient experience, but practice efficiency, as well. We are now able to take on more cases and expand access to sight-saving care.

- 2. Consistent Power Delivery: Another significant advantage of the LEAF laser is its consistent power delivery. Unlike fiber-optic-based systems, where the power set on the device might not accurately reflect the power delivered to the retina, LEAF delivers the desired amount of energy during treatment with remarkable accuracy and consistency. Precise, consistent energy delivery is crucial for developing a reliable treatment protocol based on empirical results.
- **3. Portability:** The compact nature of the LEAF laser makes it very portable, allowing us to treat more patients using a modern, state-of-the-art laser. We work across three practice locations and prior to implementing LEAF, some of these locations lacked access to advanced laser treatments. Because the LEAF is lightweight and slit-lamp attachable, it is extremely easy to move from clinic to clinic as needed.
- 4. Versatility: The Norlase LEAF is incredibly versatile. We use it for various macular conditions beyond CSR, making it an invaluable practice solution. This versatility has allowed us to expand treatment offerings and effectively manage a broader range of conditions, including PDR, RD and RT with PRP and focal treatments.

# $\mu \text{SEC}$ ENHANCES TREATMENT ALGORITHM FOR CSR

Through extensive experience and careful observation, we've developed a specific protocol for treating CSR with uSec technology.

- Patient Selection: We treat both acute and chronic CSR cases with µSec. However, outcomes tend to be better in treatment-naive patients. For chronic cases, multiple treatment sessions are often necessary.
- 2. Laser Parameters: I used two different lenses, the Volk TransEquator and Volk H-R Centralis with and 1.44x and 0.93x laser spot magnification respectively. After experimentation, we settled on the following set of parameters, which we have found to be most effective in our patients. In my experience 400mw for the TransEquator lens and 500mW for the H-R Centralis lens deliver consistent results; lower power settings often result in undertreatment
- **3. Treatment Approach:** We always avoid treating the fovea; instead, we treat both the affected areas and adjacent healthy areas of the macula. Before treating the macula, we always test the laser spots outside the arcades. This allows us to confirm the appropriate tissue response without risking damage to critical areas.
- 4. Simplified Protocol: Over time, we've moved away from combination therapies when possible. Our current protocol primarily relies on artificial tears and µSec laser treatment. This simplified approach has proven effective and reduces the treatment burden on patients-and increases efficiency from a practice perspective.

When it comes time to follow up, we evaluate patients at 4 weeks post-treatment and perform retreatment if necessary. Compared to our previous 6-week protocol with other lasers, this shorter follow-up interval facilitates more timely intervention if needed.

#### Volk Transequator Lens Laser Spot Magnification 1.44x (Cases 1 and 2)

Power	400 mW
Duration	200 ms
Spot Size	100 µm
Duty Cycle	5%

#### Volk H-R Centralis Lens Laser Spot Magnification 0.93x (Cases 3-5)

Power	500 mW
Duration	200 ms
Spot Size	200 µm
Duty Cycle	5%

#### Treatment Employed Based on Disease Characterization

Chronic CSR or Recurrent cases	µSec laser; Retreat after the first session at 1-month follow up, if necessary.
CSR with NVM	µSec laser and Anti-VEGF

The LEAF laser's ability to deliver precisely the power we set (no fiber optic losses) is a significant advantage. This consistency allows for more predictable treatments and outcomes.

### $\mu SEC$ IS EFFECTIVE, CONSISTENT, AND IMPROVES PATIENT OUTCOMES

In our experience,  $\mu$ Sec technology provides similar or better results than other tissue-sparing technologies, such as Micropulse lasers. Two main factors stand out. As mentioned earlier, the LEAF laser's ability to deliver precisely the power we set (no fiber optic losses) is a significant advantage. This consistency allows for more predictable treatments and outcomes. Additionally, the ability to use a smaller spot size (144  $\mu$ m) with the TransEquator lens compared to the standard 200  $\mu$ m used in many micropulse protocols concentrates the laser energy more effectively. We believe this contributes to the faster resolution of retinal fluid that we've observed.

#### **CASE EXAMPLES**

**Case 1:** 41-year old female patient with CSR in the right eye, more than 3 months before µSec laser treatment.



Figure 1. Pre-µSec laser: OD detached central neuroepithelium and central macular thickness (CMT) 536um. VA: 0.20 LogMar (20/31).



Figure 2. Post-µSec laser: CMT 238um. VA: 0 LogMar (20/20).

Case 2: 27-year old male patient with chronic CSR in the left eye.



Figure 3. Pre-µSec laser: OS detached central neuroepithelium and central macular thickness (CMT) 322um. VA: 0.20 LogMar (20/30).



Figure 4. Post-µSec laser: CMT 272 um. VA: 0.0 LogMar (20/20).

Case 3: 57-year old male patient with chronic CSR in the right eye, more than 3 months before µSec laser treatment.

**Case 4:** 40-year old male patient with chronic CSR in the right eye, more than 3 months before µSec laser treatment.



Figure 5. Pre-µSec laser: OD detached central neuroepithelium and central macular thickness (CMT) 332um. VA: 0.30 LogMar (20/40).



Figure 6. Post-µSec laser: CMT 212um. VA:0.20 LogMar (20/32).



Figure 7. Pre- $\mu$ Sec laser: OD detached central neuroepithelium with detached RPE and central macular thickness (CMT) 338um. VA: 0.20 LogMar (20/32).



Figure 8. Post-µSec laser: CMT 272um. VA: -0.10 LogMar (20/16).

**Case 5:** 42 -year old female patient with chronic CSR in the left eye, more than 3 months before µSec laser treatment.



Figure 9. Pre- $\mu$ Sec laser: OS detached central neuroepithelium with detached RPE and central macular thickness (CMT) 265um. VA: 0.10 LogMar (20/25)



Figure 10. Post-µSec laser: CMT 240um. VA: -0.10 LogMar (20/16).

## CHALLENGES AND CONSIDERATIONS

While our overall experience with  $\mu$ Sec has been very positive, it's important to note some challenges and considerations.

First, as with any new technology, there is a learning curve that one must overcome to optimize treatment parameters. We have found that in our practice, starting with power settings below 350mW often led to undertreatment, which is why we now consistently use the 400mW-500mW power setting, depending on the lens. Additionally, while µSec is effective for both acute and chronic CSR, it is our experience that chronic cases often require multiple treatments and may have a higher recurrence rate.

Capital expenditures must be considered. LEAF's competitive pricing makes it an attractive and accessible option. The device's high degree of portability and versatility of use have made it a highly cost-effective solution for our multilocation practice.

### CONCLUSION

In our experience, Norlase's µSec technology, as implemented in the LEAF Green Laser System, has proven to be an effective modality for treating CSR. Its consistent power delivery, portability, and ability to rapidly resolve retinal fluid have made it an invaluable asset in our practice.

The simplified treatment protocol we've developed using µSec has allowed us to manage CSR cases more efficiently and effectively. The system's portability has also allowed us to treat patients at multiple locations, expanding access to advanced laser treatments for our patient population.

While additional experience and formal, long-term assessments are warranted, our clinical experience to date suggests that  $\mu$ Sec is a promising technology: one that deserves robust consideration by retina specialists managing CSR and other challenging conditions affecting the retina.

With the introduction of the Norlase LEAF<sup>®</sup> laser with µSec tissue-sparing technology, we've been able to improve the way we treat and manage CSR.

#### REFERENCES

This case study reflects the independent findings of the doctor(s) involved. Norlase devices should only be used in accordance with their user manual including indications for use and intended use.



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<sup>1.</sup> Borrelli E, Ranno S, Sacconi R, et al. Multimodal Imaging of Paracentral Acute Middle Maculopathy and Acute Macular Neuroretinopathy. J Clin Med. 2023;12(1):186. doi:10.3390/jcm12010186