



**Title: The Use of Confocal Microscopy in the Diagnosis of Anterior Segment Disease: A Case Series**

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**Abstract:**

**Purpose**

To explore how confocal microscopy can help in the diagnose of corneal abnormalities and anterior segment diseases. Images will be displayed and explained.

**Methods**

A few words on confocal microscopy (principles, clinical setting).

A series of 3 case reports will then be presented.

**Case 1 - Insipid central diabetes mellitus related to Sjogren syndrome**

In this case, we present the case of a 32-year-old woman. She was referred for dry eyes secondary to central diabetes insipidus and scleral lens fitting. Confocal microscopy was performed and Sjögren's syndrome was suspected. There was no evidence of surface dry eye, but neuropathy with associated pain was present. Internal medicine and rheumatology investigations were performed and seronegative Sjögren's syndrome was confirmed. This was found to be the main cause of the hormonal imbalance and therefore of the central diabetes insipidus. The neuropathy was treated with amniotic membrane and pharmacotherapy. The systemic condition was treated with immunomodulators. After several months of follow-up, the patient's condition improved.

Confocal analysis made it possible to reorient the initial diagnosis and treat the true cause of the condition.



### **Case 2 - Confirmation of small fiber neuropathy**

In this case, a patient was referred for confirmation of a diagnosis of small fiber neuropathy. She presented with chronic physical and ocular pain. Moderate to severe dry eye was also present. Confocal microscopy confirmed the diagnosis. The presence of numerous inflammatory cells indicated the need for treatment with corticosteroids. Scleral lenses can be used once the inflammation has subsided. Confocal microscopy confirmed the diagnosis and also identified chronic inflammation that had no clear clinical manifestation in the cornea and anterior segment. The results of this test helped to ensure appropriate management of the condition.

### **Case 3 - Treating the right eye**

In this case, a patient presents with chronic post-surgical neuropathic pain in the left eye.

His right eye has also undergone refractive surgery but is not symptomatic. The patient reports having tried several strategies including medication, IPL treatment, Lipiflow, and scleral lenses. He still has a painful sensation in his left eye. Amniotic membrane therapy is being considered. However, before proceeding, confocal microscopy is performed. The results indicate left neuropathy but a much more advanced condition in the right eye. In fact, the latter remains asymptomatic because the number of remaining and functional nerves is significantly lower. They are therefore unable to transmit pain signals. Discussion about treatment: should the right eye be restored and made symptomatic, at least in the short term, or should it be left as it is, given that the patient is 28 years old and could suffer more serious consequences in the future?