INTERNATIONAL CONGRESS OF THE

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

EOS 1902

In collaboration with: MEACO MIDDLE EAST AFRICA COUNCIL OF OPHTHALMOLOGY

HOW CAN MEIBOGRAPHY AND OTHER DED DIAGNOSTICS CHANGE OUR CLINICAL DECISIONS ??

BY

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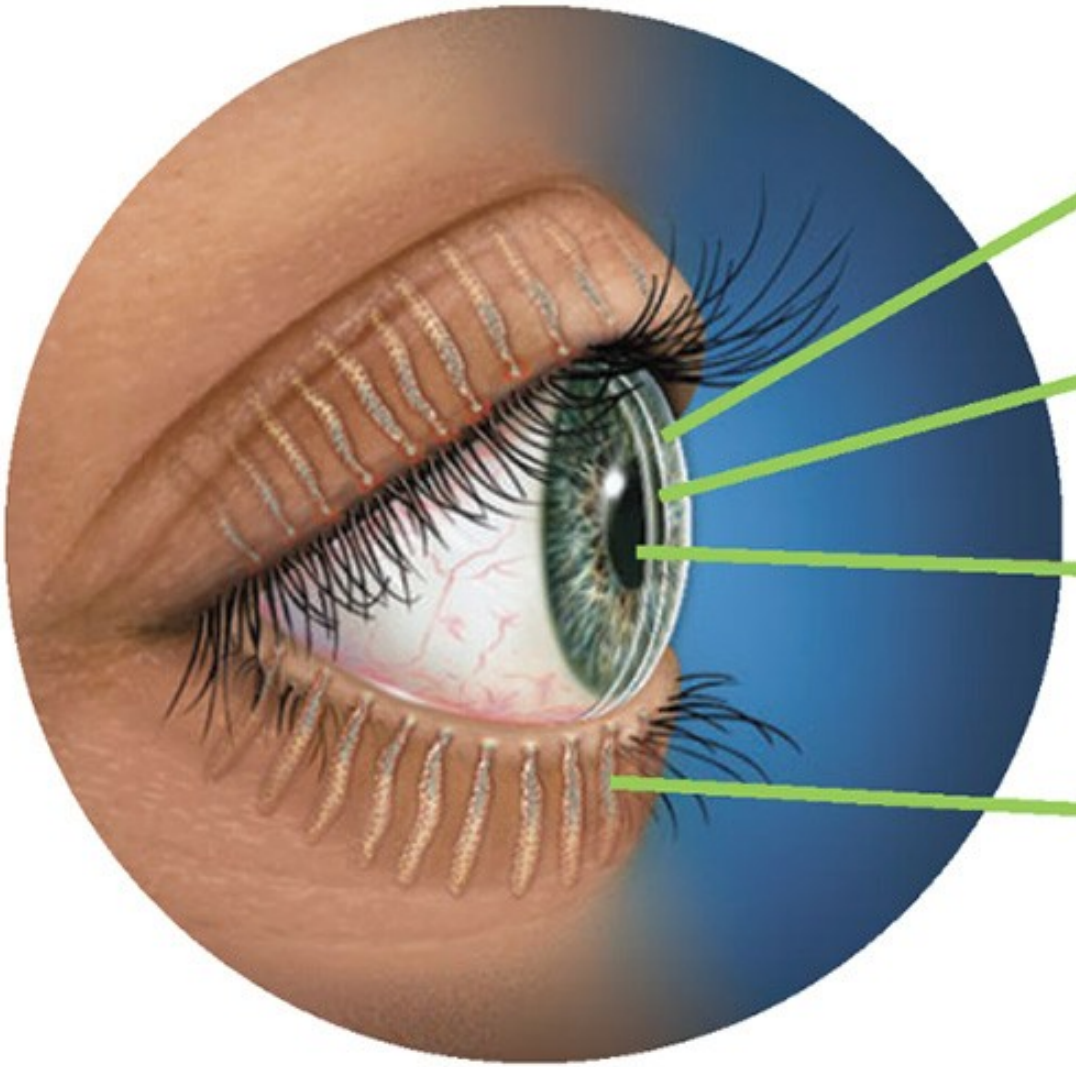
Sohag University

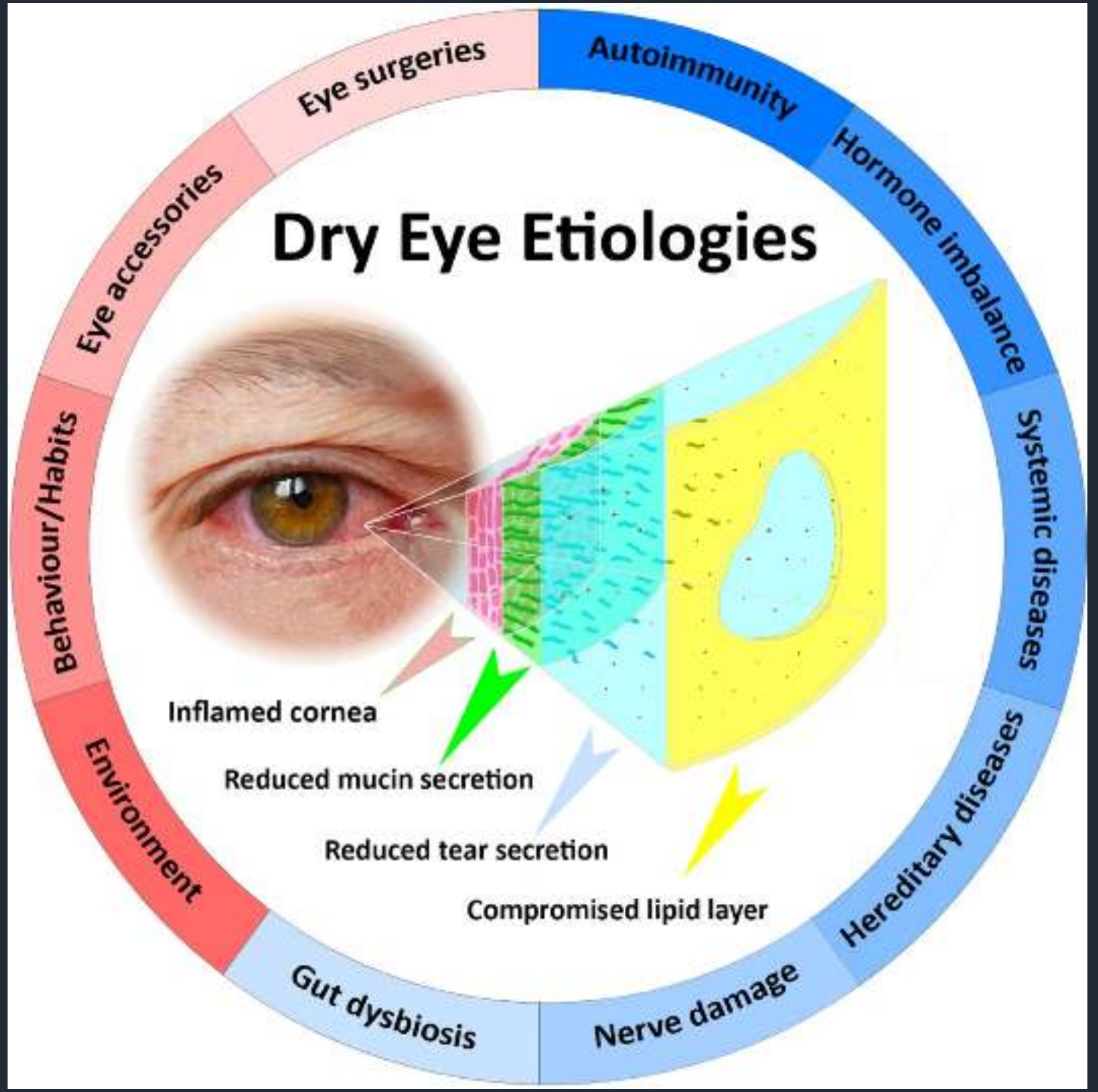


Lipid (Oil) Layer:
Lubricates and prevents evaporation

Aqueous (Water) Layer:
Nourishes and protects the cornea

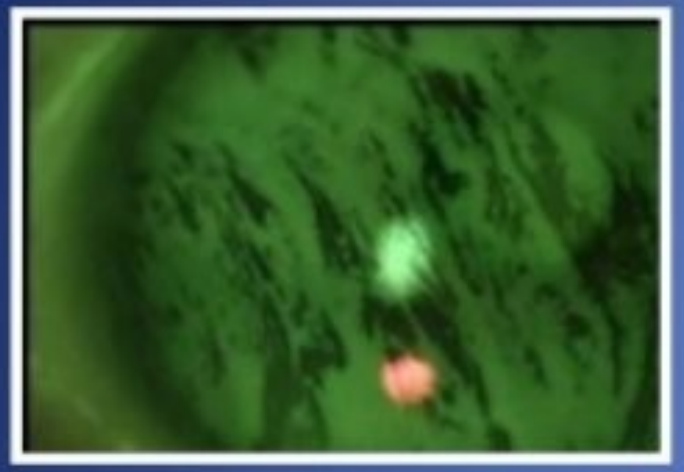
Mucin Layer:
Adheres tears to the eye

Meibomian Glands:
Create the lipid (oil) layer of the tear film, a blockage can leave to evaporative dry eye


Dry Eye Etiologies
Eye surgeries
Autoimmunity
Hormone imbalance
Systemic diseases
Hereditary diseases
Nerve damage
Gut dysbiosis
Environment
Behaviour/Habits
Eye accessories
Inflamed cornea
Reduced mucin secretion
Reduced tear secretion
Compromised lipid layer

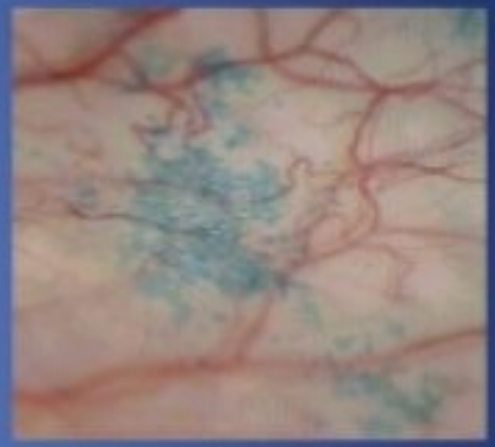
Dilemma of dry eye diagnosis

Conventional Diagnosing Tools

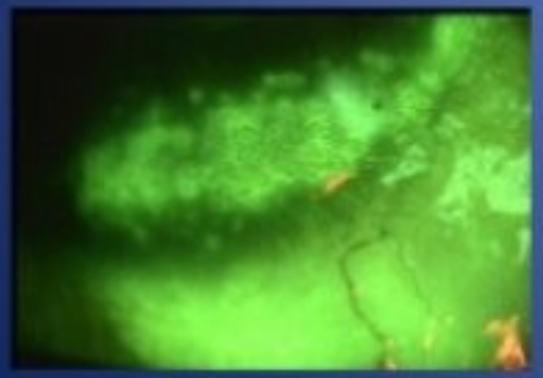


Tear Film Break-Up Time (BUT)

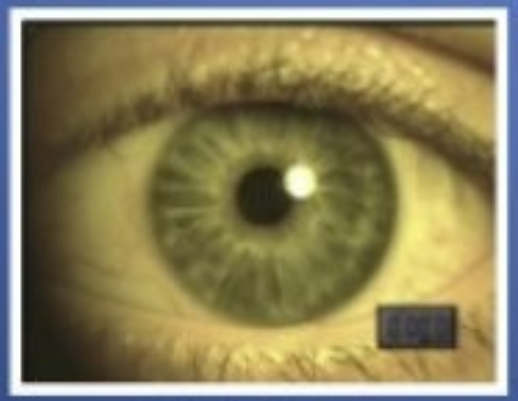
Rose Bengal Staining



Lissamine Green Staining



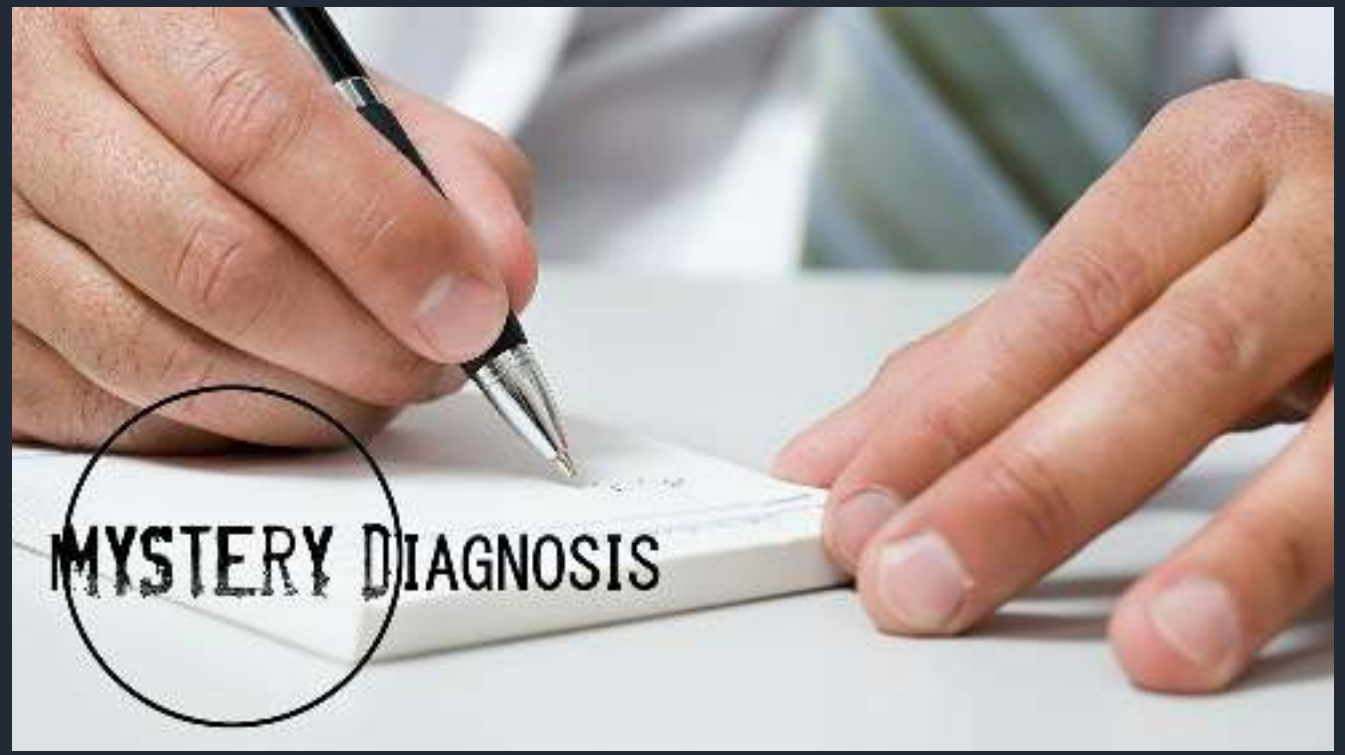
Fluorescein Staining



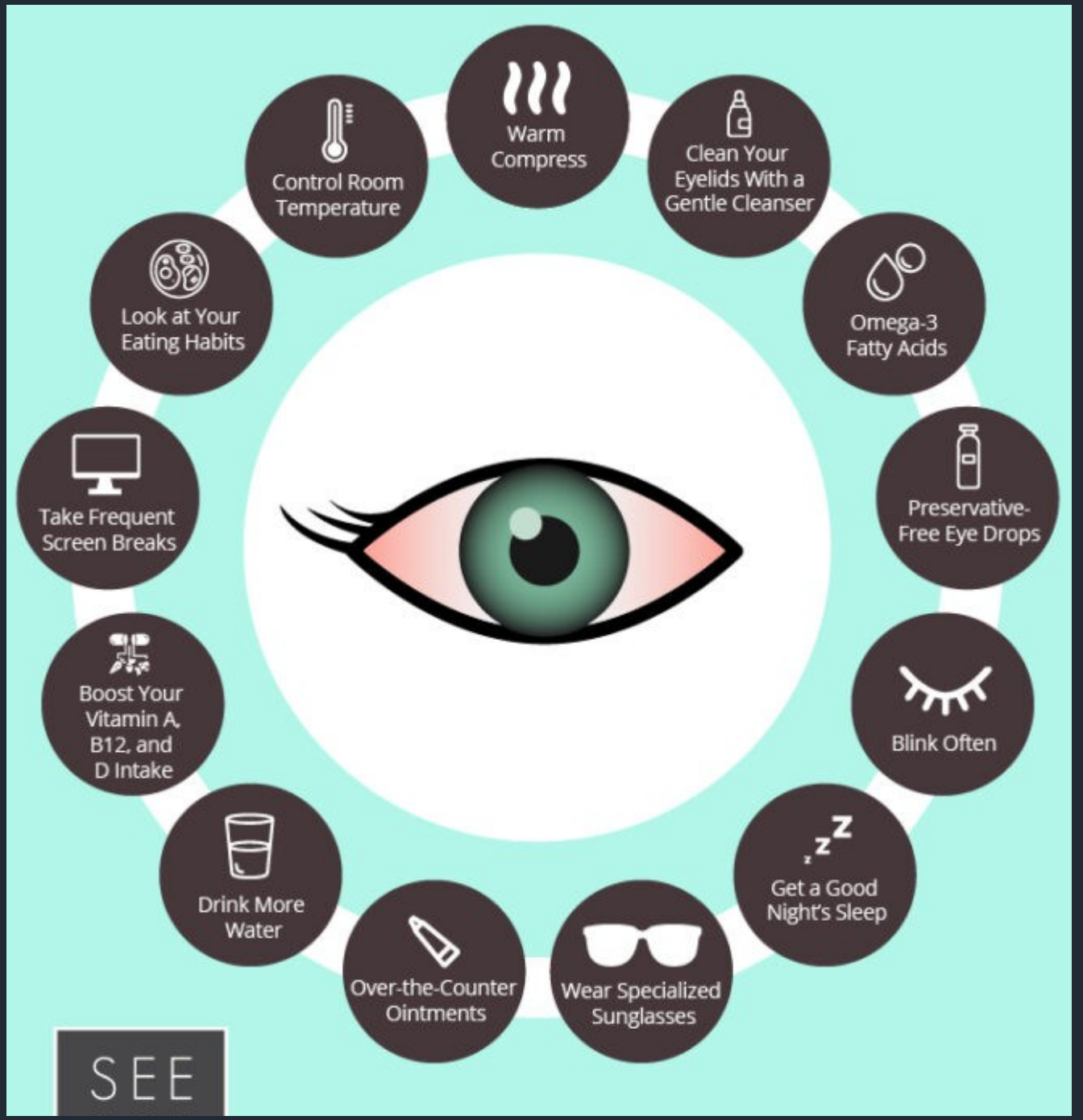
Blink Rate

Schirmer Testing

Osmolarity


MYSTERY DIAGNOSIS

DILEMMA OF DRY EYE TREATMENT



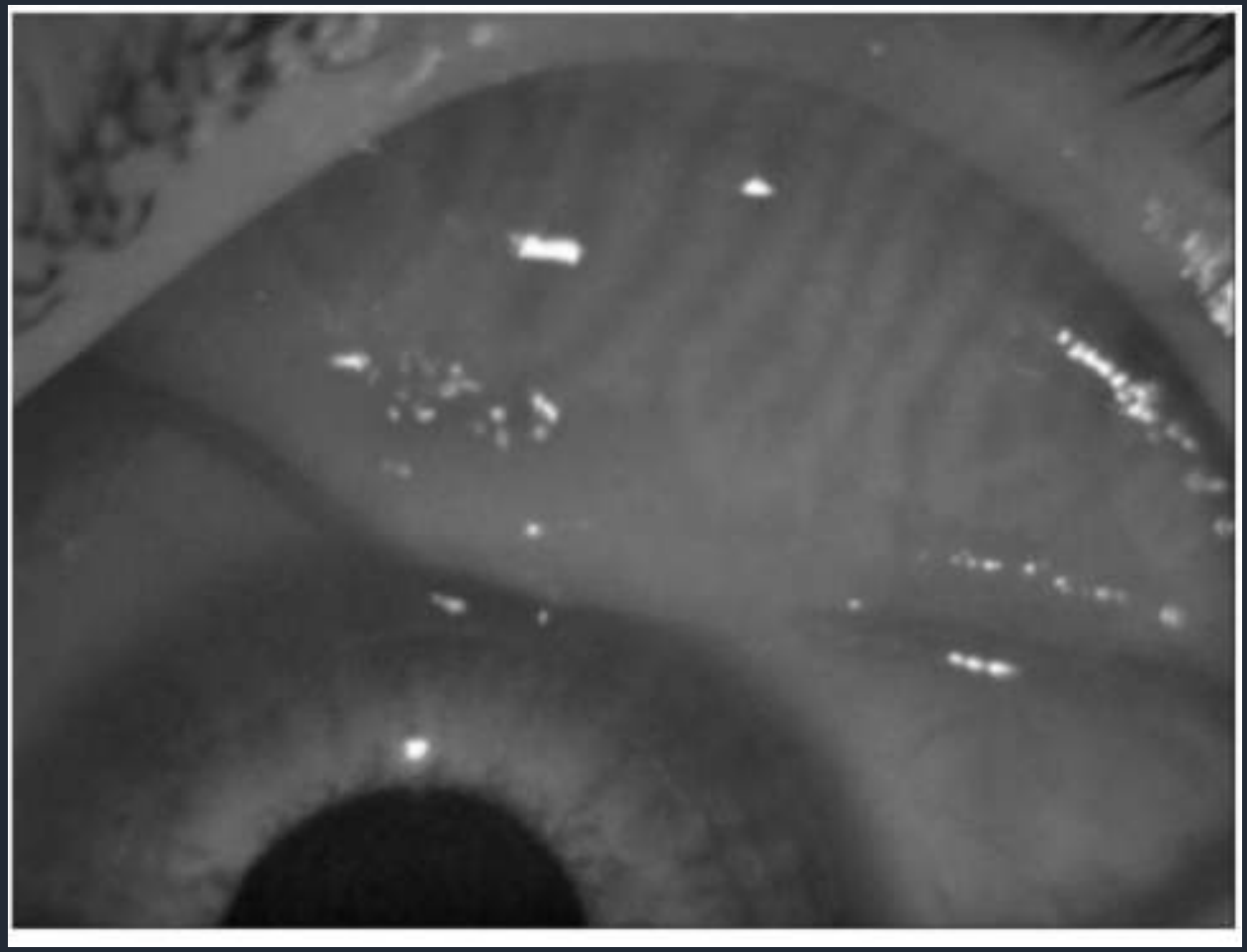
- Imaging techniques for the anterior segment are nowadays routinely used in clinical practice.

- A variety of imaging techniques have been introduced to study the ocular surface, such as anterior segment optical coherence tomography, in vivo confocal microscopy, or non-contact meibography.

Non-Contact Meibography

- Meibography refers to the visualization and quantification of Meibomian gland drop-out using photo documentation.

- Non-contact Meibography consist of a slit lamp equipped with an infrared charge-coupled device video camera and an infrared transmitting filter to allow the observation of the everted lid without contact to the instrument.

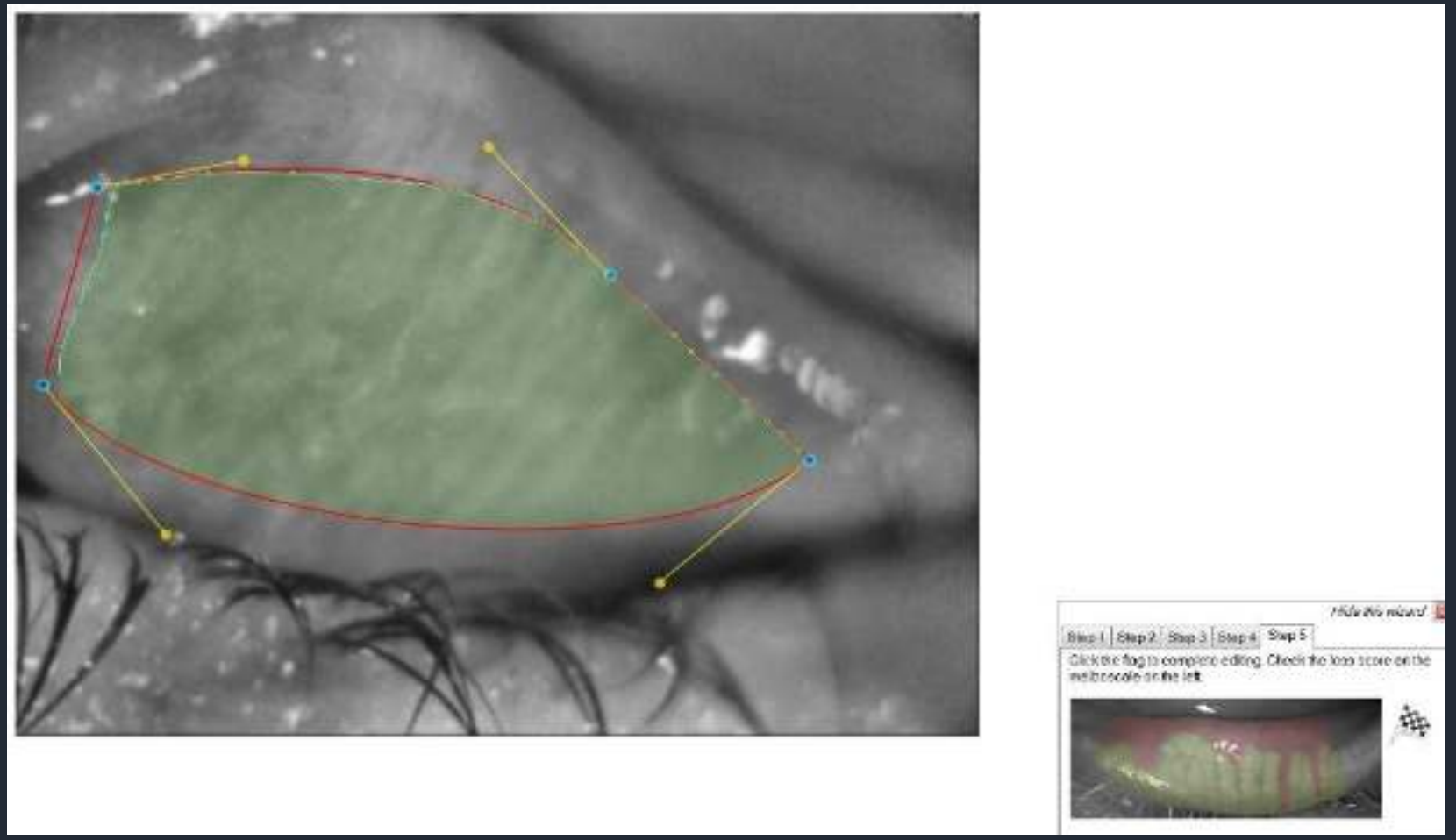


Evaluation:

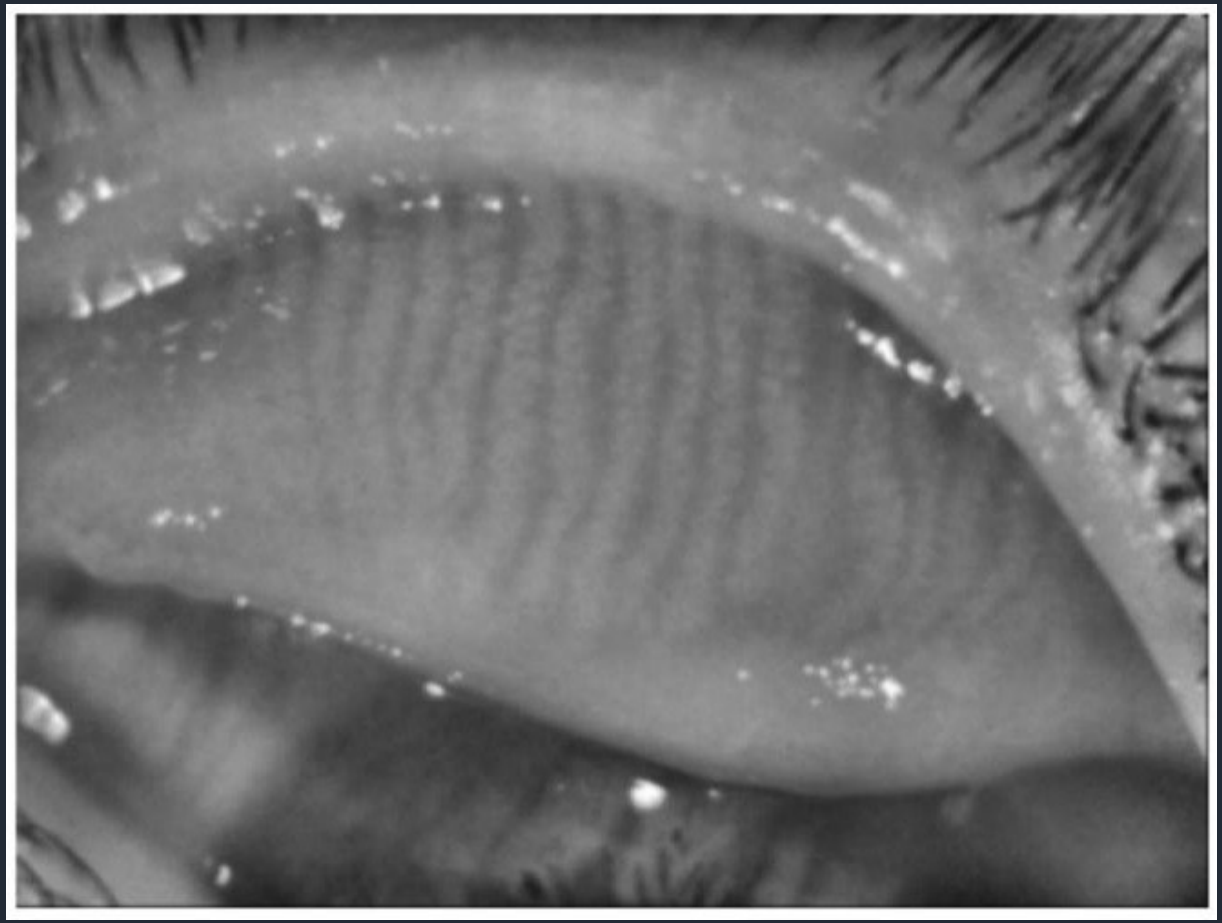
- Normal meibomian glands appear as hypoilluminant grape-like clusters.
- Upper eyelid MGs outnumber the lower eyelid MGs and are longer in length.
- The MGs that did not transverse the total tarsal plate were indicated as a “dropout.”

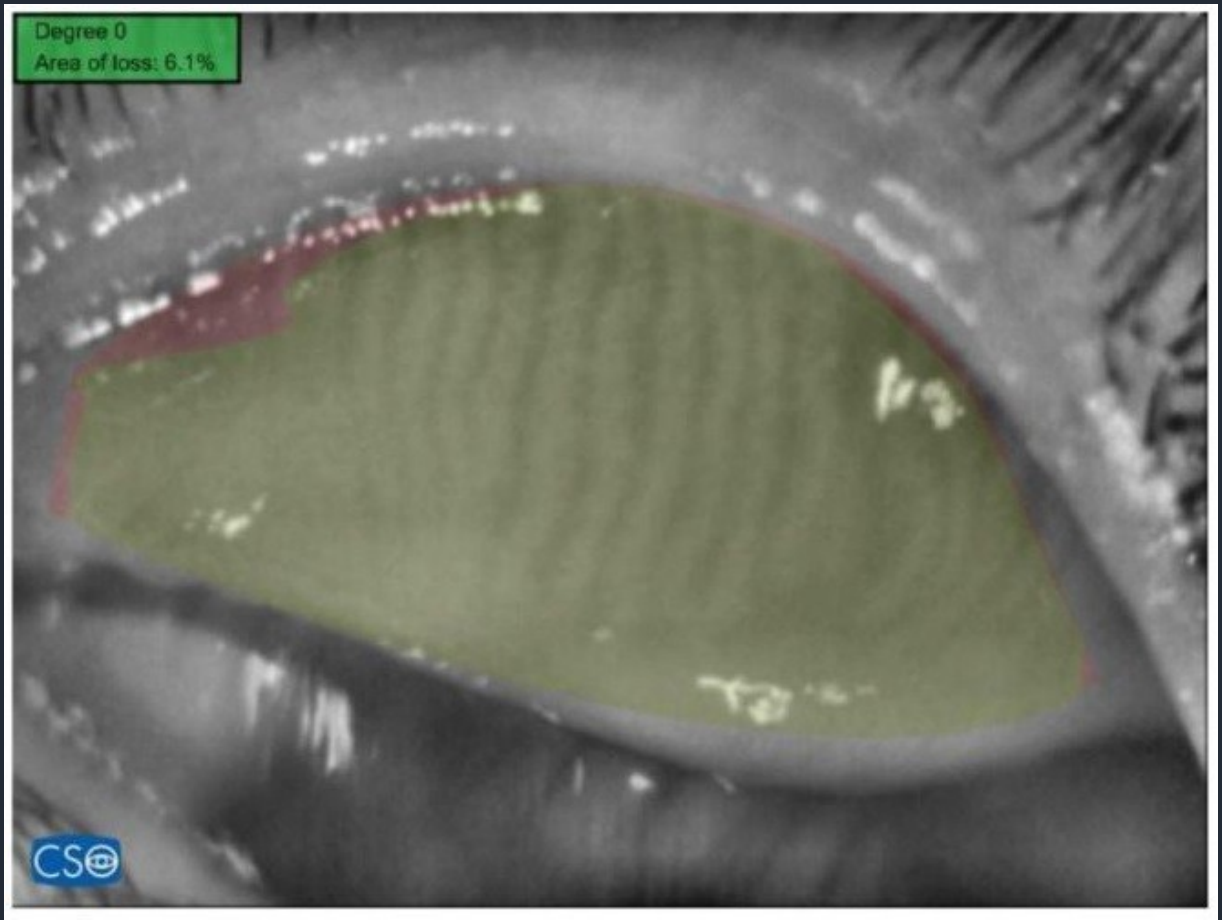
Advantages:

- Easy to perform, with entire gross evaluation of the lid.
- Good tool for documentation and monitoring of the glands.
- Subjective interpretation of the image by various objective and analytical grading systems.



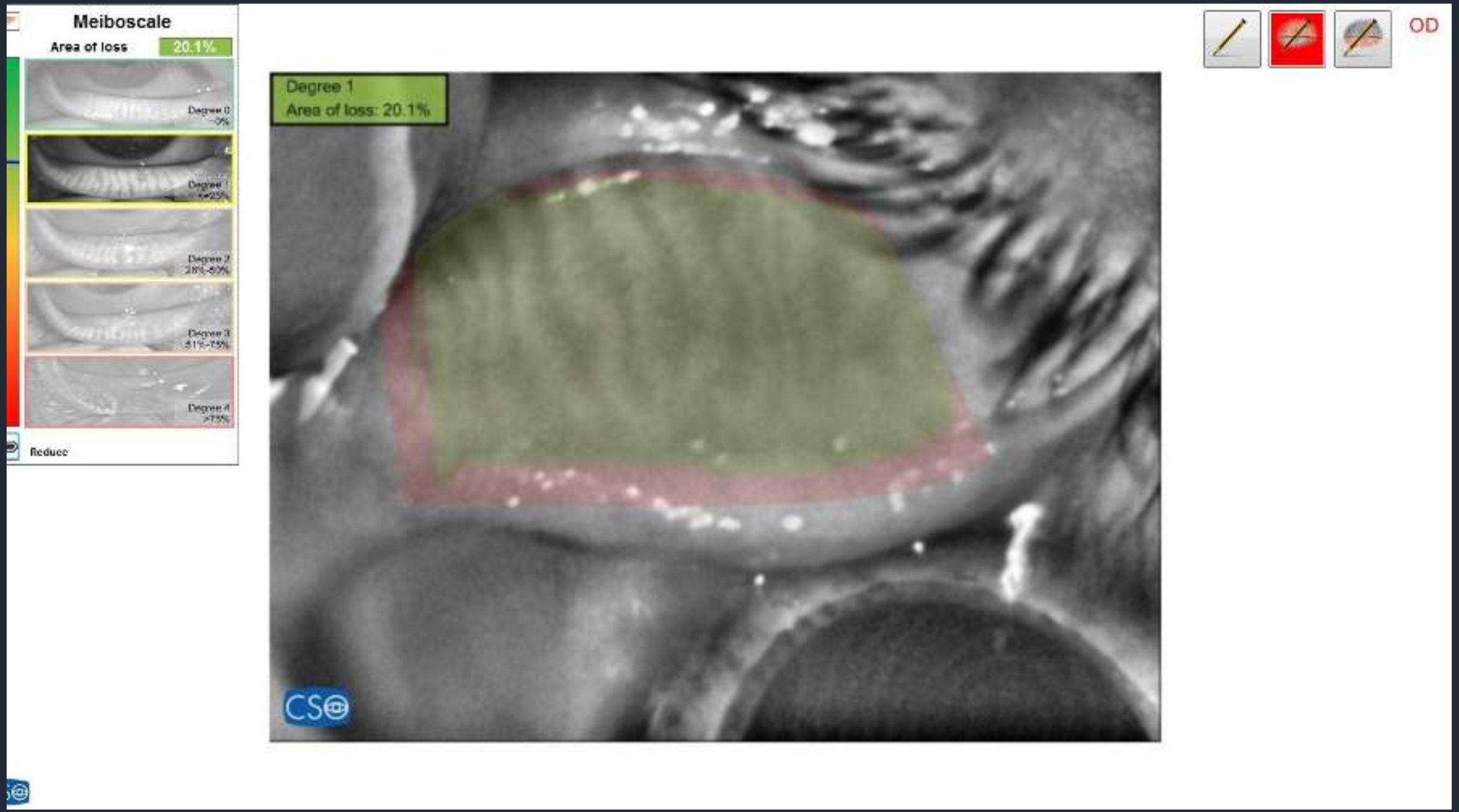
Noncontact meibography performed by Sirius (CSO, Florence, Italy)





Measurements:

- Measurements of the dropout by percentage, as well as grouped the dropout by a scale within the area, which was highlighted by the users' free-hand tool:
- Grade 0, no loss at all;
- Grade 1, ≤25%;
- Grade 2, 26%–50%;
- Grade 3, 51%–75%;
- Grade 4, greater than 75%


Meiboscale
Area of loss
20.1%
Degree 0
Degree 1
Degree 2
Degree 3
Degree 4
Reduce
Degree 1
Area of loss: 20.1%
OD

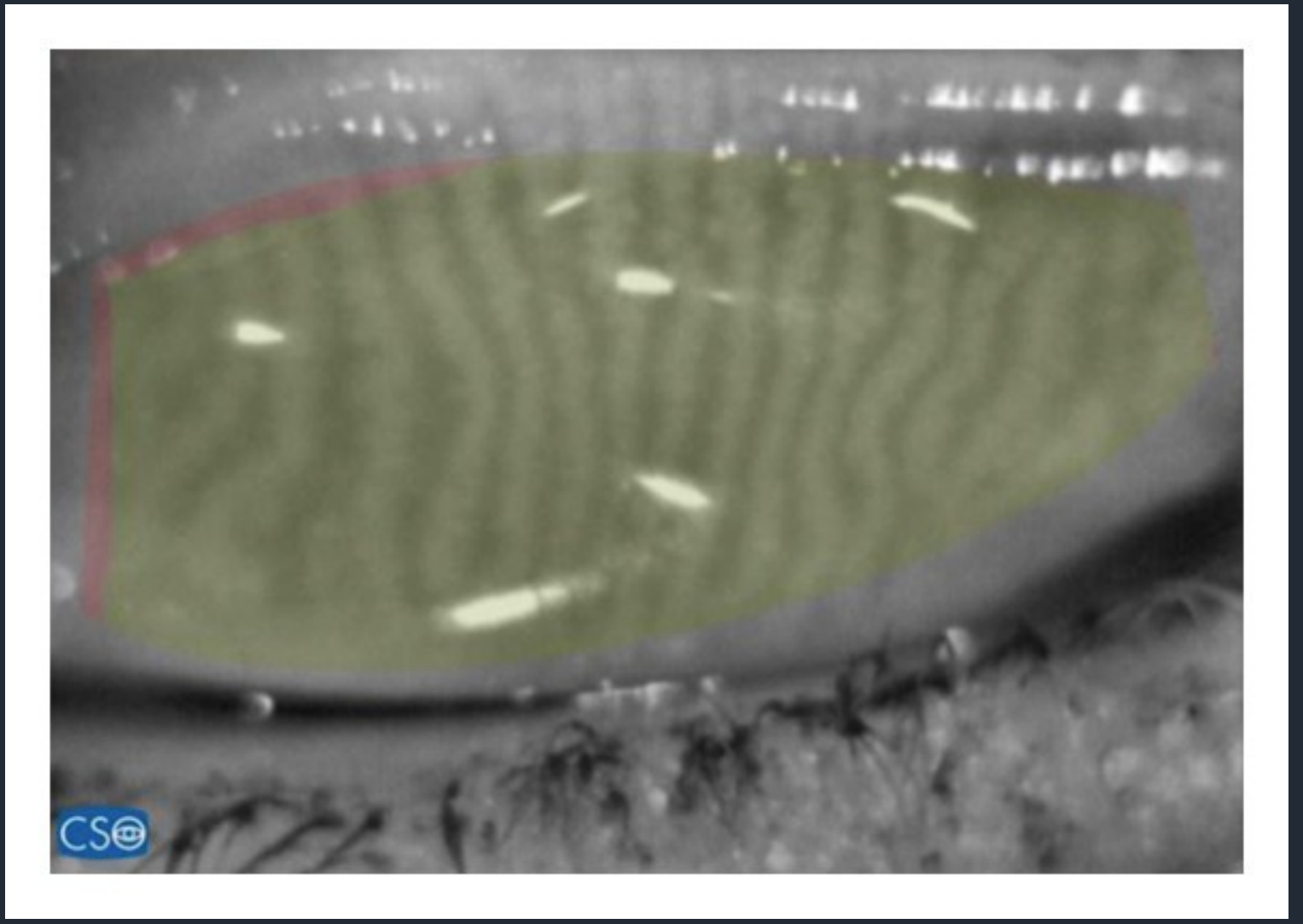
Meibograde System

The meibograde system was developed and validated by Call et al.*

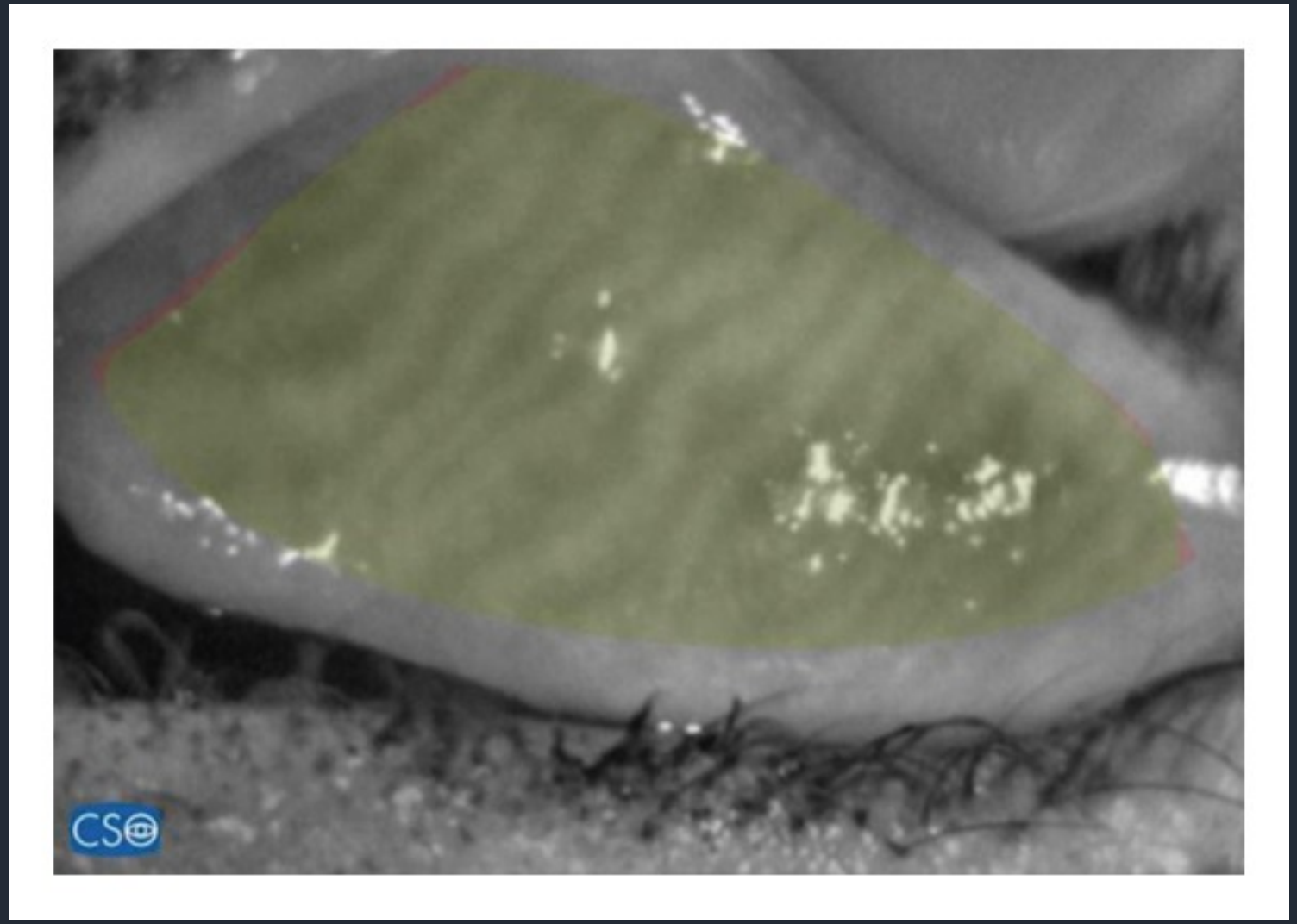
This system involves gland distortion which is an abnormal gland to tarsus ratio, tortuous glands, and/or discordant patterning depending on previously studied histopathological changes.

*Call CB, Wise RJ, Hansen MR, Carter KD, Allen RC. In vivo examination of meibomian gland morphology in patients with facial nerve palsy using infrared meibography. Ophthalmic Plast Reconstr Surg. 2012 Nov-Dec;28(6):396-400.

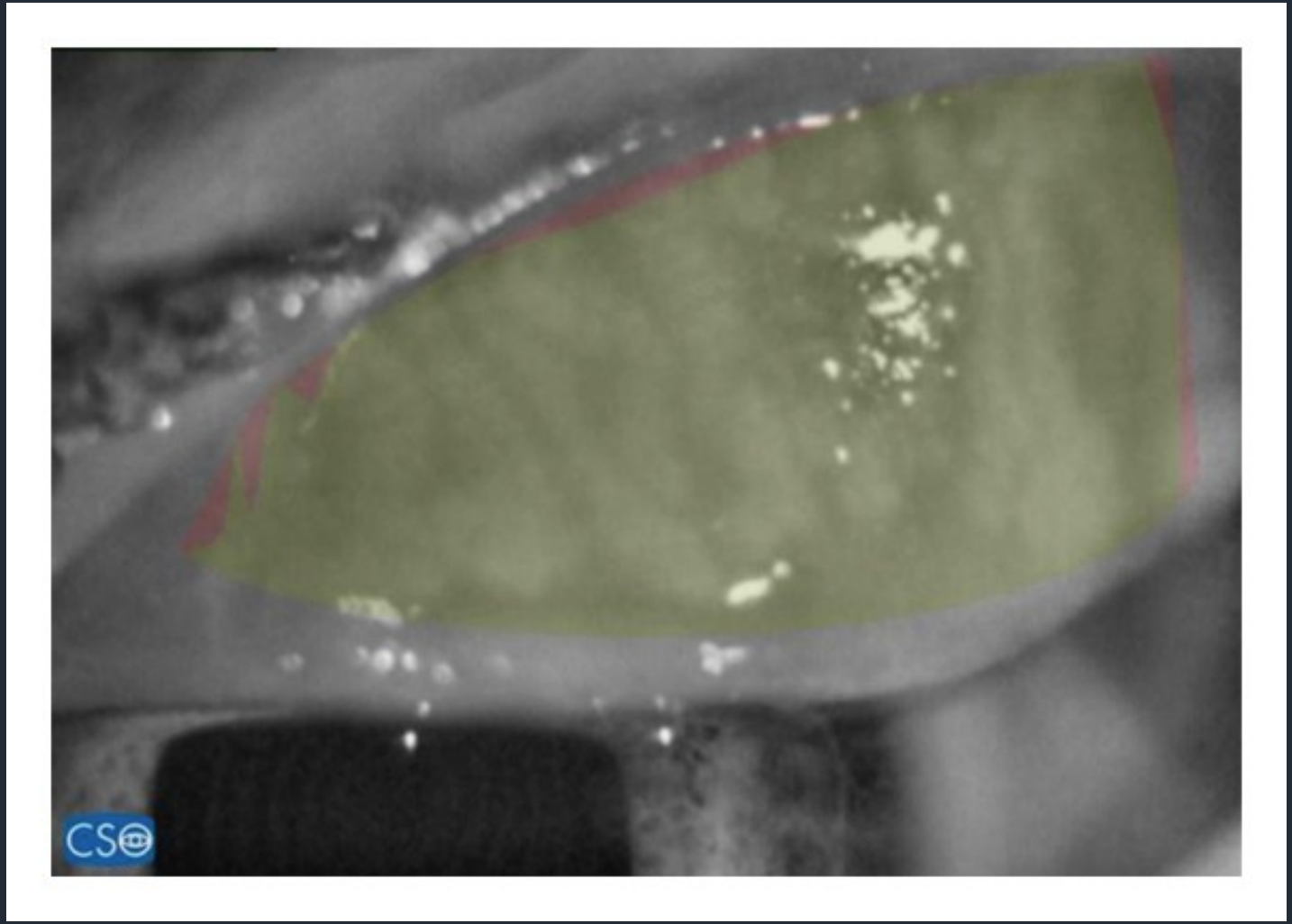
Grade 0, no significant eyelid involvement



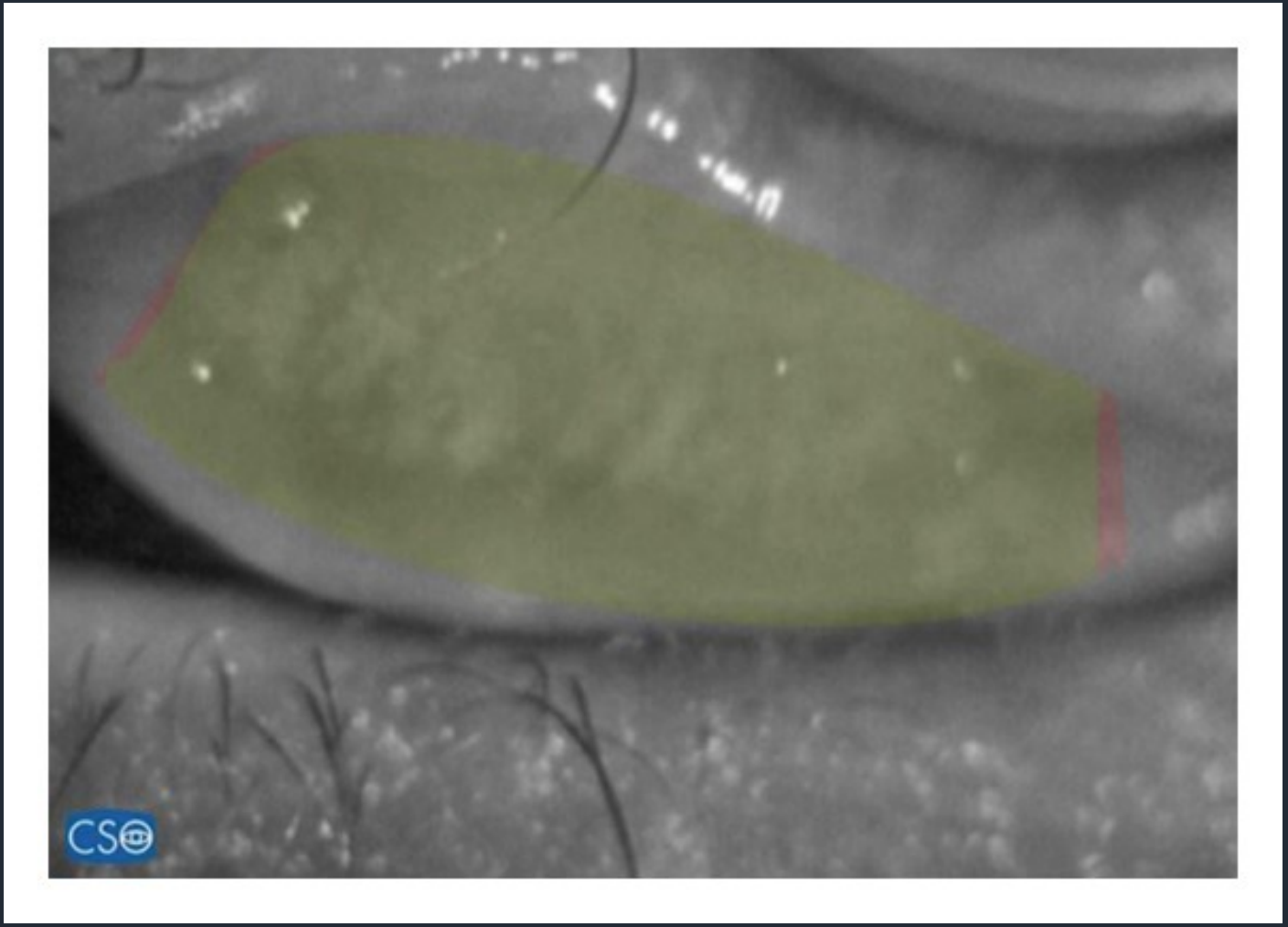
Grade 1: dilatation and tortuosity of the MG.



Grade 2: dropout of MG along with gland distortion.



Grade 3: MG does not traverse the total tarsal with mottling of details.



Non-Contact Meibography in different ocular surface disorders

1) Study the effect of posterior blepharitis on meibomian glands

Journal List > Saudi J Ophthalmol > v.31(3); Jul-Sep 2017 > PMC5569335

Saudi Journal of Ophthalmology

Official Publication of the Saudi Ophthalmological Society

الجمعية السعودية لطب العيون
SAUDI OPHTHALMOLOGICAL SOCIETY

Saudi J Ophthalmol. 2017 Jul-Sep; 31(3): 131–134.
Published online 2017 Jun 1. doi: 10.1016/j.sjopt.2017.05.014

PMCID: PMC5569335
PMID: 28860908

Meibography for eyes with posterior blepharitis

Abdulrahman AlDarrab,[a] Mohammed Alrajeh,[b] and Adel H. Alsuhaibani[c,*]

Author information · Article notes · Copyright and License information Disclaimer

Saudi J Ophthalmol

Non-Contact Meibography in different ocular surface disorders

2) Determine changes detected by noncontact meibography in individuals with regular use of soft contact lenses

Dovepress Clinical Ophthalmology

Clin Ophthalmol. 2022; 16: 1427–1437 PMCID: PMC9084900
Published online 2022 May 5. doi: 10.2147/OPTH.S362207 PMID: 35547400

Changes in Noncontact Meibography and Noninvasive Tear Break-Up Time Test with Contact Lenses Usage

Reham Fatih,[1] Amr Mounir,[2] Mohamed Anber,[2] and Osama Ali Mohammed[2]

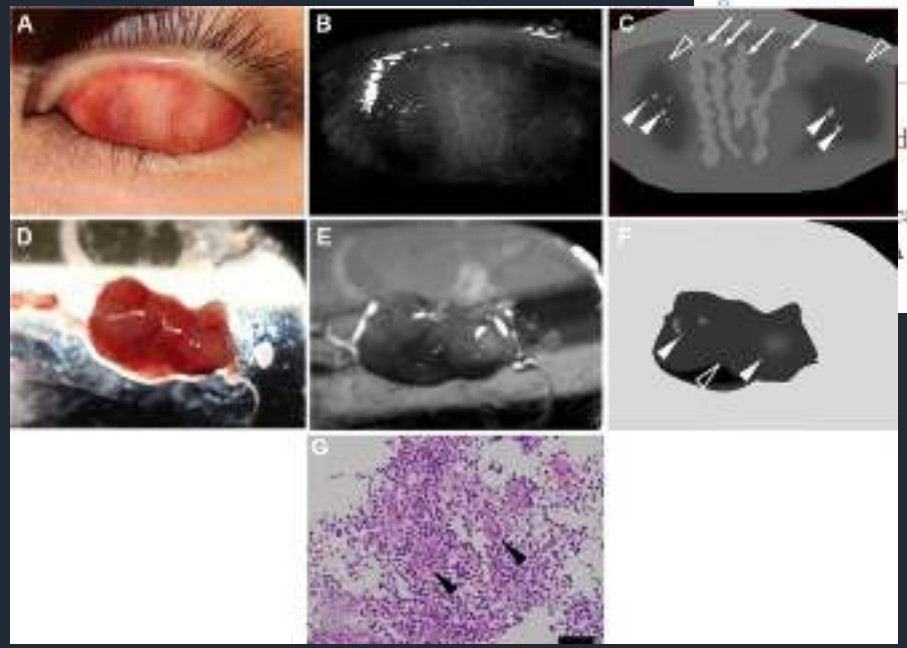
Abstract Go to: •

Purpose

The study aimed to determine changes detected by noncontact meibography and noninvasive break-up time test (NIBUT) in individuals with regular use of soft contact lenses and compare these findings with irregular soft contact lenses wearers who not compliant with them and non-wearers control group.

Non-Contact Meibography in different ocular surface disorders

3) Differentiation between chalazion and sebaceous carcinoma.



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Clinical Ophthalmology
Clin Ophthalmol. 2014; 8: 1869–1875.
Published online 2014 Sep 18. doi: 10.2147/OPTH.S69804
PMCID: PMC4172083
PMID: 25258508

Differentiation between chalazion and sebaceous carcinoma by noninvasive meibography

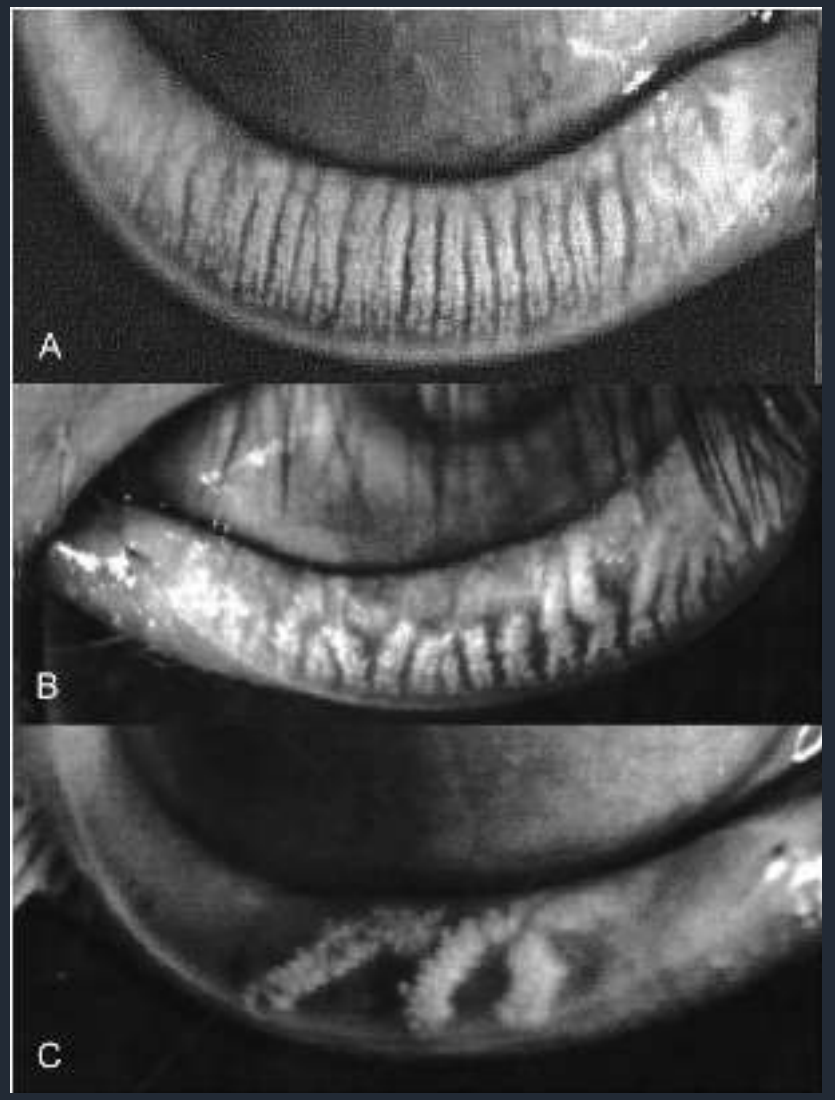
Yuji Nemoto,[1] Reiko Arita,[2,3] Atsushi Mizota,[1] and Yuko Sasaima[4]

Go to: •

carcinoma is notorious for masquerading clinically as other benign lesions such as
tool to better differentiate between these two conditions would thus be desirable.

Non-Contact Meibography in different ocular surface disorders

4) Prevalence of Meibomian Gland Atrophy in a Pediatric Population.



Non-Contact Meibography in different ocular surface disorders

5) Evaluation of morphological changes of meibomian glands in patients with type 2 diabetes.

International Journal of Ophthalmology

Int J Ophthalmol. 2016; 9(12): 1740–1744
Published online 2016 Dec 18. doi: 10.18240/ijo.2016.12.06

PMCID: PMC5154985
PMID: 28003972

Changes of meibomian glands in patients with type 2 diabetes mellitus

Tao Yu,[1,2] Wei-Yun Shi,[3] Ai-Ping Song,[2] Yang Gao,[2] Guang-Fu Dang,[2] and Gang Ding[4]

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Abstract

Go to:

AIM

To investigate the morphological changes of meibomian glands in patients with type 2 diabetes mellitus (DM).

METHODS

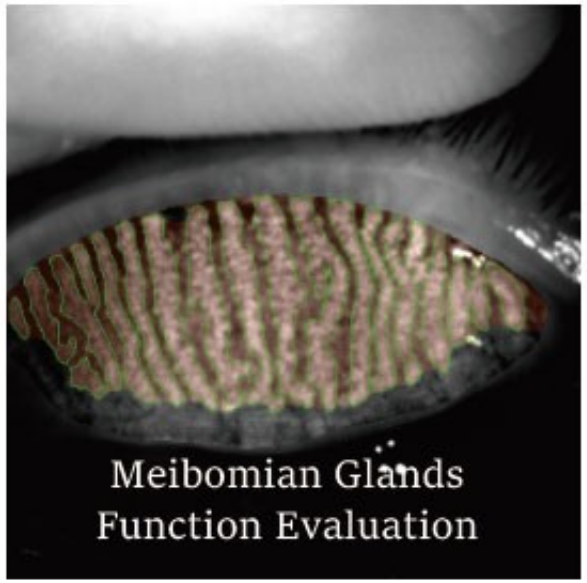
Of 118 eyes (118 patients) with type 2 DM (DM group) and 100 eyes of 100 control subjects (control

Non-Contact Meibography in different ocular surface disorders

6) Evaluation of morphological changes of meibomian glands in Sjögren’s syndrome and n Sjögren’s dry eye patients

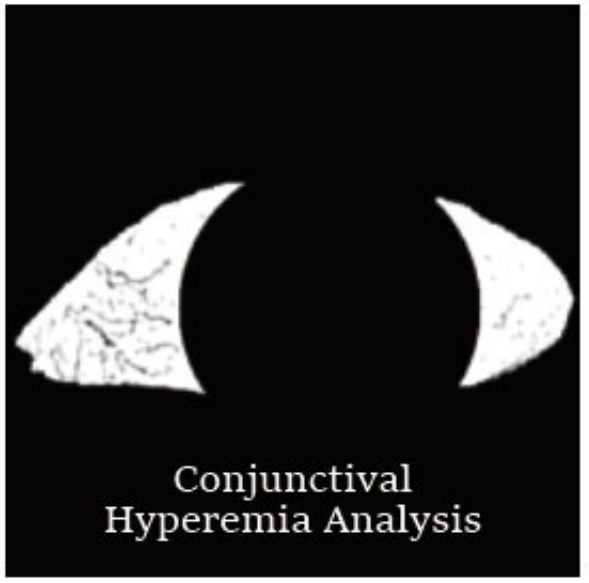
Photo Documentation

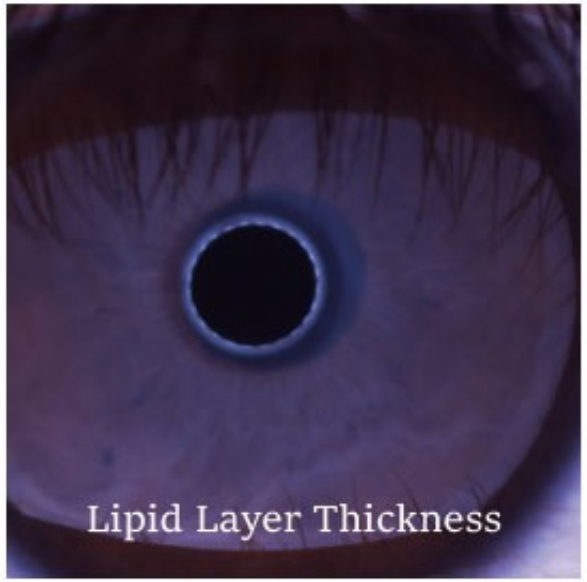
Anterior segment photos can be used to document and follow over time dry eye signs


Meibomian Glands
Function Evaluation


Non-Invasive Breakup Time

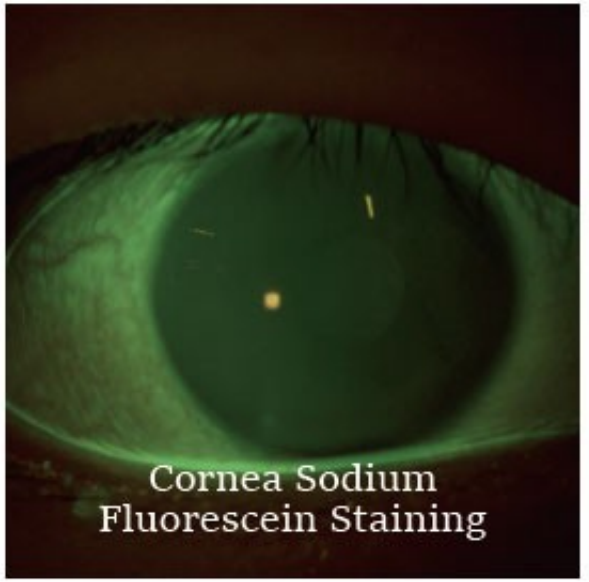

Eyelid Margin


Conjunctival
Hyperemia Analysis

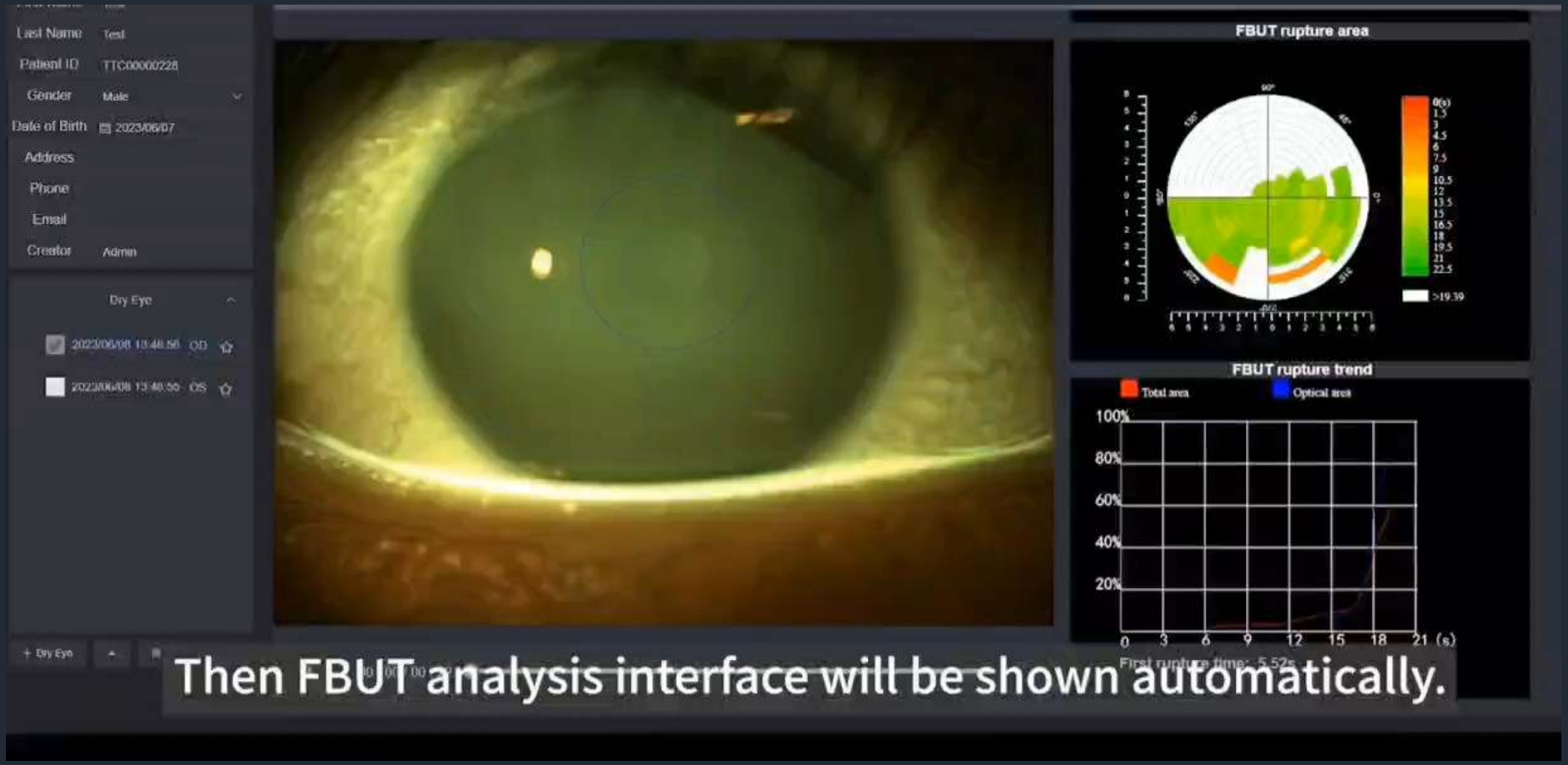

Lipid Layer Thickness


Fluorescein Breakup Time


0.12mm
Non-Invasive Tear
Meniscus Height

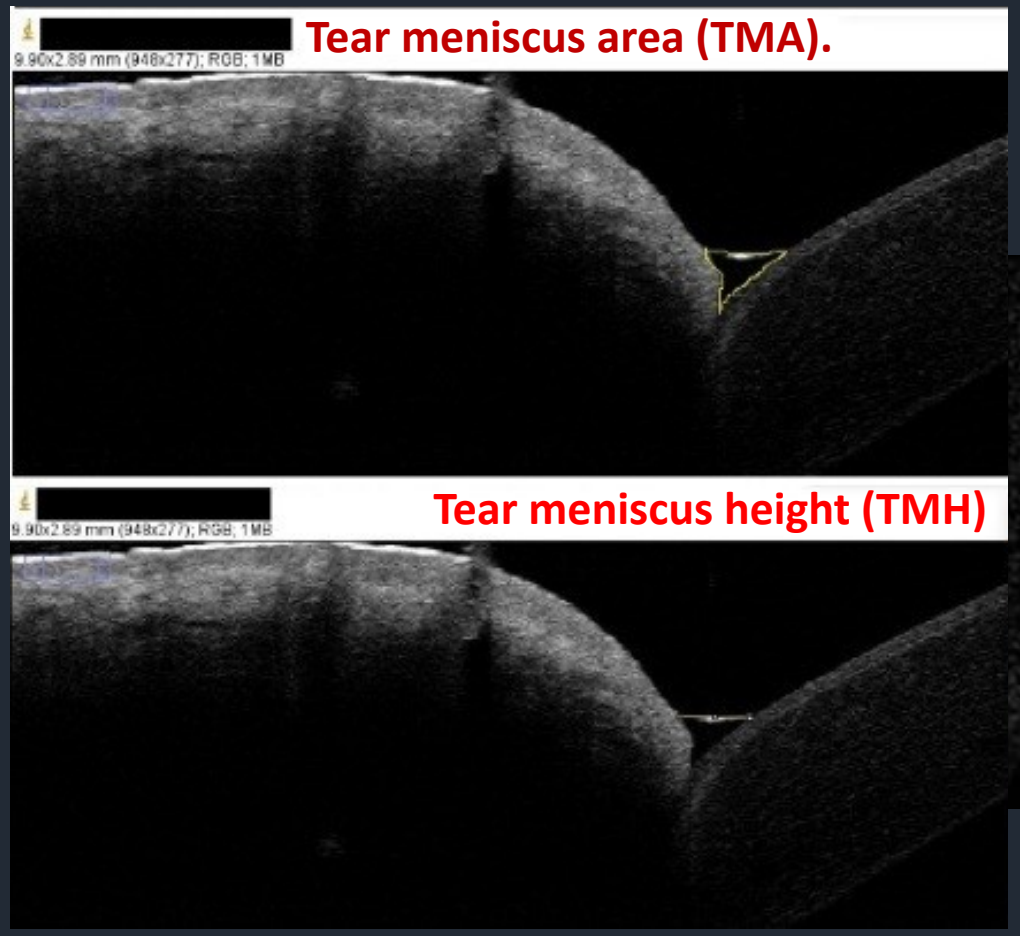

Cornea Sodium
Fluorescein Staining

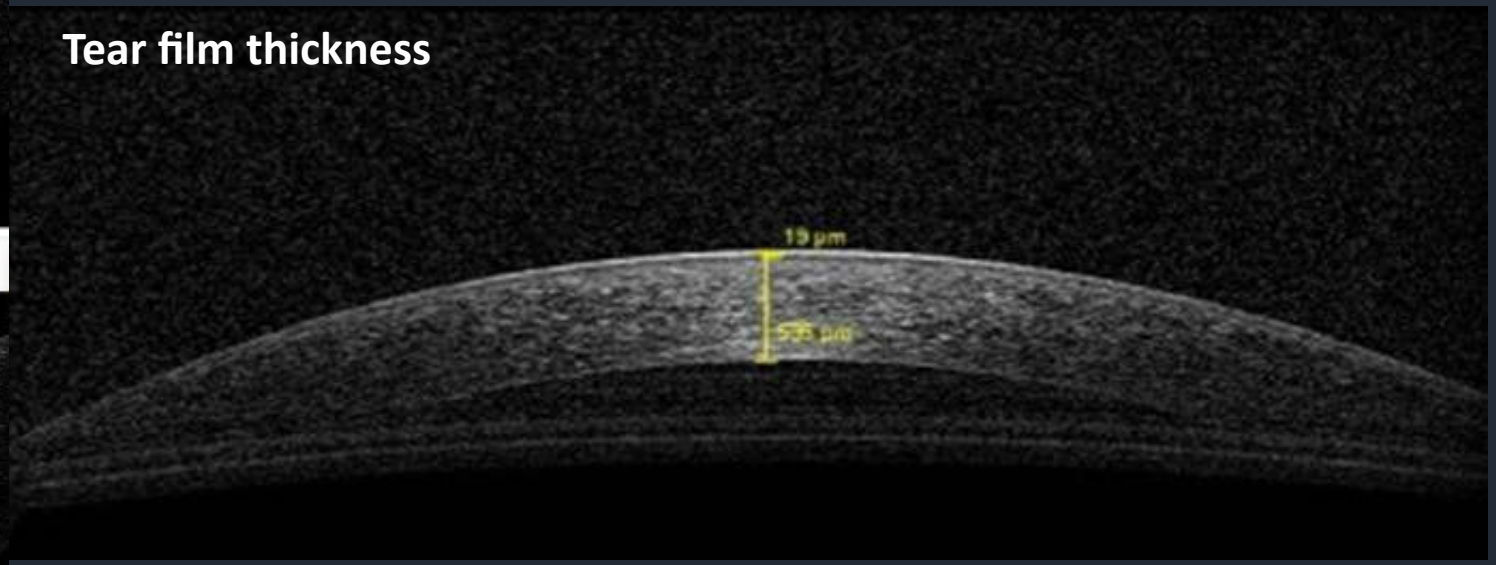

OD 00:05


Last Name Test
Patient ID TTC00000228
Gender Male
Date of Birth 2023/06/07
Address
Phone
Email
Creator Admin
Dry Eye
FBUT rupture area
FBUT rupture trend
Total area
Optical area
100%
80%
60%
40%
20%
0 3 6 9 12 15 18 21 (s)
Then FBUT analysis interface will be shown automatically.


CNR
NIBUT
Tear Height
Lipid Layer
Meibomian Glands
Eyelid Edge
Eye Redness
FBUT
Ocular Surface Staining
Report
00:00/00:05
00:09/00:09
Result:
Lipid layer grade
4

Anterior Segment Optical Coherence Tomography

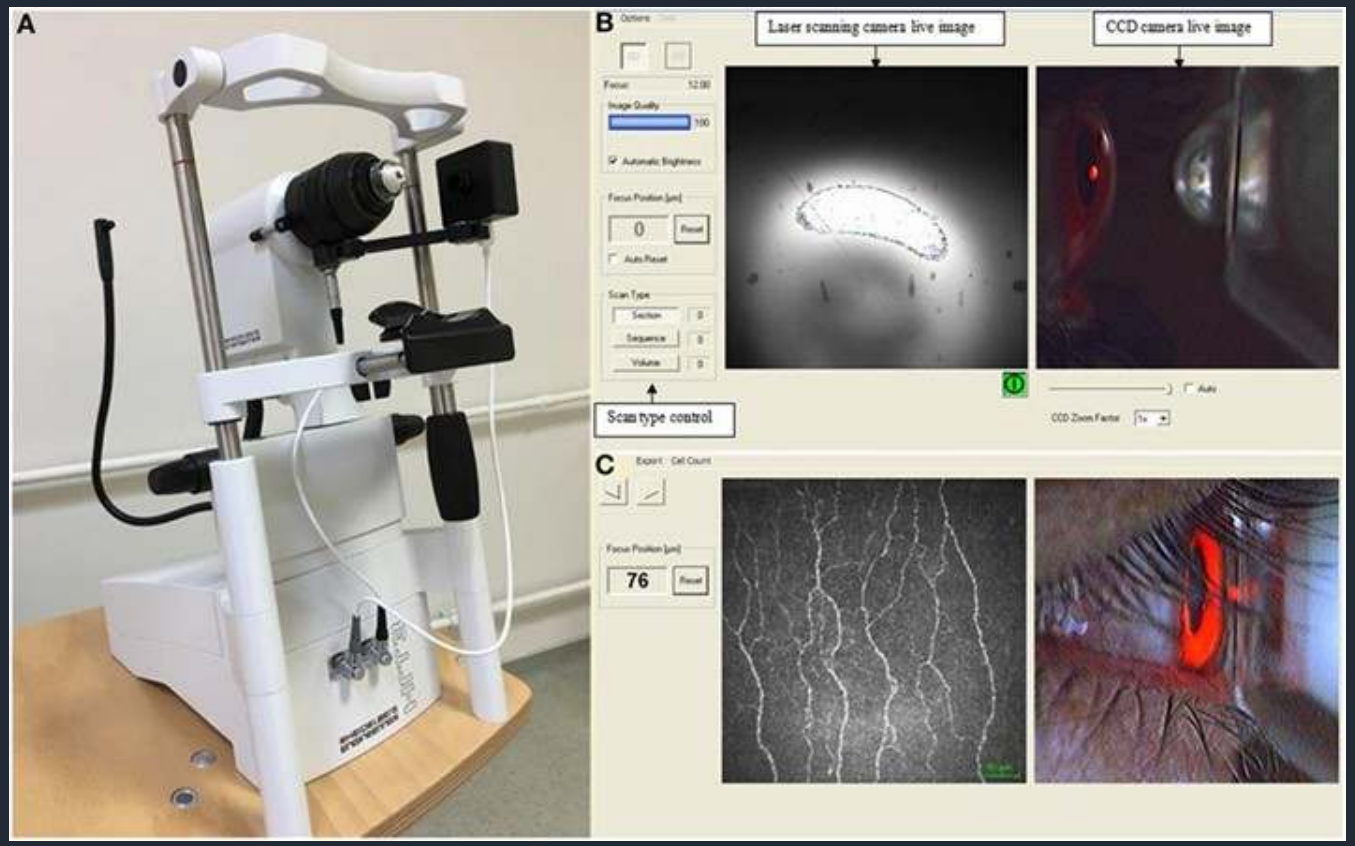




In vivo confocal microscopy

- A noninvasive technology that is useful as a supplementary diagnostic tool for the in vivo assessment of the histopathology of many ocular surface diseases and anterior-segment disorders at cellular level.

- In the dry eye field, in vivo confocal microscopy has been applied to the examination of the cornea, bulbar and palpebral conjunctiva, Meibomian gland, and lacrimal gland.



Thank You