ophthal Focus

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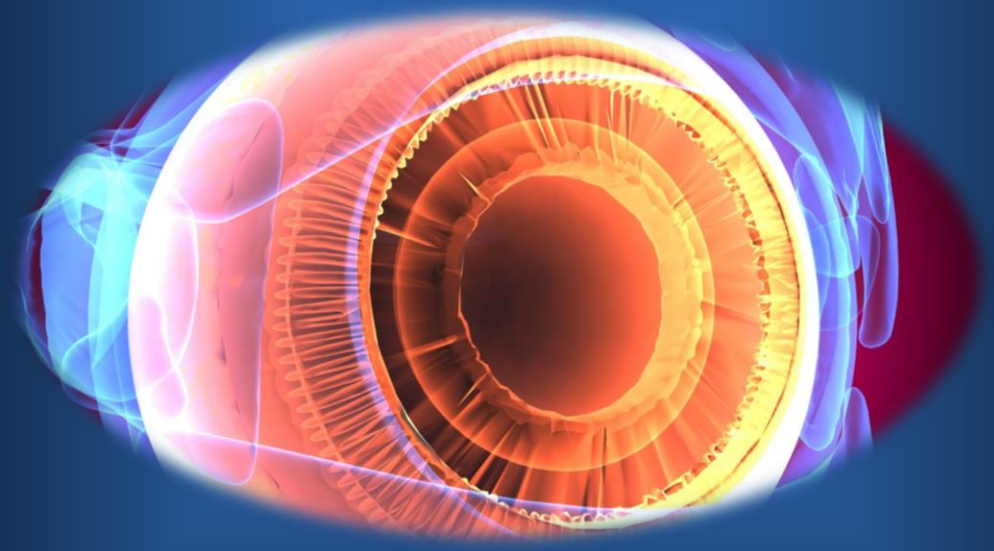


Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you 'Ophthal Focus' which contains latest and interesting news in the field of Ophthalmology.

This issue contains

- Infrared Meibography in Patients Undergoing Hematopoietic Stem Cell Transplantation: A Longitudinal Analysis
- Identification and Quantitative Assessment of Schlemm's Canal in the Eyes with 360° Angle Recession Glaucoma
- Coats' Disease Presenting with Macula Star

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in
Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited

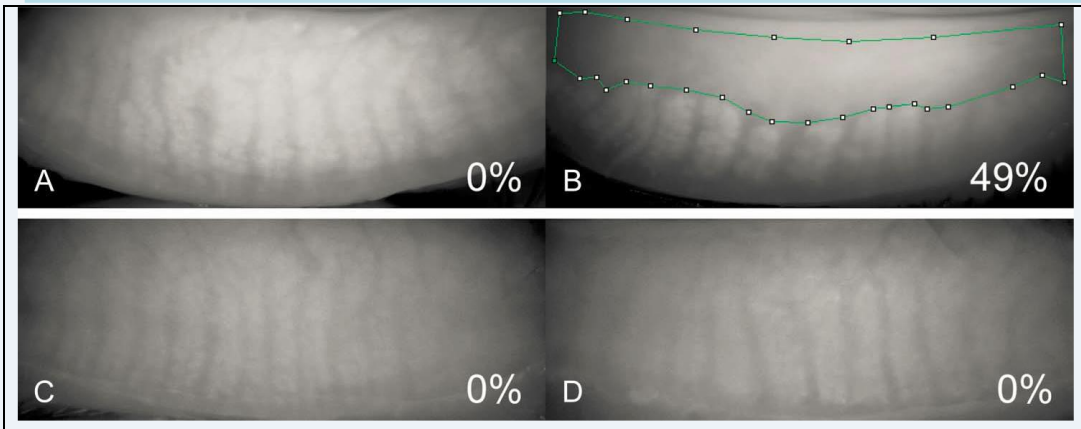
Infrared Meibography in Patients Undergoing Hematopoietic Stem Cell Transplantation: A Longitudinal Analysis

Ocular graft-versus-host disease (oGVHD) is one of the major complications after hematopoietic stem cell transplantation (HSCT), occurring in 40% to 60% of transplant recipients. The ocular surface system represents the main target of oGVHD, and all the structures can be impaired at a various degree of severity. Meibomian gland dysfunction (MGD) is one of the most frequent complications because of the functional impairment of meibomian glands (MGs) that leads to tear film instability and dry eye disease (DED).

MG function, loss, and quality significantly worsened after HSCT. Myeloablative conditioning regimen was associated with higher MGL

This study was done to evaluate meibomian gland (MG) changes in patients undergoing hematopoietic stem cell transplantation (HSCT) by infrared meibography and to further investigate possible correlations with hematological characteristics.

Thirty-three patients were included: infrared meibography of the lower eyelid, Schirmer test, tear break-up time, ocular surface staining, and Ocular Surface Disease Index questionnaire were conducted before (V0) and 4 months after HSCT (V1). A paired samples t test was used to compare parameters before and after HSCT. A mixed analysis of variance was used to assess the effect of hematological characteristics on changes of MG loss (MGL) after HSCT.



IM obtained from the lower eyelid of 2 representative patients before (V0) and 4 months after HSCT (V1). The images were analyzed using ImageJ software for the calculation of the percentage of MGL. In patient 1, the MG dropout was null at V0 (A) and increased to 49% at V1 (B). In patient 2, the MG dropout was null at V0 (C) and remained unchanged at V1 (D).

MGL and corneal staining significantly increased after HSCT (respectively, from 24.3% ± 10.1% to 32.2 ± 15.0 and from 1.2 ± 1.5 to 2.0 ± 1.7; always P <0.011), whereas tear break-up time significantly decreased (from 6.6 ± 4.2 seconds to 3.2 ± 2.2; P< 0.001).

Table: Ocular Surface Parameters in Hematological Patients Before and After HSCT

Parameter	V0	V1	*P*
MGL (%)	24.3 ± 10.1	32.2 ± 15.0	<0.001
TBUT (s)	6.6 ± 4.2	3.2 ± 2.2	<0.001
Schirmer test (mm/5')	21.9 ± 13.0	20.5 ± 12.3	0.553
Corneal staining (NEI score)	1.2 ± 1.5	2.0 ± 1.7	0.011
Conjunctival staining (VB score)	2.5 ± 2.8	2.8 ± 2.2	0.582
OSDI (score)	14.6 ± 14.0	17.5 ± 11.8	0.300

At V1, 19 patients (57.6%) belonged to ocular graft versus- host disease severity grade 0, 8 (24.2%) to grade I, and 6 (18.2%) to grade II. The percentage of MGL at V0 and the increase of MGL from V0 to V1 did not differ between patients who developed ocular graft-versus-host disease and those who did not (always P > 0.05). At V1, MGs' quality reduced in 16 patients (48.5%), remained unchanged in 14 (42.4%), and improved in 3 (9.1%). The increase of MGL after HSCT was higher in patients receiving myeloablative conditioning regimen (P = 0.005).

Meibography is still a relatively new technique, and grading scales as well as user-friendly digital analysis software are still evolving to better evaluate the features of MGs. Because meibography represents a useful tool to detect MG changes in patients who underwent HSCT, it should be incorporated in the ophthalmological workup of these patients.

Source: Bernabei F et al. Cornea. 2020 Jul;39(7):812-817. doi: 10.1097/ICO.0000000000002271.

Identification and Quantitative Assessment of Schlemm's Canal in the Eyes with 360° Angle Recession Glaucoma

Angle recession, trabecular meshwork injury, increased trabecular pigmentation, and reduced Schlemm's canal dimensions can cause reduced aqueous outflow and unilateral glaucoma in an eye, following blunt trauma. Also, these patients are possibly at a risk to develop raised intraocular pressure (IOP) in the normal fellow eye due to reduced Schlemm's canal area. The study was conducted to identify and quantitatively evaluate Schlemm's canal (SC) parameters by anterior segment optical coherence tomography (AS-OCT) in the patients with unilateral 360° angle recession glaucoma (ARG) and compare with the fellow normal eyes and age-related normal control.

Trabecular meshwork injury, angle recession, and increased trabecular pigmentation are probably the predisposing factors in the ARG

Six patients with a history of unilateral ocular blunt trauma and unilateral 360° ARG, normal fellow eyes and 34 age-matched normal controls underwent anterior chamber angle imaging with corneal line scan protocol using AS-OCT. Schlemm's canal cross-sectional area (SC-CSA) and meridional and coronal diameters were measured on temporal and nasal sections at 3 and 9 o'clock positions.

Study participants underwent imaging of SC with RTVue (Optovue, Fremont, CA) AS-OCT corneal line scan, which has 8 mm scan length. The scan line was placed on the limbus at temporal and nasal, 3 and 9 o'clock meridians. SC was identified

in the cross section scan as a horizontal elliptical or oval-shaped translucent space, close to the TM (Fig. 1). All the scans were obtained by a single experienced examiner. Scans with excessive shadowing or high signal–noise ratio were discarded, and only the scans with good image quality and signal strength >50 were selected for the analysis.

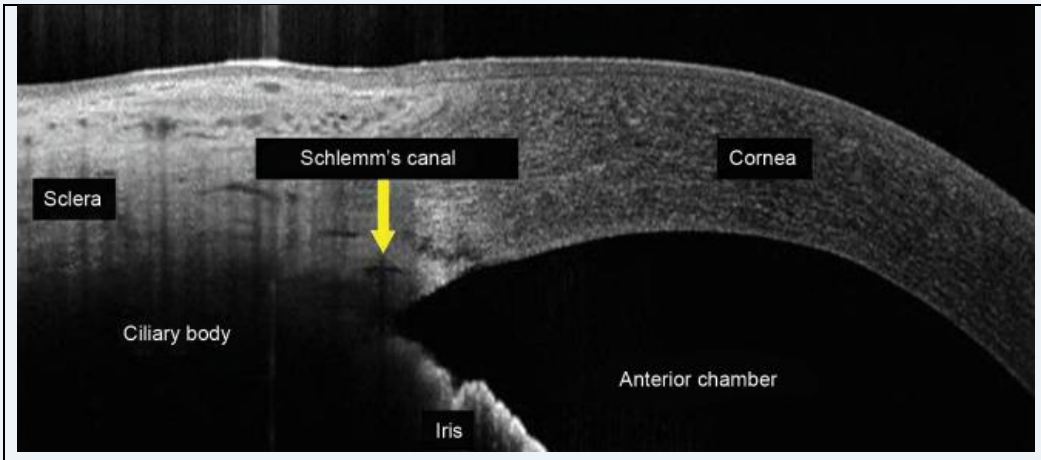


Fig.: Cross-sectional image of Schlemm's canal in the temporal quadrant obtained with anterior segment optical coherence tomography in the right eye of a normal subject

In the AS-OCT cross-sectional images, SC was observed as a horizontally oval or ellipsoidal translucent space. The mean SC-CSA (1,710 ± 376.1 μm2 vs 6,100 ± 2,700 μm2, $p < 0.0001$), mean meridional diameter (243.6 ± 55.47 μm vs 474 ± 125.6 μm, $p < 0.0001$), and mean coronal diameter (32.68 ± 6.27 μm vs 57.42 ± 16.27 μm, $p < 0.0001$) of the SC were smaller in ARG eyes when compared with the normal eyes. The SC dimensions were reduced in the untraumatized fellow eyes of ARG patients when compared with the normal eyes (SC-SCA: 2350 ± 602.1 μm2, $p = 0.001$, meridional diameter: 341.8 ± 88.8 μm, $p = 0.012$ and coronal diameter: 31.67 ± 3.8 μm, $p < 0.0001$). There was no difference in the measured SC dimensions between the ARG eyes and the normal fellow eyes.

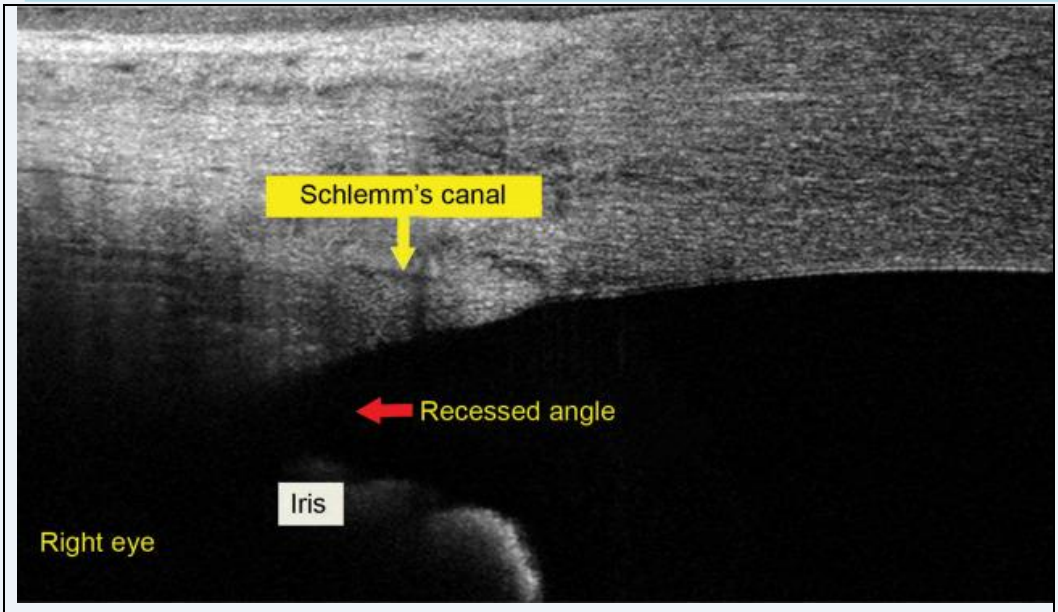


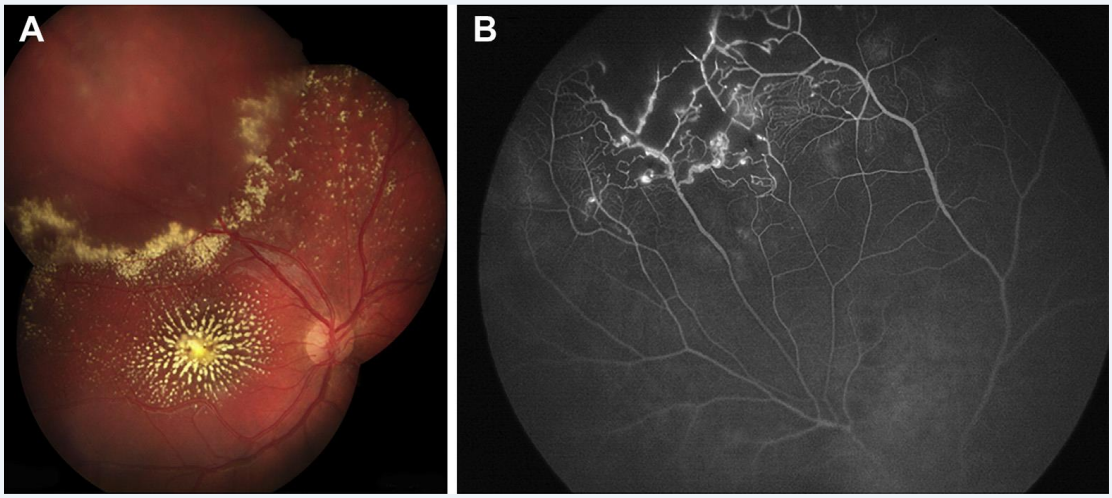
Figure 2 shows the cross-sectional image of the SC in an eye with ARG, where a marked narrowing of the SC is clearly visible, along with the cleft in the anterior surface of the ciliary muscle (recessed angle) and posterior displacement of the iris root

The reduced SC parameters in the eyes with unilateral 360° ARG and the normal fellow eyes could mean that these patients probably have an underlying structural abnormality in the SC. Trabecular meshwork injury, angle recession, and increased trabecular pigmentation are probably the predisposing factors in the ARG eyes for the increase in IOP. Whether the normal fellow eyes develop IOP rise in the future needs to be seen during regular follow-up.

Source: Mansoori T et al. J Curr Glaucoma Pract. 2020; 14(1): 25–29.

Coats' Disease Presenting with Macula Star

An 8-year-old boy presented after failed vision screening with reduced vision to counting fingers in his right eye. (A) Color montage photograph of the right eye shows lipid in a macular star configuration from large amount of subretinal exudation in the fovea, and a superotemporal exudative detachment with surrounding hard exudates. (B) Fluorescein angiography shows superotemporal telangiectatic vessels, leaking aneurysms, and peripheral capillary dropout, characteristic of Coats' disease.



Source: Greven MA et al. Ophthalmology Retina. 2020 June; 4(6):559. https://doi.org/10.1016/j.oret.2020.03.005