

Ultrasound biomicroscopy versus anterior segment OCT in diagnosing various anterior segment diseases

Essay

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Abstract

High frequency, high-resolution ultrasound biomicroscopy (UBM) provides visualization of anterior segment anatomy previously unavailable in vivo. UBM is based on 50- to 100- megahertz (MHz) transducers incorporated into a B-mode clinical scanner. Lower frequency transducers (50 MHz) are used where depth of penetration is important. Higher frequency transducers (80-100 MHz) are used to increase resolution of more superficial structures.

Optical Coherence Tomography (OCT) is a new non-contact and noninvasive imaging technique that can produce high resolution cross-sectional images of the human retina. Anterior segment imaging using OCT was first demonstrated in 1994 using light with a wavelength of 830 nm. Recently, transcleral OCT with 1310 nm wavelength light had been described in non contact biometry, anterior chamber angle assessment, identification and monitoring of intraocular masses and tumors, and elucidation of abnormalities of the cornea, iris, and crystalline lens.

Key Words :

Ultrasound Biomicroscopy - Ocular Coherence Tomography -
Intraocular lenses.

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List of abbreviations:

UBM: Ultrasound Biomicroscopy.

OCT: Ocular Coherence Tomography.

MHz: megahertz

W/sq cm: Watt per square centimeter.

LTK: Laser thermokeratoplasty.

CCT: Central corneal thickness.

KI: Keratoconus index.

TCT: Thinnest corneal thickness.

CAS-OCT: Corneal and anterior segment OCT.

IOLs: Intraocular lenses.

AS-OCT: Anterior segment optical coherence tomography.

AC-OCT: Anterior chamber optical coherence tomography.

AP: anteroposterior.

AC: anterior chamber.

SD: Standard deviation.

ACD: Anterior chamber depth.

AC IOLs: Anterior chamber intraocular lenses.

PC IOLs: Posterior chamber intraocular lenses.

ICL: Implantable contact lens.

LASIK: Laser in situ keratomileusis.

PRK: photorefractive keratectomy.

BFS: best-fit spheres.

US: Ultrasound.

UCVA: Uncorrected visual acuity.

CCIs: clear corneal incisions.

PCO: Posterior capsular opacification.

LEC: lens epithelial cells.

PACG; Primary angle-closure glaucoma.

LPI: Laser peripheral iridotomy.

ACA: Anterior chamber angle

AOD: Angle opening distance.

ARA: Angle recess area.

TISA: Trabeculo-iris space area.

PDS: Pigment dispersion syndrome.

IOP: Intraocular pressure.

PAS: peripheral anterior synechia.

PKP: penetrating keratoplasty.

PBK: pseudophakic bullous keratopathy.

CED: corneal endothelium distance.

ICA: Iridocorneal angle.

OP-OCT: Ocular coherence tomograph coupled with an operating microscope.

SL-OCT: Slit-lamp ocular coherence tomography

IOFBs: intraocular foreign bodies

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