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ROLE OF OCT IN SHALAKYA PRACTICE (OPTHALMOLOGY)

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ABSTRACT

Background:
Optical Coherence Tomography (OCT) is a diagnostic tool that can perform cross-sectional or tomographic images of biological tissues within less than 10 micron axial resolution using light waves. The operation of OCT is analogous to USG B-mode imaging or radar except that light is used rather than acoustic or radio waves. OCT is specially situated for diagnostic applications in ophthalmology because of the ease of optical access to the anterior and posterior segment of the eye.

Aims & Objectives:
To use OCT in diagnosis of anterior and posterior segment ocular pathology.

Materials and Method:
According to the target area the mode of OCT is for the diagnosis of ocular pathology.

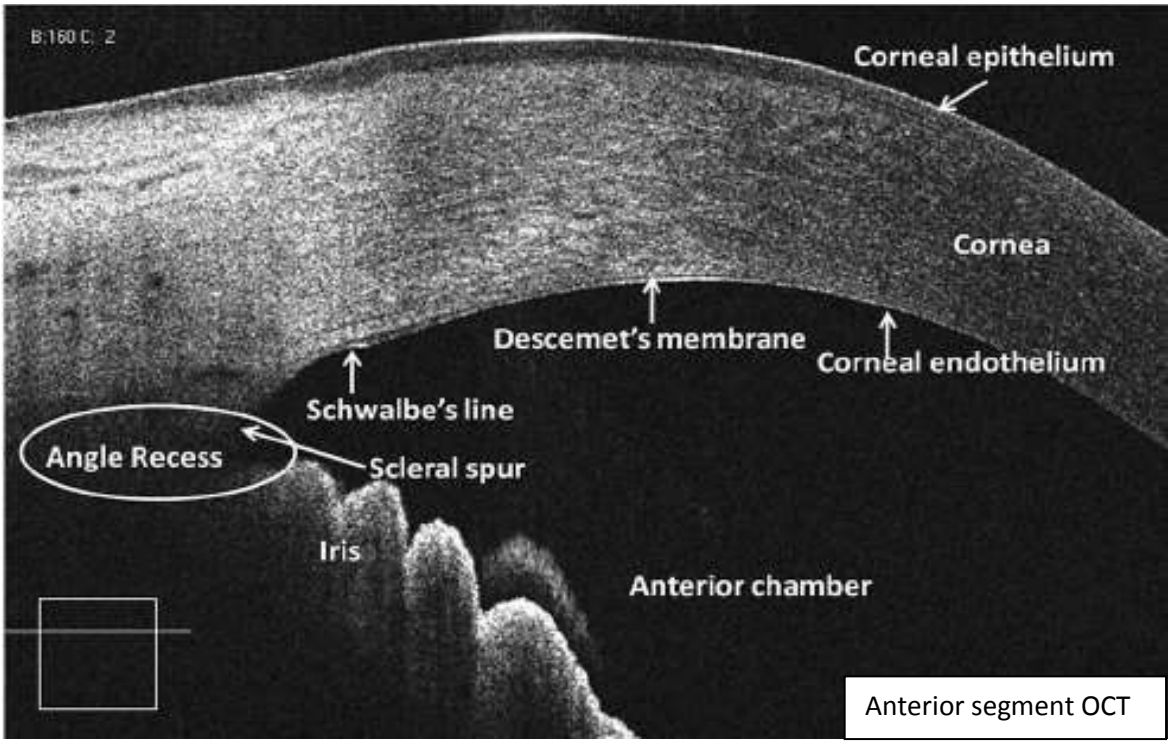
Results:
The diagnostic Optical Coherence Tomography provides accurate diagnostic data for anterior & posterior segment ocular pathology.

Conclusion:
Optical coherence tomography is a highly advanced form of ocular diagnostic tool for the early diagnosis of ocular pathology of Retina, ONH and RNFL.

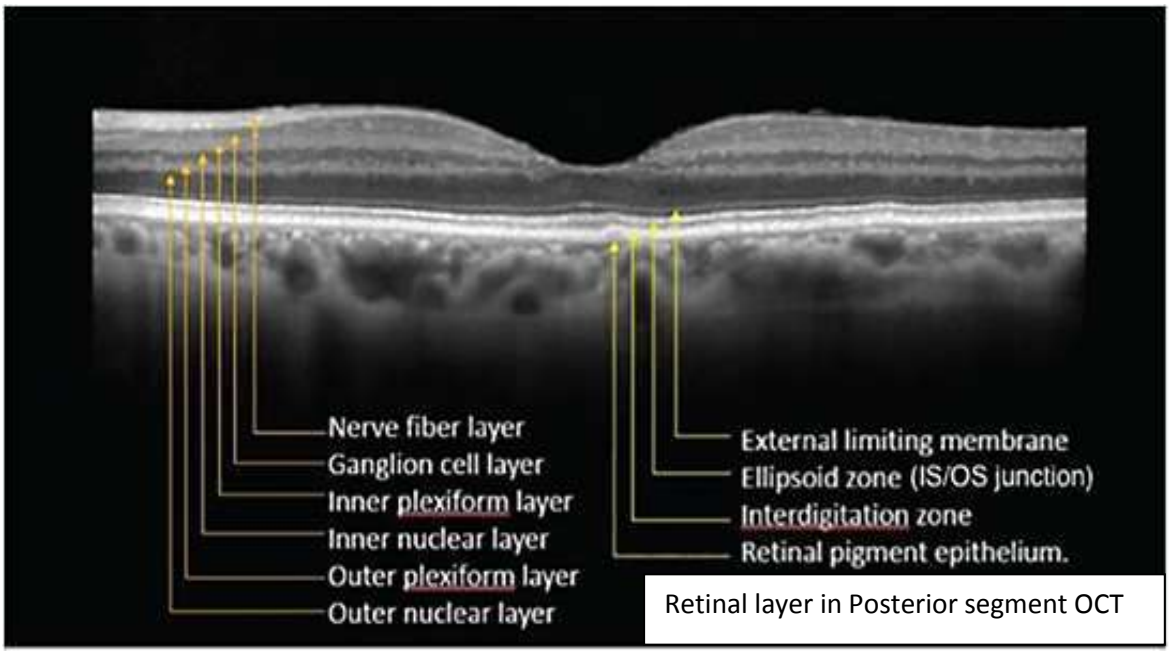
INTRODUCTION

Optical Coherence Tomography (OCT) is a diagnostic tool that can perform cross-sectional or tomographic images of biological tissues. It utilizes light waves of <10 micrometer axial resolution The operation is similar to USG B-scan or RADAR except instead of acoustic or radio waves , it utilizes low coherence light.OCT is especially designed to study a cross sectional image of the anterior and posterior segment of the eye with a high resolution, similar to histological section.

Anterior segment OCT allows assessment of Cornea, Irido-corneal angle, Iris, Ciliary body, Lens and any neoplasm. Similarly posterior segment OCT allows assessment of retinal pathology as well as Retinal Nerve Fibre Layer & Optic Nerve Head study for glaucoma and its progression.



Anterior segment OCT



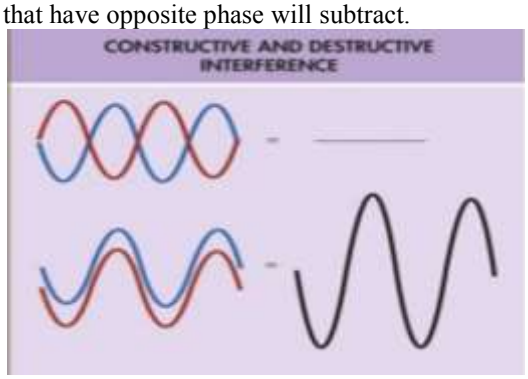
Retinal layer in Posterior segment OCT

TYPES: There are four types of medical diagnostic OCT used in ophthalmology.

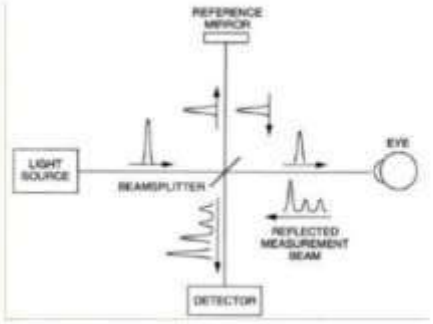
- Time domain OCT
- Frequency domain OCT
- Specially encoded frequency domain OCT
- Time encoded frequency domain OCT

PRINCIPLE OF OCT

- Interferometry is the technique of superimposing (interfering) two or more waves, to detect differences between them.
- Interferometry works because two waves with the same frequency that have the same phase will add each other while two waves that have opposite phase will subtract.



- Light from a source is directed onto a partially reflecting mirror and is split into a reference and a measurement beam.
- The measurement beam reflected from the specimen with different time delays according to its internal microstructure.
- The light in the reference beam is reflected from a reference distance which produces a variable time delay.
- The light from the specimen, consisting of multiple echoes, and the light from the reference mirror, consisting of a single echo at a known delay are combined and detected.

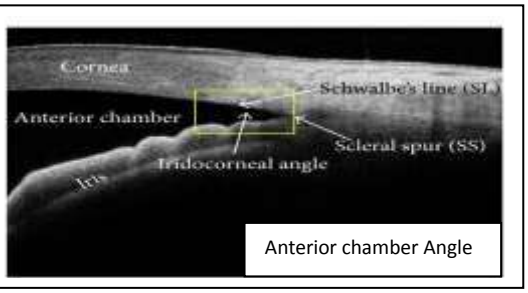


Application of Anterior segment OCT

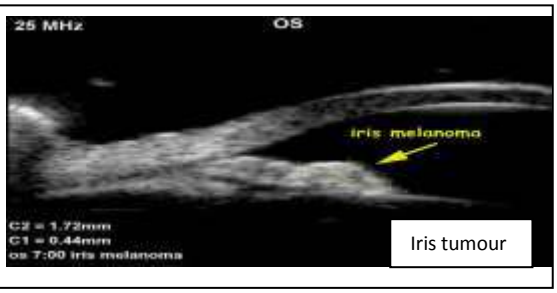
- Anterior segment imaging using OCT was first demonstrated in 1994 by Izatt
- Anterior segement OCT uses light with a higher wavelength of 1310 nm
- Anterior segment OCT with higher wavelength of 1310 nm is better suited for AC angle imaging due to reduced scattering which ensures better penetration through ocular structures like the sclera and the iris and hence more detailed AC angle morphology can be detected.

Indication of Anterior segment OCT

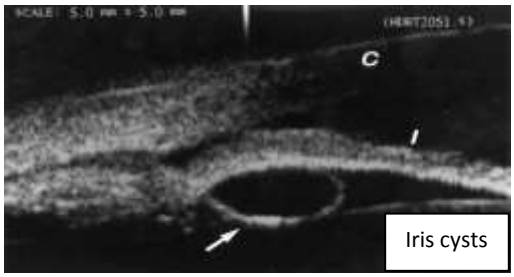
1. Imaging of Anterior chamber angle
2. Iris tumour
3. Iris cysts
4. Ciliary body tumour
5. Ciliary body cysts
6. Ciliary body detachments
7. Corneal pathologies
   - Corneal dystrophies
   - Corneal degenerations
   - Corneal ulcers
   - Keratoconus
   - Descemets detachment
8. Glaucoma



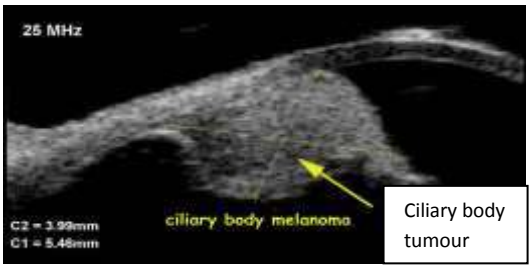
Anterior chamber Angle



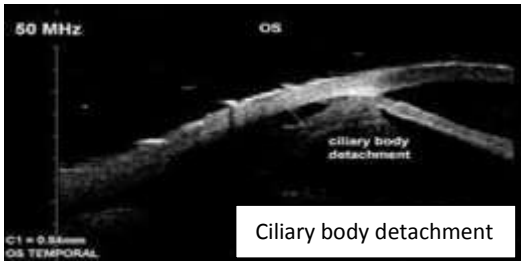
Iris tumour



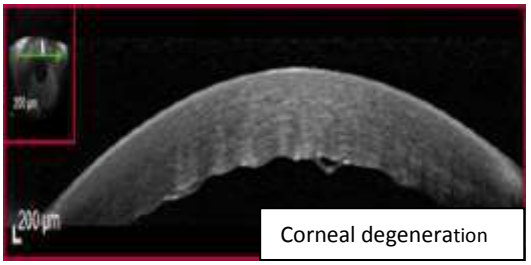
Iris cysts



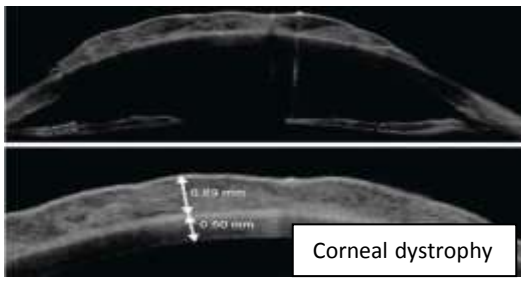
Ciliary body tumour

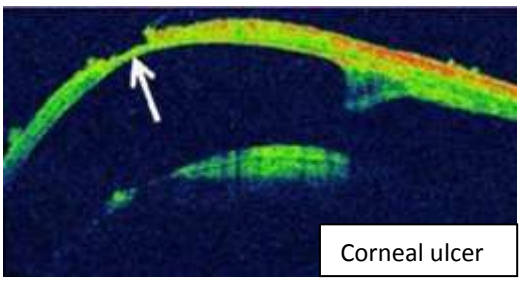


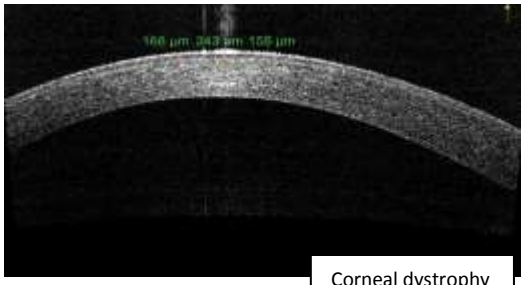
Ciliary body detachment

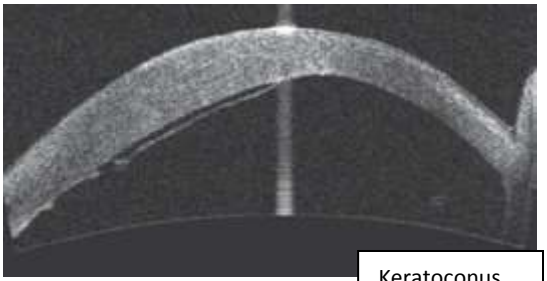


Corneal degeneration


Corneal dystrophy


Corneal ulcer


Corneal dystrophy

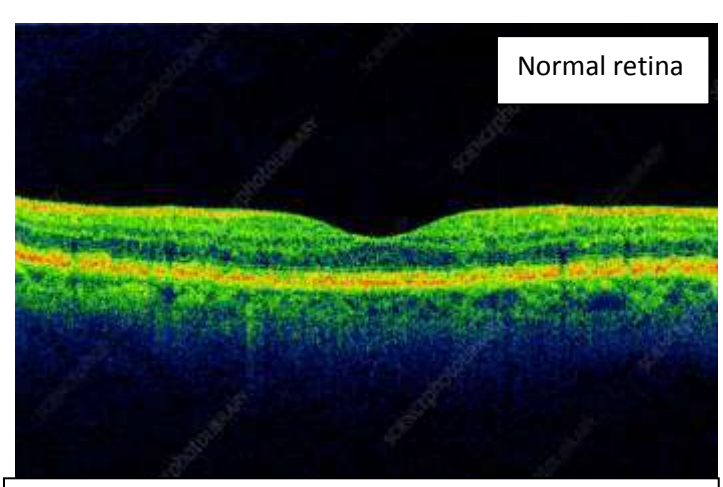

Keratoconus

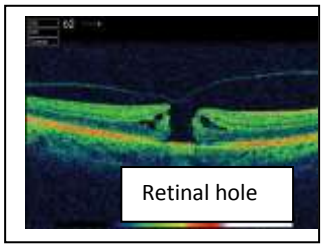
Application of Posterior segment OCT

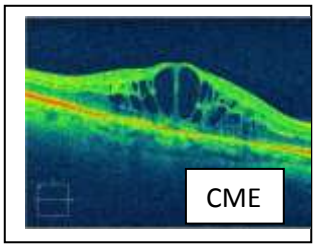
- Posterior segment OCT uses a lower wavelength of 830 nm.
- Posterior segment OCT is very useful in diagnosing macular pathologies.
- Posterior segment OCT is very useful in diagnosing and monitoring the glaucomatous changes
- Posterior segment OCT is also useful in evaluating thr RNFL for early glaucoma detection.

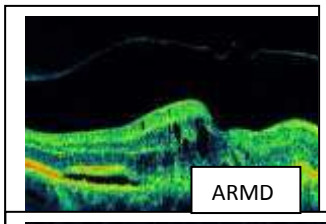
Indication of Posterior segment OCT

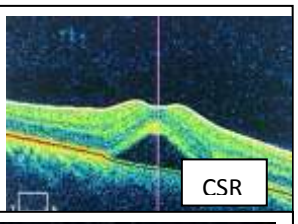
1) Cystoid macular edema
2) Macular hole
3) Age related macular degeneration
4) Central serous retinopathy
5) Epiretinal membrane

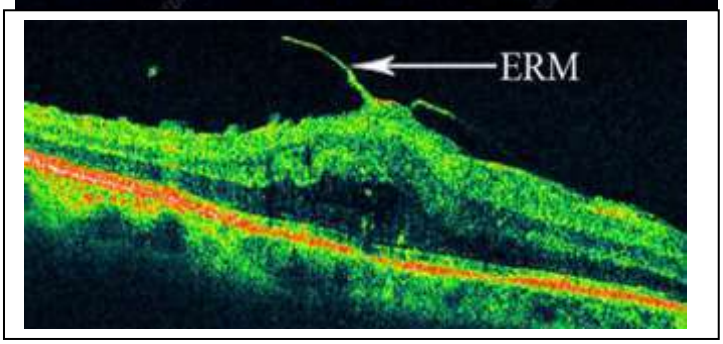


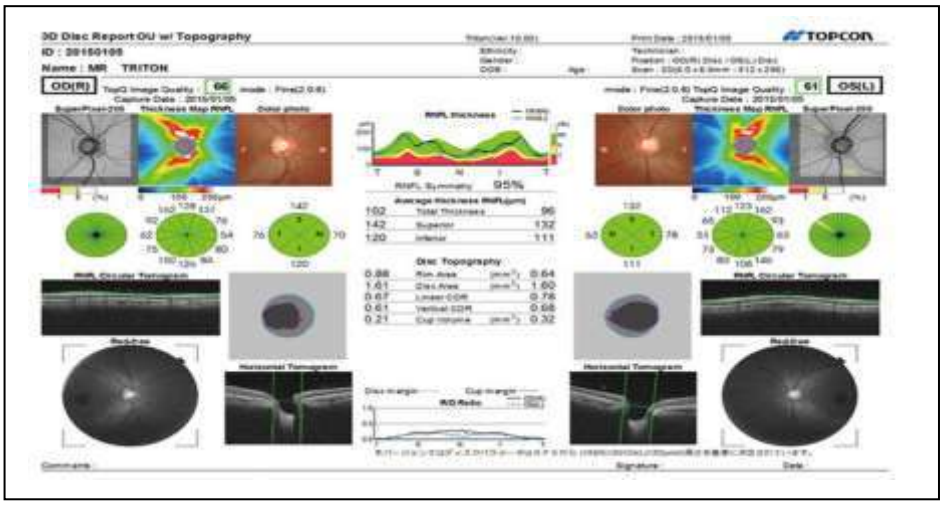


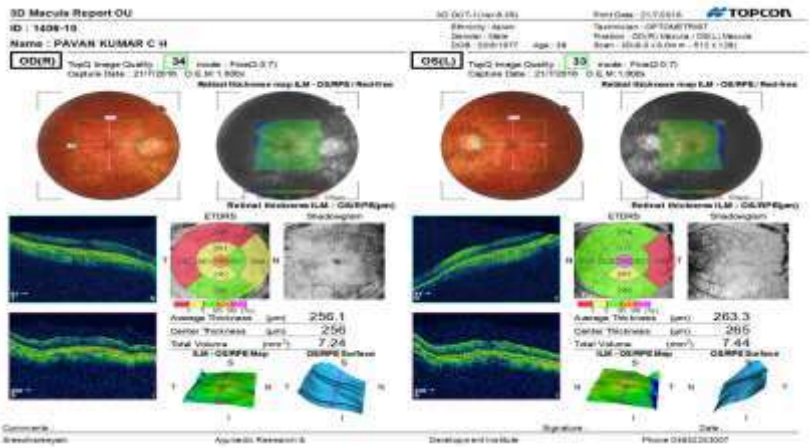












CONCLUSION

OCT has shown great promise as a diagnostic tool in Clinical ophthalmology. The ultra high resolution and ultra high speed system can provide real time, dynamic and diagnostically relevant information. Image information is available immediately without the need for excision and histologic processing of a specimen.

REFERENCES

1. *Comprehensive OPTHALMOLOGY Fifth edition Arjun K Khurana, Bhawna Khurana Page 522 & 523*
2. *https://www.slideshare.net > JagadishDukre*
3. *https://www.slideshare.net*

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