Summary and Conclusion

Optical coherence tomography provides high-resolution cross-sectional images of macular pathology in vivo. Owing to its noninvasive noncontact nature and use of near-infrared illumination of the fundus, it is well tolerated by patients. The images can be obtained without dilation and are highly reproducible, quantifying retinal thickness with an axial resolution of 10um. These qualities make OCT a powerful diagnostic tool complementary to fluorescein angiography, photography, and biomicroscopy.

Optical coherence tomography has proved to be particularly useful for the clinical evaluation of vitreoretinal interface disorders and alterations of the structural anatomy of the macula, such as from edema, choroidal neovascularization, and detachment of the neurosensory retina or RPE. The information obtained from high-resolution evaluation of retinal anatomy allows the diagnosis of conditions that are difficult to establish with biomicroscopy or angiography and improves the clinician's ability to make the optimal treatment decision. The quantitative assessment of OCT allows an objective means to monitor disease progression and therapeutic response.

Retinal thickness is an important consideration in the assessment of many macular diseases. The high axial resolution of OCT combined with the well – defined contrasts in reflectivity at the anterior and posterior boundaries of the retina make OCT uniquely suited for measurement of this parameter.

Retinal thickness may be increased with edema. The accumulation of intraretinal fluid will lead to both an increased retinal thickness, and also a change in the scattering properties of the tissue. An important location to measure retinal thickening is directly in the fovea, where edema can have a profound effect on visual acuity, this type of measurement can be particularly useful in tracking patients with macular edema due to diabetic retinopathy.

A logical application of this technology is the evaluation of underlying macular pathology. OCT is a uniquely powerful means of visualizing retinal morphology and pathology that may not be revealed using current techniques of biomicroscopy, fluorescein angiography, or B-scan ultrasonography, and serves as the newest adjunct in diagnostic technology.