Summary

UBM now allows structural details of the angle, visualization of the area posterior to iris and ciliary body, and to quantify precisely the anatomic relations among the anterior segment structures. It provides a view of subsurface structures in their normal relationships without the distortion that occurs with preparation of histological specimens.

A brief basic introduction to ultrasound and its propagation in tissues has been presented. The wave nature of ultrasound is similar, in many respects, to optical radiation, in that it obeys the fundamental laws of reflection and refraction. This means that it is possible to focus ultrasound to achieve beam widths on the order of 20 to 80 μm in the frequency range from 40 to 80 MHz. This achieves approximately 10 times the resolution achieved at conventional ophthalmic ultrasound imaging frequencies. Because losses due to attenuation increase almost linearly with frequency, the total imaging depth is significantly reduced, leading to penetration of only 4-5 mm.

The **UBM** examination has many similarities to other types of B-scan ultrasound examinations. The technique of placing the transducer opposite the area of interest and using fine manipulations of the probe with reference to the screen image to produce optimal ultrasonic sections is similar to that used with conventional ultrasound. The main differences are the presence of a moving transducer without a covering membrane, the necessity for a water bath technique, the finer movements required, and a relatively short working distance.

This study aimed to report the quantitative changes in the anterior segment configuration by using **UBM** following phacoemulsification and implantation of 1-piece and 3- piece IOLs in high myopia. Group (A) included high myopes who received 1- piece IOLs and group (B) included those who received 3- piece IOLs. **UBM** was done preoperatively and at 1, 3 months postoperatively.

The results of this study confirmed that significant changes in the anterior segment dimensions have taken place after surgeries .These changes include anterior chamber deepening, increase in AOD 500 µm from scleral spur and increase in TIA (i.e. widening of the angle). Moreover, no statistically significant between - group difference was found on comparing preoperative and postoperative measurements.

Another important aim of this thesis is to study the relationship between the diameters of the enlarged capsular bags of the highly myopic eyes and those of the implanted IOLs. Postoperatively; IOL and capsular bag diameters were measured and the correlation between them was found to be statistically significant in each group. Also, a statistically significant between - group difference was found on comparing the measurements of the IOL diameters. The statistical analyses performed in this study point to lack of fitting of both types of IOLs in relation to the enlarged capsular bags. It also shows that 3- piece IOLs appear to be better anatomically fitting in the capsular bags than the 1- piece IOLs.

"Does one – diameter IOL fit all capsular bags?" is an important question which needs many future studies to be answered correctly.