INTRODUCTION

Ophthalmology has traditionally been the field with prevalent laser applications in medicine. The human eye is one of the most accessible human organs and its transparency for visible and near –infrared light allow optical techniques for diagnosis and treatment of almost any ocular structure **(Bille,2008).**

Femtosecond laser is ultrafast infra-red laser with wave length equal 1053 nm, and is transparent to cornea . It thus can resect only targeted tissues leaving surrounded tissues unaltered.**(Sarayba et al;2005).**

By induction of non linear absorption processes, the laser can be used to perform intrastromal cuts, thus the conventional microkeratome, associated with numerous potential side effects, can possibly be replaced**(Soonga and Malta;2009)**.

Although its major use at present is in the cutting of laser in situ keratomileusis flaps, The laser has proven its versatility in laser-assisted anterior and posterior lamellar keratoplasty, cutting of donner buttons in endothelial keratoplasty, customized trephination in penetrating keratoplasty, tunnel creation for intracorneal ring segments, astigmatic keratotomy, and corneal biopsy. Current laboratory studies include all femtosecond laser refractive keratomileusis surgery, cutting corneal pockets for insertion of biopolymer keratoprostheses.**(Soong and Malta;2009).**

The use of femtosecond laser in LASIK is effective and safe procedure with less corneal high-order aberrations resulting in better uncorrected

visual acuity and contrast sensitivity**(Montes-Mico et al; 2007).**

Also the use of femtosecond laser in the treatment of presbyopia is currently under research and gaining steps everyday**(Blum et al 2006)** .

Femtosecond laser photodisruption of the ocular lens yields a self-limited lesion with bubbles that resolve with time. In living animal eyes, no cataract formation was found with no loss of lens function or induced light scatter after 3 months. These results suggest that the use of a low energy femtosecond laser might be safe when modifying the lens for correction of presbyopia**(Krueger et al;2005).**

Femtosecond laser technology seems to offer a promising approach to minimally invasive posterior keratoplasty (femto-PLAK), used in corneal endothelial diseases, through small tunnel incisions. Femtosecond laser enables the surgeon to cut cornea non mechanically with cutting accuracy of ±10 microns**(Seitz et al;2003).**

Penetrating keratoplasty can be performed with femtosecond laser safely and accurately. The postoperative outcome was uneventual **(Holzer et al;2007).**

Femtosecond laser enhanced by indocyanine green can be used for photodynamic therapy because of effective closure of corneal neovascularization at a low energy level**(Bindewald et al;2004).**

Advances in femtosecond laser technology continue to improve it's

safety, efficiency, speed, and versatility in corneal surgery**(Soonga and malta;2009).**