

MEASURING CORNEAL PACHYMETRY WITH A ROTARY SCANNING SYSTEM

Sandra Franco¹, José B Almeida¹ and Manuel Parafita²

1. Physics Department, Universidade do Minho, Portugal.
2. Department of Surgery (Ophthalmology), Universidad de Santiago de Compostela, Spain.

Authors:

Sandra Franco, Member of Faculty

José Borges de Almeida, PhD, Member of Faculty

Manuel Parafita, PhD, Member of Faculty

Corresponding author:

Sandra Franco

Physics Department, Universidade do Minho

Campus de Gualtar

4710-057 Braga

PORTUGAL

Tel: +351253604067, Fax:+351253678981, E-mail: sfranco@fisica.uminho.pt

ABSTRACT

Purpose: Recently the authors presented a technique that allows the measurement of the corneal thickness along a vertical meridian from optical sections obtained using a slit lamp microscope.

The aim of this paper is to present a new system that allows a rotary scanning of the cornea and consequent measurement of the corneal thickness along any meridian.

Method: The cornea is illuminated with a light beam which is previously expanded in a fan by a small cylindrical lens rotated on a plane containing axis to explore all the cornea. The light diffused by both corneal surfaces is collected by two video cameras placed at an angle with the light beam. The axis of the two cameras define with the visual axis two planes normal to each other.

Results: The corneal thickness along two perpendicular meridians was measured from optical sections obtained with the new system. The algorithm to compute the thickness was the same already presented with few changes.

Conclusions: With this system we expect to be able to measure the topography and thickness along an arbitrary meridian. The rotary scanning of the cornea is mechanically simple and will eventually allows automated scanning.