

Session 2-E: Cornea: Corneal Surgery

Title: Preparation of Donor Lamella Tissue for Deep Lamellar Endothelial Keratoplasty with Artificial Anterior Chamber System

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Purpose: To measure endothelial cell loss and predictability of tissue thickness after preparing donor lamellar graft tissue for deep keratoplasty with an artificial anterior chamber and microkeratome.

Methods: A microkeratome set at 350 micron depth and 9mm diameter was used to obtain ten lamellar lenticules from corneoscleral rims mounted in an artificial chamber. A punch trephine then was used to cut the donor tissue 7 mm in diameter. Specular microscopy was performed to evaluate endothelial cell density before the procedure, after cutting with the microkeratome, and after trephination. Pachymetry was performed to determine the predictability of lenticule thickness, before the procedure and after microkeratome incision.

Results: Mean post microkeratome endothelial cell loss was 72 (SD 121.8) and post punch trephination was 109.1 (SD 83.0). This represented a mean percentage loss of 2.9 and 4.4 for the due the respective steps of this procedure. Eight of the ten lenticules were cut within +/- 75 microns of the intended 350 micron thickness.

Conclusions: Preparing donor lenticules for deep lamellar endothelial keratoplasty with a microkeratome with artificial chamber system caused a relatively small loss of endothelial cells and with a consistent thickness. This may have advantages over manual preparation techniques.