Effects of ECCE on corneal structure and function: Manual expression versus Phaco-Emulsification

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Abstract

Phaco-emulsification (PEm) is becoming the preferred method for extracapsular cataract extraction (ECCE). We compared the changes in corneal hydration control (CHC) and endothelial cell count (ECC) following PEm and manual expression of the nucleus (NEx).

Twenty two (22) subjects (34 eyes), with cataract and no corneal pathology underwent ECCE. Seventeen (17) eyes received PEm and 17 NEx. The same surgeon performed all procedures using visco-elastics, BSS-plus irrigation fluid, and capsular bag implantation. CHC was estimated by monitoring the exponential rate of corneal thickness recovery following induced edema, expressed in percent recovery per hour (PRPH). Pre-operative measurements were done 1-17 weeks before surgery while all post-operative readings were taken 3-4 months after surgery. All 34 procedures were umcomplicated. Changes in PRPH and endothelial cell counts (ECC) for the 17 eyes which received PEm were -3.5 + 15.5%/hr. and 193 + 397 cell/mm^2 vs., -5.2 + 10.2 %/hr and 131 + 198 cell/mm^2 for the NEx procedure. Comparison of the changes in PRPH and ECC between the 2 procedures was not significant. ($P > 0.10$). These data provide quantitative information on changes in corneal structure and function following ECCE procedures. However, in patients who have a low pre-operative PRPH value (i.e. Fuchs'dystrophy), a 7-11%/hr decline in PRPH may be sufficient to place the patient at risk for corneal decompensation.

Ref 1: Polse KA, Brand RJ, Mandell, RB & Flom R: Age Differences in Corneal Hydration Control. Invest Ophthalmol & Vis Sci, 30(3): 1989

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