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Corneal endothelium damage after phacoemulsification surgery: A specular microscopy study**Raghda Faisal Abdelfatah Mutwaly**
Al-Neelain University, Sudan**Aim:** The study aimed to evaluate the effect of phacoemulsification surgery on corneal endothelium cells.

Material & Methods: This prospective cross-sectional study was conducted in Al-Neelain University Eye Hospital at the faculty of optometry and visual sciences in 200 patients from August to October 2016. The study protocol was approved by the ethical committee of the scientific research deanship at Al-Neelain University. All patients had senile cataract and underwent phacoemulsification surgery in one eye; their age was 50 years or more. Patients should have endothelium density more than 1000/mm². Patients with history of systemic disease and ocular trauma should be excluded from the study. A comprehensive clinical examination was performed before cataract surgery and one month after surgery; the examinations were included measurement of visual acuity, outer eye examination and assessment of corneal endothelium cells and central corneal thickness. Then data was analyzed by using statistical package of social sciences (SPSS 20). Descriptive statistics were performed and t-test was used to find correlations between measurements pre and post-surgery.

Results: The study revealed that endothelium cell density was 2178.1±463.9/mm² before surgery which decreased to 1162.8±519.5/mm² after surgery with significant difference (P=0.000). Cell number also decreased from (53.24±26.11) pre-surgery to (31.21±20.38) post-surgery (P=0.000). However, the variation between cells size pre-surgery (39.45±12.03) and post-surgery (37.83±15.85) had no significant difference (P=0.521). Furthermore, hexagonality was decreased from 38.26±17.28% pre-surgery to 25.74±24.6% post-surgery with a significant differences (P=0.001). Also, the central corneal thickness showed no significant difference pre-surgery (473.4±27.8µm) and post-surgery (478.7±66.16 µm) (P>0.05).

Conclusion: Phacoemulsification damaged more than half of corneal endothelium cells. It also reduced hexagonality and cell number of endothelium.

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