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Observation of Influence of Cataract Surgery on the Ocular Surface

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Introduction: To evaluate meibomian gland function, changes of lacrimal tears and ocular surface parameters and tear inflammatory mediators following cataract surgery.

Methods: 48 eyes of 34 patients who underwent uncomplicated phacoemulsification were involved and divided into 2 groups with those who had preexisting dry-eye before cataract surgery and those who did not. Ocular symptom score, Schirmer I test, tear film break-up time (TBUT), corneal sensitivity threshold, corneal staining, inflammatory cytokine activities, lid margin abnormalities, meibum expressibility, meibum quality and meibomian gland imaging were evaluated preoperatively, at 1 day, 1 and 2 months postoperatively.

Results: Ocular symptom scores were worse at 1 and 2 months postoperatively but, TBUT, corneal staining score and corneal sensitivity threshold showed gradual improvements at 1 month and 2 months postoperatively ($p < 0.05$, respectively). Interestingly there were statistically significant improvements in TBUT, corneal staining score and corneal sensitivity threshold at 1 month postoperatively when topical eye drops were used compared to the period without topical therapy which is the months 2 postoperatively. There were statistically significant decreases in IL-1 β , IL-6, IL-8, MCP-1, TNF- α and IFN- γ concentrations at 1 and 2 months postoperatively. Lid margin abnormalities, meibum quality and expressibility scores increased significantly ($p < 0.05$, respectively) at postoperative period. Compared with the no dry eye group, dry eye group revealed significantly higher ocular symptom scores, lower TBUT, higher lid margin abnormalities, meibum quality and expressibility scores after cataract surgery. There were significant correlations between IL-6 and parameters of dry eye, and between MGD parameters and ocular symptom scores.

Conclusions: Our study revealed that meibomian gland function is influenced after cataract surgery accompanying structural changes and these were correlated with increased ocular symptom scores. Therefore, it could elucidate the development of dry eye related to cataract surgery.

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