

The Magnitude of IOP Elevation Associated with Eye Rubbing

Turner DC (1) , Girkin CA (2) , Downs JC (3)

1 Department of Vision Sciences, School of Optometry, University of Alabama at Birmingham, Birmingham, Alabama, USA.

2 Department of Ophthalmology and Visual Sciences, School of Medicine, University of Alabama at Birmingham, Birmingham, Alabama, USA.

3 Department of Ophthalmology and Visual Sciences, School of Medicine, University of Alabama at Birmingham, Birmingham, Alabama, USA. Electronic address: cdowns@uab.edu.

To determine the magnitude of IOP elevation associated with eye rubbing

STUDY DESIGN: Experimental Study

SUBJECTS: Three nonhuman primates (NHPs)

METHODS: Three young adult male rhesus macaques were briefly anesthetized with ketamine and dexmedetomidine, and antibiotic ointment was placed in both eyes. The anesthetic was immediately reversed with atipamezole, and the animals quickly recovered. IOP was continuously recorded at 500 measurements per second during the experiment using a validated implantable wireless telemetry system; high-definition video was recorded while the NHP rubbed its eyes to remove the ointment, and rubbing events were marked in the IOP data. The experiment was repeated four times in each NHP, with numerous eye rubs recorded for each session, and these data were marked and the IOP elevation magnitudes were analyzed using NOTOCORD-hem software.

MAIN OUTCOME MEASURES: IOP elevation above baseline IOP due to eye rubbing

RESULTS: IOP increased as much as 310 mmHg due to eye rubbing. The largest IOP elevations were associated with rubbing the eye and orbit with the back of the hand or wrist, rather than the fingers or knuckle. Eye rubs elicited mean IOP elevations of 80-150 mmHg above baseline for 3-4 seconds, with peak IOP elevations reaching 310 mmHg.

CONCLUSIONS: Rubbing the eyes causes momentary IOP elevations that average 109 mmHg above baseline IOP and can exceed 300 mmHg above baseline IOP in NHP eyes.

Ophthalmology. 2018 Aug 25. pii: S0161-6420(18) 32175-4. doi: 10.1016/j.ophtha.2018.08.025.

<http://www.ncbi.nlm.nih.gov/pubmed/30153437>