

Commentary: Nearwork-induced transient myopia – Is this the game changer?

Laser vision correction (LVC) facilitates induction of abrupt emmetropization in previously ametropic eyes. This refractive procedure also alters the amount of accommodative response required for daily activities and may lead to asthenopia and difficulties in near work. In a study, 72% patients developed mild asthenopia in the first week after LASIK (laser-assisted *in situ* keratomileusis), which decreased to 44% by the end of 1 month, 3% at 6 months, and none after 9 months, pointing to a constant binocular adaptation process of the accommodative apparatus and the nervous system.^[1]

One of the primary causes of asthenopia could be near-induced transient myopia (NITM) or temporary pseudomyopia. It is the distance blurring while changing view from near to far, after prolonged near work. NITM is one of the many possible environmental-based, myopiogenic near-work contributory factors by inducing temporary retinal defocus, leading to axial elongation, thereby resulting in low degrees of axial permanent myopia and/or myopic progression.^[2] This has been found to be higher in myopes than in emmetropes or hyperopes.^[3] Both the early-onset myopes (EOMs) and late-onset myopes (LOMs) demonstrated larger NITM and its additivity than the emmetropes. The EOMs also exhibited prolonged decay of NITM compared with the emmetropes and LOMs.^[3] Progressive myopes exhibited additivity of NITM, whereas the stable myopes did not. This may be due to the impaired sympathetic function in the subjects with myopia. It is speculated that with repeated cycles of near work, residual NITM may contribute to the progression of permanent myopia.^[3]

The current published study is the first to report a range of accommodative and vergence parameters, including NITM pre- and post-LASIK surgery.^[4] Preoperative readings were taken wearing contact lenses, to remove the impact of spectacle lens effectivity while measuring accommodation. The findings suggest that NITM magnitude is significantly reduced along with other changes in accommodative parameters following LASIK surgery.

Postoperative accommodative problems have been reported with photorefractive keratectomy and small-incision lenticule extraction too.^[5,6] The authors suggest that the findings in this study probably could be extrapolated to those procedures too.

In the light of these results, it would be prudent to carry out a thorough preoperative evaluation including measurement of binocular function and accommodation parameters prior to cycloplegic refraction for LVC. Appropriate pre- and postsurgical counseling is advised to let patients have realistic expectations from the procedure and help in coping up with the temporary asthenopic symptoms (especially in those with long-term spectacle use). Also, any further treatment decisions for binocular vision complaints should be postponed to at least 3 to 6 months postoperatively. NITM could also have a possible role as a marker of myopic progression/regression after LVC. It might enable the identification of dysfunctional eyes prone to destabilization after surgery. Longitudinal studies investigating accommodative function after LASIK are ongoing. The effect of age on NITM can also be investigated. It would be interesting to know the influence of accommodation on aberrations, according to different refractive errors, by analyzing pre- and postoperative wavefront data aimed at further optimizing LVC.

Various possible treatment modalities suggested to minimize the induced asthenopic symptoms are accommodative facility

training, vision therapy, powered glasses for near work, aspheric contact lenses and orthokeratology options, targeted drugs, tailored distance, and near-work schedules.^[7]

In the present COVID-19 (coronavirus disease 2019) scenario, our dependence on visual display units and the amount of near work has gone up considerably and may lead to increased stress on our accommodative apparatus. These extended periods of near work and NITM additivity may possibly cause destabilization or progression of myopia in susceptible individuals and hence needs to be looked into through further studies.

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