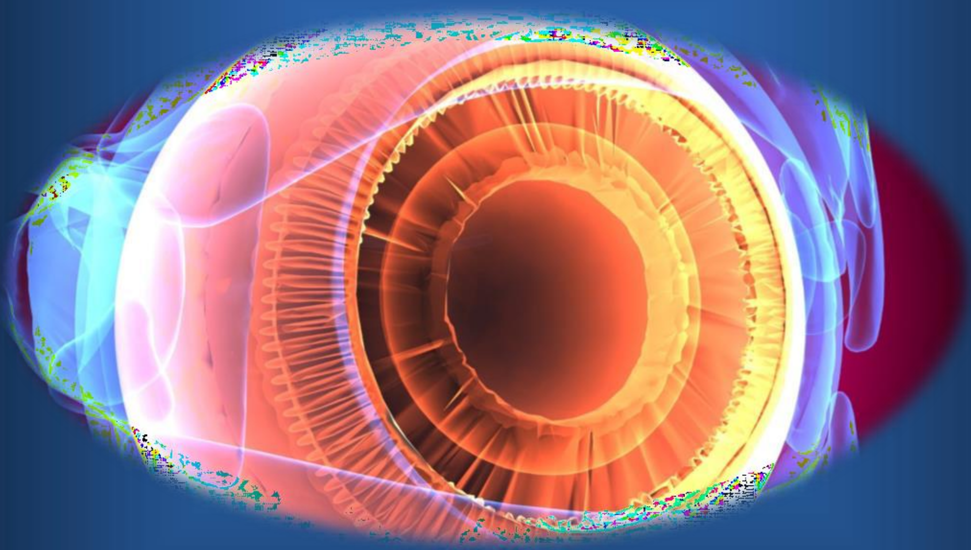
Ophthal Focus

Vol 1 | Issue 7|2020



Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you **'Ophthal Focus'** which contains latest and interesting news in the field of Ophthalmology.

This issue contains

- Parafoveal atrophy after human amniotic membrane graft for macular hole in patients with high myopia
- Digital Screen Time During COVID-19 Pandemic: Risk for a Further Myopia Boom?
- Microcystic Macular Edema in Optic Nerve Glioma

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Limited

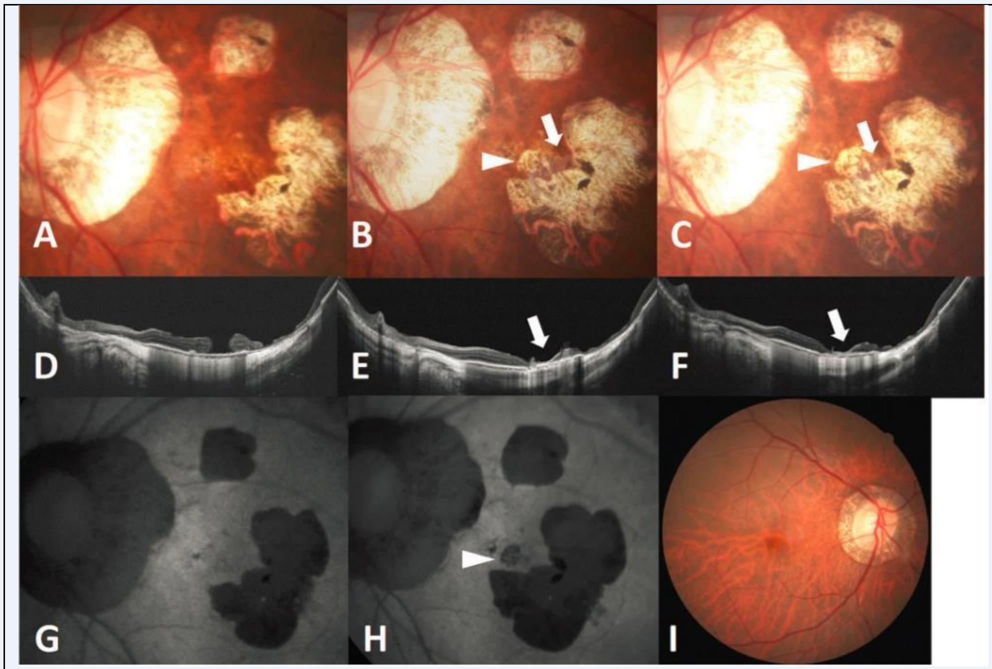
Parafoveal atrophy after human amniotic membrane graft for macular hole in patients with high myopia

Macular hole (MH) with or without retinal detachment (RD) is one of the complications of high myopia.1 Although the pathogenesis of highly myopic MH is not clearly elucidated, it is thought to differ from that of idiopathicMHin the nonmyopic eyes and involve the tangential and anteroposterior tractions. This study was done to report the surgical outcome and postoperative hypopigmented change around fovea among patients with high myopia who received human amniotic membrane (hAM) graft transplantation for macular hole (MH).

Parafovea atrophy, a rare complication in the conventional MH surgery, was observed in 40% of eyes with highly myopic MH after hAM graft transplantation

This retrospective, interventional case series included 10 eyes of 10 consecutive patients (5 (50%) male) with high myopia (axial length over 26.5 mm) who received hAM graft to treat persisted or chronic MH with or without retinal detachment in two hospitals. Postoperative parafoveal atrophy was identified with colour fundus picture and structure optical coherent tomography. Baseline characteristics and short-term visual outcome were analysed.

The preoperative mean (±SD) axial length and MH diameter were 29.9 (±1.8) mm and 881.8 (±438.5) µm, respectively. After hAM transplantation, seven (70%) eyes had complete MH closure and the mean best-corrected visual acuity (BCVA) improved from 1.26 (±0.48) logarithm of minimal angle of resolution (logMAR) before operation to 1.11 (±0.44) logMAR on the last visit (p=0.074). Patchy atrophy-like depigmentation developed around the MH lesion in four (40.0%) eyes as early as in the first month after surgery. None of them had visual worsening. In terms of demographics, axial length, MH size, ocular history, preoperative BCVA and postoperative BCVA, there was no significant difference between those with and without the parafoveal atrophy. No graft rejection and inflammation happened during the follow-up. Parafovea atrophy, a rare complication in the conventional MH surgery, was observed in 40% of eyes with highly myopic MH after hAM graft transplantation. The pathogenesis and long-term consequence need further investigations.



Colour fundus pictures (A–C), optical coherence tomography (OCT) images (D–F) and fundus autofluorescence (FAF) images (G, H) of a persistent macular hole in a 70-year-old female with an axial length of 27.86 mm. Preoperative fundus photography (A) shows preexisting patchy chorioretinal atrophy over the posterior pole. Myopic macular hole is visible on preoperative OCT image (D). FAF shows obvious hypoautofluorescent areas of preexisting patchy chorioretinal atrophy (G). Fundus photography 1 month after surgery (B) shows new-onset parafoveal atrophy (arrowhead) which develops partially beneath the human amniotic membrane (hAM) graft (arrow) and near the preexisting patchy chorioretinal atrophy. Fundus photography 6 months after surgery (C) shows the visible hAM graft and slightly enlargement of parafoveal atrophy. OCT 2 months (E) and 6 months (F) show the hAM graft (arrow) and closed macular hole. There is attenuated hyperreflective band of retinal pigment epithelium and increased signal transmission onto the underlying sclera within the parafoveal atrophy. FAF 3 months after surgery (H) shows the new but small hypoautofluorescent patch (arrowhead) of the parafoveal atrophy. In the fellow eye (I), no parafoveal atrophy happened during the follow-up period

Source: Tsai D-C et al. Br J Ophthalmol Epub ahead of print: [please include Day Month Year]. doi:10.1136/bjophthalmol-2019-315603

Digital Screen Time During COVID-19 Pandemic: Risk for a Further Myopia Boom?

COVID-19 has caused a significant health burden. The world has never experienced the extent and intensity of measures taken to curb the COVID-19 pandemic. Many digital technologies, including Internet of Things (IoT), are currently heavily used in various domains, including digital virtual learning for the children. There is a possibility that a prolonged battle against the COVID-19 virus may lead to an increase in the incidence of myopia by shaping long term behavioural changes conducive for the onset and progression of myopia. This study was done to review the impact of increased digital device usage arising from lockdown measures instituted during the COVID-19 pandemic on myopia and make recommendations for mitigating potential detrimental effects on myopia control.

Close collaboration between parents, schools and ministries is necessary to assess and mitigate the long term collateral impact of COVID-19 on myopia control policies.

Review of studies focused on digital device usage, near work, and outdoor time in relation to myopia onset and progression. Public health policies on myopia control, recommendations on screen time and information pertaining to the impact of COVID-19 on increased digital device use were presented. Recommendations to minimize the impact of the pandemic on myopia onset and progression in children were made.

It may be intuitive to link digital device usage to increased time spent indoors and on near work, thus conferring an increased risk of myopia onset and progression in children. However, current evidence is inconclusive. A large cohort study of 5074 children in Rotterdam (the Generation R study), found an association between increased computer use and myopia at 9 years of age (odds ratio (OR) 1.005, 95% confidence interval (CI) 1.001-1.009). The combined effect of near work, including computer use, reading time and reading distance, increased the odds of myopia at 9 years old (OR = 1.072; 95% CI = 1.047-1.098).17 A study of 418 students found that device recorded smartphone data usage, an objective surrogate for time spent using the smartphone, was independently associated with myopia in a study of 418 students (OR1.08, 95% CI 1.03-1.14).18

In a meta-analysis involving 15 studies with a total of 49,789 children aged between 3 and 19 years old, the authors found that screen time was not associated with prevalent or incident myopia,19 although there were several reasons for the lack of association in this report. First, these studies used self-reported measurements of screen time. This is subject to recall bias and more objective measures of time spent on digital devices is needed. Second, the number of studies included in the meta-analysis was small (5 out of 15 studies). This may have affected the validity of the pooled estimates. Third, there was no proven spike in near work, despite the increase in screen time20, indicating a substitution effect with traditional reading/writing being replaced by educational screen time, while recreational screen time might already have been limited due to the widespread belief that near work causes myopia.

Increased digital screen time, near work and limited outdoor activities were found to be associated with the onset and progression of myopia, and could potentially be aggravated during and beyond the COVID-19 pandemic outbreak period. While school closures may be short-lived, increased access, adoption and dependence on digital devices could have a long term negative impact on childhood development. Raising awareness among parents, children and government agencies is key to mitigating myopigenic behaviours that may become entrenched during this period.

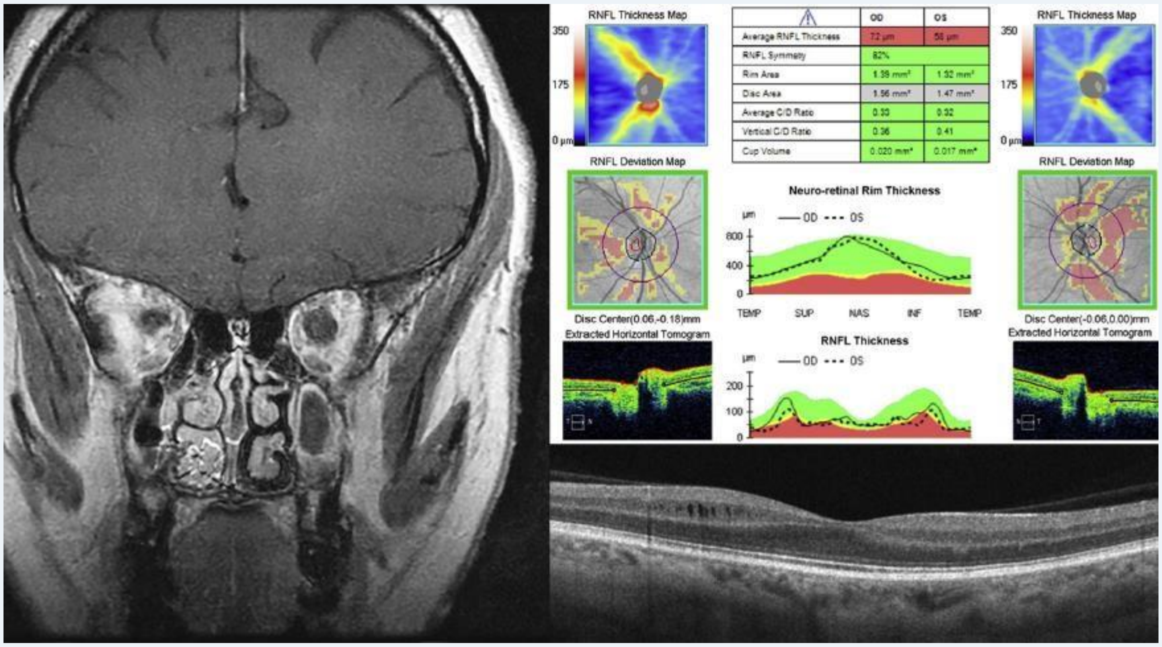
While it is important to adopt critical measures to slow or halt the spread of COVID-19, close collaboration between parents, schools and ministries is necessary to assess and mitigate the long term collateral impact of COVID-19 on myopia control policies.

The unprecedented scale of the COVID-19 pandemic has disrupted our lives beyond recognition. While the world reels from the global impact of COVID-governments are also making adjustments to allow for everyday life to continue, such as the closure of schools with the education of our school children using online platforms. In this regard, digital technology has been immensely beneficial in cushioning the disruption to school education, but it is crucial to be cognizant of the impact of increasing dependence on digital devices. While it is important to adopt strict measures (e.g., lockdown and home quarantine) to slow or halt the spread of COVID-19, multi-disciplinary collaboration and close partnerships between ministries, schools and parents are necessary to minimize the long term collateral impact of COVID-19 related policies on various health outcomes such as myopia, which was already a major public health concern prior to the pandemic.

Source: Wong CW et al. Am J Ophthalmol. 2020 Jul. doi: 10.1016/j.ajo.2020.07.034 [Epub ahead of print]

Microcystic Macular Edema in Optic Nerve Glioma

A 42-year-old woman with neurofibromatosis 1 and bilateral (left larger than right) optic nerve gliomas was seen for an annual ophthalmic examination. Visual acuity was 20/20 right eye and 20/25 left eye with a left relative afferent pupillary defect. OCT demonstrated hyporeflective lesions in the inner left retina termed “microcystic macular edema”; however, this term is a misnomer. The OCT changes represent cystic spaces in the inner nuclear layer resulting from vitreous traction on the Müller footplates preventing the retina from collapsing in the setting of ganglion cell loss from any optic neuropathy.



Source: Bhatti TM et al. Ophthalmology. 2020 July; 127 (7):P930. https://doi.org/10.1016/j.ophtha.2020.03.017