

under pediatric cardiology, infectious disease, intensive care and rheumatology specialists can be designed. As the evidence base for COVID-19 and MIS-C treatment and care management is evolving rapidly, this guidance may change in future.

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Impact of the COVID-19 Pandemic on Retinopathy of Prematurity Practice: An Indian Perspective

The severe acute respiratory syndrome coronavirus 2019 (SARS-Cov-19) associated lockdown in India led to cessation of public transport and routine outpatient department (OPD) services. However, the need to screen to premature babies for retinopathy of prematurity (ROP) continued, with reduction in those actually getting screened. ROP requires urgent treatment and has been listed as an essential medical service during the COVID-19 pandemic by both the American Academy of Ophthalmology and All India Ophthalmological Society [1-3]. We discuss the impact of the COVID-19 pandemic on ROP services experienced at our center.

Impact on ROP screening: Following the guidelines issued by the All India Ophthalmological Society (AIOS) in conjunction with the Vitreo Retina Society of India (VRSI) and the Indian Retinopathy of Prematurity (iROP) Society, we continued to screen premature babies for ROP [2,3]. Being a tertiary care institute, we are the primary referral center for neighboring states. However, given the scarcity of trained ophthalmologists to perform ROP screening, we often end up as the first point of screening for majority of the regional neonatal intensive care units (NICU). There was a decrease in the number of infants screened both in the OPD (396 vs 87; $P=0.001$) as well as in the institute NICU (241 vs 169; $P=0.001$) during similar time periods pre (1st January, 2020 to 23 March, 2020) and post (24 March, 2020 to 31 May, 2020) COVID-19 lockdown. This could primarily be attributed to the lack transport facilities for patients to reach the hospital, despite this being permitted

during the lockdown. In the pre lockdown period, the number of babies screened in the OPD were significantly higher than those screened inside the institute NICU/neonatal nursery ($P=0.001$), which was also reversed during the lockdown period.

Impact on ROP treatment: Laser photocoagulation was increasingly preferred (49 eyes) over intravitreal anti-vascular endothelial growth factor (anti-VEGF) agents (2 eyes) as the primary treatment during the lockdown period. The main reason for this was the finite nature of laser photocoagulation compared to the risk of recurrences with anti-VEGF agents, which requires regular and extended follow-up [4]. We had at least three babies with aggressive posterior retinopathy of prematurity (APROP) who were given anti-VEGF injection prior to lockdown and missed follow-up for two months owing to movement restrictions during lockdown. While the disease regressed in two of these babies, one progressed to develop tractional retinal detachment in both eyes and required surgical intervention. In the pre-lockdown period, all laser treatments (for outborns as well as inborns) were done inside the neonatal nursery/NICU of our institute under monitoring by a neonatologist. This sometimes entailed a wait period of 24-48 hours depending on availability of a monitoring bed in the NICU. During the lockdown, there was shut down of most elective procedures such as cataract surgery. This allowed availability of more operation theatre (OT) tables for emergency procedures. We therefore arranged to perform all ROP interventions in the OT itself with the focus being on same day treatment. A pediatrician was available on call for monitoring in addition to the anesthetist. This helped reduce the contact of outborns with inborns as well as other NICU healthcare professionals in addition to reducing the waiting time. All lasers were performed under topical anesthesia using personal protective equipment as per the AIOS guidelines [2,5].

Impact on surgical rate: The proportion of babies requiring lens sparing vitrectomy (LSV) as the primary intervention increased from 1.1% in the pre-lockdown period to 2.9% in the post-

lockdown period. Majority had stage 4A ROP (1, bilateral stage 4B ROP). Delayed screening, delayed referral and travel difficulties were probably responsible for this advanced presentation. For bilateral cases, immediate sequential bilateral vitreous surgery was preferred over multiple sessions of surgery [6].

Impact on incidence of conjunctivitis: ROP screening and treatment requires frequent contact with the eyelids, both by the ophthalmologist as well as the parents. This increases the chances of conjunctivitis in these babies [7]. Prior to COVID-19 lockdown, 30 babies developed conjunctivitis while on follow up, including a cluster of 24 babies in the institute's NICU/ neonatal nursery. Post-lockdown, this number came down to three. Overall conjunctivitis infection rate reduced from 4.7% to 1.2% ($P=0.01$). This could primarily be attributed to the enforcement of frequent handwashing practices amongst both the doctors as well as the caregivers. We also reduced the points of contact of the baby once in the hospital. All babies for ROP screening were managed at a single dedicated room without going through the general ophthalmic screening OPD. Parents were educated and encouraged to dilate their babies' eyes themselves after performing hand hygiene while in the hospital waiting area. This helped reduce number of contacts with the health care professionals.

Implications for future: There were several important lessons learnt from the above experience. Firstly, there is a need to expand tele-medicine services for ROP throughout the country. Fundus photographs taken by a trained nurse/technician using portable, wide-field camera system scan be sent to a remotely placed expert and advice regarding the urgency of referral can be given. It will also be a good tool to educate parents regarding the condition of their child's eye. Low-cost imaging devices being made available now are a step in this direction [8]. Secondly, there is an urgent need to ensure adequate training for indirect ophthalmoscopy during residency at all medical colleges in the country which would help in bringing out more ophthalmologists who are confident in this field. Thirdly, laser photocoagulation for the treatment of ROP may be a better alternative in these times when there is a doubt on the ability of the patient to follow-up regularly. Lastly, some of the positive habits like frequent handwashing and use of masks may be a boon even in the post-COVID era, if reinforced regularly. They potentially helped reduce the conjunctivitis infection rate in our setting and could have similar implications in other healthcare settings. We hope our experience would assist other centers managing ROP, as we continue to experience the impact of the COVID-19 pandemic.

Acknowledgements: Dr Vipin Rana, Dr Raghunadhan

Ramanadhane, Dr Atul Arora, Dr Uday Tekchandani, and Dr Anchal Thakur for their help in managing ROP patients during the pandemic.

Published Online: September 05, 2020; *PII:* S097475591600240.

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