Commentary: "Indovation" in retinopathy of prematurity management during COVID-19 times

The coronavirus disease-2019 (COVID-19) pandemic has caught many of us off-guard and thrust even the most developed of nations into chaos. While the direct implications of the disease have been much talked about, the collateral damage on patients suffering from non-COVID conditions has been equally severe. Retinopathy of prematurity (ROP) is an ocular emergency and any delay in treatment leads to permanent visual loss in a premature child. However, during the COVID-19 pandemic, lesser number of ROP babies got screened with an increasing proportion of them presenting with advanced disease.[1] Despite effective methods of treatment with laser and surgery, many premature neonates lost vision in the initial days of the COVID-19 lockdown due to late presentation.[2,3] To add to this, the fear of COVID-19 transmission led various doctors to reduce working hours, taking ROP care further away from those in need of it. In these testing times, Nayak *et al*.[4] have come out with a unique 'indovation' – The virus containment box. The basic concept stems from an incubator where ROP screening and laser are provided through the visualization provided by the slanting wall of the incubator.[5] The authors have described a low-cost setup that may be feasible at the level of a general ophthalmologist. While the authors must be applauded for their effort, a little note of caution is necessary here.

Pros and Cons of Barrier Devices

Barrier devices have become a commonplace due to the circumstances of the COVID-19 pandemic. Various designs of barrier devices for procedures such as mechanical intubation/resuscitation have been published over the past few months.[6-9] Some devices even incorporate a negative pressure system to actively eliminate any aerosols that may be generated during the procedure. However, the impact of aerosols generated by a crying baby may not be completely gauged by the 'eye drop bottle' experiment applied by Nayak *et al*.[4] An airborne particle counter with a laser diode and photon detector to detect various sizes of airborne particles may be a better option. Simpson *et al*.[8] utilized the same to test various modifications of barrier devices during simulated intubation. A barrier device with suction to create negative pressure led to a reduction in 0.3, 0.5, 1.0, and 2.5 micron particles but not in the 5.0 micron particles when compared to no device used. On the contrary, a barrier device with no negative pressure actually showed an increase in 1.0, 2.5 and 5.0 micron particle count compared to no device use. The results for 0.3 micron particle size were similar whether any barrier device was used or not. A review of 52 publications describing various barrier devices by Sorbello *et al*.[9] also concluded that barrier devices may only be effective in limiting large droplet spread and not the aerosolised virus particles.

While the aerosol containment barrier device may serve as an adjunct during the COVID-19 pandemic, the importance of adequate personal protective equipment and hand hygiene practices cannot be over stated. They remain our first line of defense in protecting ourselves from the pathogen while providing effective care. Pre-procedure testing before laser/surgery is another way of creating a safe workplace. It is during these procedures that a prolonged exposure is expected. Over the past 6 months, we have been testing all premature infants for COVID-19 by polymerase chain reaction who are to undergo laser/surgery for ROP. From over 100 babies tested, only one has tested positive so far. Thus the overall rate of positivity in neonates appears to be low and this has been substantiated by other studies as well.[10] Adequate availability of personal protective equipment, extensive COVID-19 testing, and an added layer of protection by barrier devices should encourage more and more ROP specialists to continue providing their services safely to prevent an impending pandemic of preventable childhood blindness.

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