Googles Eye Shield & Evaporative Dry Eye

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Evaporative dry eye and aqueous tear-deficient dry eye are the two major sub-types of dry eye. Though self-reported eye complaints and ocular surface alterations have been reported to have a high prevalence (72.3%) in operating room (OR) personnel, incidence of dry eye (evaporative or aqueous tear-deficient) in OR personnel is unclear. We hereby self-report the incidence of possible evaporative dry eye complicating the eyes pre-disposed to relative aqueous tear-deficiency in clinical anesthesia (CA) year-1 residents.

Within 15 days of her shadowing month as an anesthesia provider in the OR, one of the CA-1 resident started feeling burning sensation in her eyes associated with tearing and red eyes. She has been wearing prescription contact lenses for last 10 years. Hence she got scared when she started feeling like sand in her eyes. She was later diagnosed with keratitis and dry eye; and prescribed discontinuance of contact lenses as well as steroid and antibiotic eye drops for acute rescue and artificial tears for long term prevention against dry eye.

Another CA-1 resident self-observed red eyes and associated minimal squinting in the first month as an anesthesia provider in the OR. She was diagnosed as dry eye with corneal dryness and prescribed discontinuance of prescription contact lenses as well as artificial tears for long term prevention against complicated dry eye and corneal abrasions.

One of the CA-2 residents has been suffering from dry eye for one year. He was surgically treated for follicular adenoma and thyroiditis of unknown origin, and has been medically optimized against subsequent iatrogenic hypothyroidism. He has been using prescribed artificial tears as well as Google's® eye shield for prevention of the cold-sensations in the eyes that he feels while working in the cold and low humidity air-conditioned OR environment.

We reviewed the symptoms and retrospectively searched the published literature available regarding the dry eye in the OR personnel. The exact mechanism triggering the eye complaints in the OR personnel is still not fully understood. The ORs are designed as well-insulated air-conditioned environments to achieve good thermal working conditions as well as effective sterile operating conditions. In the past, high incidence of eye irritation in other air-conditioned environments has been correlated to indoor air pollutants and instability of tear films. Additionally, the risk of eye problems may be accentuated in ORs because per American Institute of Architects' guidelines, the OR ventilation requirements include more than or equal to 15 air changes per hour (ACH) that is higher than 8-12 ACH recommended for the other rooms in the hospital. ACH is directly proportional to air flow velocity that can increase the tear evaporation in eyes that are already susceptible to dryness due to exposure to dryer (30-60% relative humidity) and colder (18-21 °C) OR environments. Additionally, the susceptibility to relative aqueous tear deficiency due to chronic contact lens usage and thyroid disorder may have caused the early incidence of dry eye in our cases as a first year anesthesia resident working for 65-70 hours a week in the OR environment. Mansour et al recently demonstrated that plastic disposable glasses provide the most effective eye protection against eye contaminations in OR. Therefore, the symptomatic relief observed with Google's® eye shield in our case may be explained by its additional capacity to protect eyes against exposure to dry, cold and fast air flow in OR.

In summary, it is our perception that Google's® eye shield can have a role against evaporative dry eye as a palliative intervention in the present OR personnel and as a preventive intervention in the future OR personnel.

Abbreviation(s)

OR: operating room
CA: clinical anesthesia
ACH: air changes per hour

Reference(s)


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