Guidelines for the Oculoplastic and Ophthalmic Trauma Surgeon
during the COVID-19 era – An APOTS & APSOPRS Document
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Background

The outbreak of COVID-19 pandemic is changing the infection, transmission and safety practices of medical establishments globally. From evidence that is available presently, the risk of transmission of this virus is high amongst medical personnel involved in procedures and surgeries around the head and neck region- Ophthalmology, Otorhinolaryngology, Craniofacial Surgery, Head and Neck Oncology, Neurosurgery including Anesthesiology. The field of Oculoplastic Surgery has risk factors common to both ophthalmology and all of the above craniofacial subspecialties. While clear directives and strategies to handle elective, urgent and emergency surgeries in SARS-Cov2 positive patients is constantly evolving, we herewith attempt to consolidate various guidelines from various relevant professional global medical societies which will be beneficial to the orbit, oculoplastic and ophthalmic trauma surgeon and also their hospital administrators.

Outline

The aim of this article is to lay down strategies and guidelines for both emergencies and elective surgeries in the COVID-19 pandemic period based on guidelines issued by various authorities worldwide. We herewith cover procedures and surgeries of eyelid, lacrimal system, orbit including endonasal and ocular trauma surgeries. The focus will be on

1. Risk stratification of Oculoplastic and other ophthalmic procedures depending on urgency required for different surgeries.
2. Safety of medical personnel, protection and precautions for personnel who will come in contact with potential SARS–Cov2 patients.

General considerations

- Develop new clinic workflows to segregate and minimize staff members needed for patient management to reduce the risk of transmission to staff. Segregation of teams,
staggering patient appointment timings, and minimizing patient-staff contact time are recommended.\textsuperscript{[1]}

- Viral presence in air and surfaces: Viral particles become aerosolized and stay in the air for at least 3 hours but may last up to 72 hrs on plastic and stainless steel surfaces. Based on experience in Wuhan, China, and Lombardy, Italy, N95 masks were ineffective in controlling spread of the disease and it was not until Powered Air-Purifying Respirators (PAPRs) were introduced that transmission of the virus was controlled among medical personnel. Transmission by elevator buttons and faucet taps and other objects underscore the importance of surface cleanings with viricidal agents such as bleach, quaternary ammonium, and hydrogen peroxide. \textsuperscript{[2]}

- Procedures involving the nasal, naso-lacrimal, oral and endotracheal mucosa are considered high-risk for transmission due to viral aerosolization. There is significant evidence that the viral load is high in these locations compared to other parts of the body including lower respiratory tract. \textsuperscript{[1][2][3][4][5]}

- Aerosol generating equipment and procedures (AGP) should be minimised. These include lacrimal irrigation, invasive procedures including nasal endoscopic procedures, use of monopolar cautery, powered drills including other irrigation and suction procedures. \textsuperscript{[2][5]}

- Thus, all elective non-vision and non-life threatening diagnostic and therapeutic intranasal procedures, lacrimal irrigation and probing, removal of lacrimal stents, and lacrimal surgery should be deferred.\textsuperscript{[1][3]}

- Urgent lacrimal procedures where deferral may not be possible include removal of lacrimal drainage system malignancies, trauma including canalicular lacerations (monocanicular stenting preferred) and removal of stents that are causing keratopathy. If such procedures are required, appropriate Personal Protective Equipment (PPE) is advised. \textsuperscript{[5]}

- Risk stratify all patients prior to surgery. \textsuperscript{[1][3][4]} Unless well screened, all patients may be considered to be COVID-19 positive and appropriate preventive measures and PPE should be practiced. Risk stratification is performed by appropriate history taking, general medical status assessment, endemicity of the infection within the local population and where available, antibody testing (ideally IgM antibody) and 2 successive negative nasopharyngeal swab tests by PCR-RT. \textsuperscript{[2]} Potential asymptomatic carriers of Covid-19 should always be borne in mind and appropriate precautions should always be taken.

- Patients at low risk of COVID-19 infection: These patients may undergo emergency and urgent and semi-urgent procedures in a controlled environment. Surgeons and anesthetists should wear appropriate PPE (non-porous gown, cap, surgical mask or N95 mask, goggles, gloves and drapes). \textsuperscript{[2]}

- **High risk (possible or confirmed COVID-19 infection) patients:** Full PPE is recommended with tight airseal (see below). COVID-19 positive patients should wear surgical masks at all times when possible.\textsuperscript{[2]}

- PPE is recommended for all procedures at present. The minimum requirements are:
  - N95 or FFP2 mask plus face shield (or mask/with attached shield over N95). It is generally accepted that FPP3 or PAPR provides better protection and should be used in place of N95 mask where available.\textsuperscript{[2]}
  - Complete facial/head cap.
• Non-porous gown.
• Goggles.
• Gloves.
• Operating microscope drape with seal.

• Povidone-iodine (iodine with the water-soluble polymer polyvinylpyrrolidone) (PVP-I): PVP-I has higher virucidal activity (including SARS-Cov-2) compared to other commonly used antiseptic agents like chlorhexidine. This virucidal activity includes in vitro activity against all the coronaviruses including the SARS-Cov - Severe Acute Respiratory Syndrome (SARS) which caused the epidemic of 2002–03 and the MERS-CoV - Middle East Respiratory Syndrome (MERS) which caused the epidemic of 2012–13. Although PVP-I has high antimicrobial effectivity up to 1:100 dilution (0·1%), a 0.5% dilution is considered most practical in the pre-surgical situations preferably in an atomised form to the patient as well as medical personnel. [6]

General pre-operative, intra-operative and post-operative guidelines for SARS-Cov-2 positive patients

1. Full PPE for all medical and non-medical personnel involved in the surgery (minimum PPE described as above). [1][2][3][4]
2. Only minimum necessary anaesthetic, surgical and allied health personnel should be present inside the operating room. [2]
3. Use of aerosol protection devices is encouraged during intubation and extubation to limit spread of aerosols away from the patient. An oxygen mask/aerosol protection device should be placed over the face after the tube is removed to mitigate aerosolization with coughing. [7][8]
4. Non-anesthetic manpower should be outside the operating room during intubation and extubation. [2][9]
5. The surgical operating team should be outside the door ideally for 20 minutes following intubation before entering the OR. The team may then enter with appropriate PPE (N95 or PAPR). [2][9]
6. Povidine Iodine disinfection for endonasal lacrimal and orbital procedures: PVP-I has viricidal activity on coronaviruses related to SARS-Cov-2. Studies suggest 0.5% PVP-I preferably in atomised form for disinfection of nasal mucosa and nasopharynx for both the medical personnel involved in surgery and the patient. The method of instillation depends on the availability, region and institution where surgery is being performed. [6]

Guidelines for the Oculoplastic & Ophthalmic Trauma Surgeons [1][2][3][4][9]

<table>
<thead>
<tr>
<th>Oculoplastic Surgery and Ophthalmic Oncology Risk Stratification</th>
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<tbody>
<tr>
<td><strong>Level A</strong></td>
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<tr>
<td><strong>Level B</strong></td>
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**Level C** Can be deferred beyond 3 months without change in outcomes.

**Oncology:** Elective surgery can be delayed for 10-12 weeks will have no predicted negative outcome.

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**General Oculoplastic Guidelines**

1. Avoid general anesthesia (intubation, extubation) whenever possible
2. Avoid monopolar cautery for cutting/coagulation.
3. Use cutting blade for skin and mucosal incisions whenever possible.
4. Use bipolar cautery for hemostasis in lowest power setting.
5. Practise minimal handling of tissues especially mucosal surfaces.
6. Avoid repeated irrigation and suctioning of tissues.
7. Avoid/minimize drills, oscillating osteotomes and other powered instruments. \[^4]\)

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**I. Eyelid and Facial Surgery**

<table>
<thead>
<tr>
<th>Level A</th>
<th>Level B</th>
<th>Level C</th>
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</table>
| 1. Repair of eyelid lacerations including those involving canaliculi.  
2. Incision/Excision biopsy in suspected malignancy of the eyelid.  
3. Tarsorrhaphy to prevent impending corneal compromise.  
4. Upper lid entropion or retraction in the presence of progressive sight-threatening corneal exposure.  
5. Temporal artery biopsy for suspected giant cell arteritis. | 1. Correction of severe amblyogenic ptosis with unilateral or bilateral brow suspension  
2. Botulinum toxin injections for severe blepharospasm | 1. Mild to moderate eyelid malpositions.  
2. Long standing congenital or acquired ptosis.  

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**II. Lacrimal Surgery**

<table>
<thead>
<tr>
<th>Level A</th>
<th>Level B</th>
<th>Level C</th>
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</table>
| 1. Decompression of dacyrocele in a neonate with airway compromise.  
2. Drainage of lacrimal abscess. | 1. Drainage of an infected mucopyocele. | 1. Dacryocystorhinostomy PANDO without any Acute/Chronic Dacryocystitis  
2. Probing of nasolacrimal duct. |
Specific precautions during lacrimal surgery

1. Avoid lacrimal irrigation and nasal endoscopy for diagnosis. Consider Fluorescein Dye Disappearance Test (FDDT) for LDS obstruction diagnosis.
2. Avoid/minimize the use of nasal endoscopy and instrumentation. Wear full PPE if indicated.
3. Avoid excessive handling of nasal mucosal tissues to reduce aerosol generation.
4. If urgent dacryocystorhinostomy (DCR) is required, consider external DCR under local anaesthesia, without powered instrumentation, irrigation and suction when possible.

III. Orbital Surgery & Ophthalmic Oncology

<table>
<thead>
<tr>
<th>Level A</th>
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<tbody>
<tr>
<td>1. Canthotomy and cantholysis for sight-threatening orbital haemorrhage.</td>
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<tr>
<td>2. Drainage of an orbital or periorbital abscess.</td>
</tr>
<tr>
<td>3. Exenteration for life-threatening infection.</td>
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<tr>
<td>4. Orbital biopsy (incisional or excisional) for life or sight-threatening conditions.</td>
</tr>
<tr>
<td>5. Repair of orbital and other facial fractures fracture in presence of oculo-cardiac reflex.</td>
</tr>
<tr>
<td>6. Evisceration/Enucleation for severe, untreatable infection, malignancy.</td>
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<tr>
<th>Level B</th>
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<tbody>
<tr>
<td>1. Optic nerve sheath fenestration for progressive visual loss.</td>
</tr>
<tr>
<td>2. Orbitotomy for malignancy or sight threatening tumor/ other lesions.</td>
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<tr>
<td>3. Thyroid Eye Disease: Orbital decompression in case of optic neuropathy or uncontrolled orbital congestion.</td>
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<tr>
<td>4. Orbital fracture repair with symptomatic residual entrapment.</td>
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<td>5. Plaque brachytherapy.</td>
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<th>Level C</th>
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<tbody>
<tr>
<td>1. Orbital decompression for cosmetic rehabilitation.</td>
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<td>2. Socket Reconstruction.</td>
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Specific precautions during Orbital surgery including orbitofacial fractures.

1. Use scalpel over monopolar cautery for all mucosal and skin incisions.
2. If osteotomy is required, consider manual osteotome instead of oscillating saw, high-speed drills, etc.
3. Consider closed reduction if fracture is stable for zygomatico-maxillary complex (ZMC) fractures. Avoid intra-oral incision, if two-point fixation (rim and ZF) is sufficient for stabilization.
4. Self-drilling screws preferred over self-tapping ones that require predrilling.
IV. Ocular Trauma

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<tr>
<th>Level A</th>
<th>Level B</th>
<th>Level C</th>
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<tbody>
<tr>
<td>1. Open globe injury (penetrating, perforating and globe ruptures).</td>
<td>1. Traumatic cataract without endothelial touch, secondary glaucoma, etc</td>
<td>1. Aesthetic and functional keratoplasty</td>
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<tr>
<td>2. Deeply embedded corneal foreign bodies.</td>
<td>2. Tectonic corneal &amp; scleral grafts</td>
<td>2. Enucleation for phthisis bulbi</td>
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<tr>
<td>3. Intraocular foreign body.</td>
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<td>4. Retinal detachment/tear.</td>
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<td>5. Vitrectomy for trauma related complications*.</td>
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<tr>
<td>6. Paracentesis for vision threatening hyphema.</td>
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<td>7. Chemical and electrical injuries.</td>
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*intraocular infection, vitreous haemorrhage, retinal tear, intraocular foreign body, misdirected aqueous, ciliary block glaucoma, malignant glaucoma, a vitreous prolapse, or a tube shunt that blocks filtration.

Specific guidelines during surgery for Ocular Trauma

1. Liberal use of viscoelastic devices instead of high flow anterior chamber maintainers.

Summary

The COVID-19 infection has evolved from an epidemic to a pandemic with devastating clinical outcomes in high-risk and not infrequently even otherwise healthy patients. The onus is upon healthcare professionals to adopt and practice full scale protection against incidental infections from patients and spread amongst hospital staff. While these guidelines are considered universal, every practising surgeon, should adapt and modify his/her practice based on the recommendations and guidelines of their local professional medical society, their national and institutional guidelines.

Disclaimer

The above suggested guidelines are based on the current evidence available and meant to provide a general overview to surgeons and institutions, be they public or private. Individual surgeon, institutional and national discretion may be applied.

References


Last referenced Apr 14, 2020.

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