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Should We Perform Orthopaedic Surgery on Patients of COVID-19 with Inadequate Personal Protection?

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According to Rodrigues-Pinto et al.'s manuscript, it is very important to divide the operating rooms for patients of COVID-19 into 5 zones: entry dressing room, where the basic personal protective equipment (PPE) is donned; anteroom, where the disinfection and surgical dressing take place; COVID-19 operation room; exit room, where the PPE is removed; exit dressing room, where the staff showers (1).

PPE shown in the present manuscript may be inadequate to protect the surgeons from aerosols exposure (2,3). The routes of transmission of SARS-CoV-2 were consisting of respiratory droplets, direct contact, aerosol, blood and so on (4,5,6). An FFP2 or N95 respirator together with protective glasses, disposable surgical cap, surgical mask, surgical gloves and sterile disposable reinforced surgical gown may be effective to prevent the virus in respiratory droplets, blood or elsewhere. However, surgeons may suffer from aerosols exposure and infection through conjunctiva (7).

To better prevent the aerosols exposure and infection through conjunctiva, fully enclose protective glasses or powered air-purifying respirators (PAPRs) should be used. Even though better protection of eyes achieved, fog on goggles may prevent the surgeons from observing the surgical field, making the surgeries being more difficult, technically demanding and of higher risk of complications.

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Article Author Response

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Article Author(s) to Letter Writer(s)

Surgery on COVID-19 patients should always be performed with adequate personal protection

Ricardo Rodrigues Pinto, MD, PhD, FEBOT

Ricardo Sousa, MD, PhD, and António Oliveira, MD, PhD

Dear Editor,

In response to Hua et al letter regarding our paper “Preparing to Perform Trauma and Orthopaedic Surgery on Patients with COVID-19” (1):

Ocular protection is paramount when operating on COVID-19 patients. While studies have argued against ocular transmission of SARS-CoV2 suggesting that the risk of viral shedding in tears is low (2), others, as pointed out by Hua et al, have identified SARS-CoV2 RNA in tears and conjunctival secretions of COVID-19 patients (3, 4) . SARS-CoV2 RNA positivity in tears and conjunctival secretions of patients with conjunctivitis, however, does not mean that SARS-CoV2 can replicate in the conjunctiva but may result from viral exsudation of conjunctivitis (5). The conjunctiva is neither a preferred tissue for SARS-CoV-2 infection, nor is a preferred gateway of entry for SARS-CoV-2 to infect respiratory tract (6). While the transmissibility of SARS-CoV-2 through the eye is still being investigated, and our understanding of the

virus behavior is constantly evolving, eye protection should always be used when performing surgery on COVID-19 patients, as we have recommended in our paper (1) :

1. In the Entry dressing room protective glasses are donned. These protective glasses, which can be seen in Figures 2A and 2B, are disposable, waterproof and are curved to the sides providing lateral face and eye protection.
2. In the anteroom, and for a sterile procedure, a surgical mask with shield is donned over the protective glasses/ goggles, as shown in Figures 3A and 3B.

These recommendation provide a double eye protection barrier. This type of protection is in accordance with current recommendation from the World Health Organization (7), the Centers for Disease Control and Prevention (CDC) (8), European Center for Disease Prevention and Control (9), The Centre for Evidence-Based Medicine (10) and Public Health England (11) .

Powered air-purifying respirators (PAPRs), which draw ambient air through a HEPA filter and blow it over the face at such a high flow rate that no unfiltered air is entrained during inspiration are an alternative to FFP2/ N95 respirators, while also providing a full head and eye protection – as we also detail in our paper. Hence, PAPRs (albeit not readily available at most institutions) can be used in alternative to appropriate FFP2/N95 respirators and appropriate eye protection. Nonetheless, it is also important to take into consideration, the extent of available PPE resources and avoid depleting them unnecessarily.

As Hua et al refer and we completely agree surgical procedures should never be undertaken without appropriate PPE and while alternatives to our protocol can provide equivalent protection, fully enclose protective glasses and PAPRs are not mandatory for adequate personal protection.

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