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Safety in the operating room during COVID 19 for Orthopaedic Surgery

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We read the recently published article " Orthopaedic Systems Response to and Return from the COVID-19 Pandemic: Lessons for Future Crisis Management " (1) where the authors had briefed the safety concerns of the operating room.

Jerome et al (2) had reported the safety concerns from their survey involving 100 Orthopaedics surgeons from 50 countries during the early and mid-lockdown phase of corona virus disease. Interestingly 73% of Orthopaedic surgeries were performed in their normal operating room (ORs) and 18% had COVID-19 makeshift ORs with negative pressure control and filters. Minor ORs and emergency ORs were used in 8%. More than one-third of the surgeons (40%) did surgery with full PPE kits, N95 masks, face shields, shoe covers, and protective glass, with proper donning and doffing techniques before and after procedures. Surgeons (25%) performed surgeries with normal surgical masks, operating gowns, shoes, and usual accessories during and after the procedures, partly attributing to non-availability, poor supply, and increased demand for the PPE kits and the accessories. More cautiously 5% wore both surgical and N95 masks together during the procedures. Surgeons had perspirations, heat, fogs, and occasional breathlessness wearing the PPE kits and the accessories. Surgeons (2%) preferred (filtering face piece level 1, 2, and 3) FFP3 masks over N95 masks, which are slightly better and advantageous than N95 masks. (2)

PPE kits include surgical gloves, water-resistant gowns with long sleeves, a surgical mask, and full-face protection with a face shield. This reduces intraoperative wound contaminations from blood and body fluids, which get sprayed in an area of 2 to 8 meters around the operating table.(3) There are four levels of safety in gowns: level 1(use in minimal risk environment), level 2 (low risk procedures), level 3 (moderate risk), and level 4 (high-risk procedures/infectious diseases). There are three types of face masks protecting the mouth and the nose.

1. Single-use face mask: it filters large particles of 3 µm, prevents droplet transfer, and is used by the health care workers (4) to protect and patients to limit COVID-19 transmission. (5)

2. Respirators mask (6): it filters small particles of 0.3 µm and protects against airborne transmission. The

European Standard (EN 149:2001) classifies respirator masks into three types: FFP1, FFP2, and FFP3. The N95 mask is FFP2 type which has 95% filtering capacity and provides good protection. FFP3 is an N99 mask, which gives 99% filtration against airborne contamination of 0.3 µm particles.

3. Power air-purifying respirator (7): it was used mainly during the severe acute respiratory syndrome (SARS) outbreaks by the health care workers and persons with high risk of transmission (surgeons).

Jerome et al (2) recommendations for safety in the operating room for performing Orthopaedic surgeries

1. Respirators (FFP1, FFP2, and FFP3) protect against droplets and aerosols (percentage of filtered particles >300nm).

2. N95 masks filter 95% of >300nm particles.

3. Both have high protective potential.

4. WHO recommends all health care workers should wear a respirator (FFP3/N95).

5. Surgical masks are reasonably safe for patients with COVID-19 and health care providers.

Though the survey and study had limited evidence, 76% of the participating Orthopaedics surgeons agreed to form a super majority and strong consensus with 95% CI (69 to 86).

References

References

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