INTRODUCTION

‘When you have a new hammer, every problem seems like a nail’

Although COVID-19 is not primarily a surgical disease, it has significantly affected surgical practice in multiple ways. The risk of viral disease transmission with laparoscopy is virtually zero. Although the viral DNA of blood-borne viral pathogens, such as hepatitis B and HIV, has been detected in surgical plume after the use of surgical energy (e.g., electrosurgery, laser and harmonic scalpel), there is no evidence to indicate that the use of electrosurgery during laparoscopy increases the risk of disease transmission through the surgical plume or pneumoperitoneum. Even if it is assumed that limited viral particles may become airborne through the pneumoperitoneum during laparoscopy, the operation theatre is one of the safest places in the hospital to avoid COVID-19 exposure because of the air filtration/circulation in most standard ORs, the sterile field, and the fact that surgeons and anaesthesiologist will be wearing Personal Protective Equipment (PPE). However, the most challenging aspect currently is the wearing of PPE during laparoscopic surgery itself.

PROBLEMS WITH PERSONAL PROTECTIVE EQUIPMENT

Experience with PPE ensembles used by health-care workers during the Ebola outbreak in the hot, humid conditions of West Africa had prompted significant concerns with heat stress and the inability to work in the PPE for extended work periods. There are studies which showed the prevalence of skin injuries due to heavy sweating and long period of wearing Grade 3 PPE during work.

PERSONAL PROTECTIVE EQUIPMENT DURING LAPAROSCOPY

The problems a laparoscopic surgeon faces while performing surgery wearing PPE is a dormant volcano, all set to erupt 1 day. Even though medical masks reduce the
transfer of saliva and respiratory droplets to others and help block blood and other potentially infectious materials entering the mouth or nose of the wearer, wearing N95 masks for more than 4 h results in hypoxemia and hypercapnia which reduce working efficiency and the ability to make correct decisions. Dizziness, headache and shortness of breath are commonly experienced by the medical staff wearing N95 masks.[4]

Another problem the laparoscopic surgeons have to face during surgery with PPE is fogging of goggles and face shields. During non-medical use of protective eye protection, the problem of ‘fogging’ has resulted in reduced visual acuity and this is cited as the main reason for non-compliance.[4] The only remedies are (1) washing the spectacles with soapy water that leaves behind a thin surfactant film that reduces this surface tension and causes the water molecules to spread out evenly into a transparent layer and (2) applying metal clips on the mask over the nasal bridge. Wearing goggles will prevent the use of surgical loupes. Goggles with an anti-fog coating are recommended, as they may block vision when covered in fog. Furthermore, wearing goggles and face shield makes performing surgery under the microscope exceedingly difficult.

The next problem with PPE is that the health-care personnel are not able to communicate effectively and accurately with each other and with patients while wearing PPE. Communication among the health-care providers may become difficult, given the muffled voices and hearing that results from multiple layers of PPE.

The most difficult problem of PPE is sweating with dehydration. Overheating due to PPE is quite common.[9] PPE may cause an increase in body temperature by preventing heat from being lost via sweat evaporation. Heavier forms of PPE may also increase body heat production due to the increased work of carrying the PPE. Wearing this PPE for a prolonged period during a laparoscopic operation may make the surgeon fatigued and dehydrated due to excessive sweating.[9] Sweat loss and dehydration from overheating can cause heat illness, ranging from a mild heat rash (miliaria) to a life-threatening heat stroke. While operating with PPE, sweat in the eyes and mask makes the mask wet, making laparoscopic surgery which needs perfect hand–eye coordination extremely difficult, and there is a high chance of committing surgical errors at that moment. It is essential to understand that operating in PPE is not simply working in a hostile environment, and it is working in a lethal environment.[7] The sweating surgeon may be more likely to contaminate the surgical field than a non-sweating surgeon. Moreover, the atmosphere inside an OR remains always tense and charged with the surgical and anaesthetic team members donning PPE being in discomfort, hypoxic and suffocated. The charm of laparoscopic surgery, the passion with which a surgeon and anaesthetist approach their work, has dissolved into a state where the thought of operating is an irritating and daunting task.

CONCLUSION

There is an urgent need for more study to assess the risk of contracting COVID-19 by a surgeon when doing laparoscopic surgery. Moreover, protocols have to be formed as to whether in all cases, PPE is necessary to be worn or not. Since the problems on long-term wearing of PPE are significant and can potentially affect the work and results of a surgeon, can harm his health both mentally and physically, it is very important that guidelines emerge as to the rational use of PPE during laparoscopic surgery.

'A good surgeon doesn’t just concentrate on technical ability, but also on the appropriateness of what you are doing.'

– Benjamin Carson.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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