(COVID-19) outbreak/epidemic in China has been largely under control, but the pandemic of the disease is still ongoing in many parts of the world. People may not be very sure if rebound of the epidemics would occur even in the countries and regions where the disease has been successfully controlled so far, and we cannot rule out the possibilities that similar or entirely different communicable diseases would occur in future. It is extremely important for people working in any fields of medicine and health care to continuously summarize, learn, study and spread knowledge, methods, techniques for how to fight against the diseases like SARS, MERS and COVID-19, how to curb transmission of such diseases in any of our daily practices, and thereby to protect our care givers and any other people. Many of the care givers have made major or minor contributions for control and prevention of COVID-19. A Method for smoke evacuation in laparoscopic surgeries for suspected coronavirus infected patients reported by Drs. Mints Y et al in Ann Surg a month ago, is one of the outstanding examples that can prevent transmission of the disease via the smoke produced during the laparoscopic surgery from a suspected or confirmed patient with COVID-19.

Laparoscopic surgery has become very popular since decades ago, and I believe that in most of the laparoscopic surgery, production of smoke occurs frequently, and in many operating rooms the smoke is expelled into the operating room, and all those working in the same room and adjacent rooms are exposed to the smoke, and there is experimental evidence according to Drs. Mintz and coauthors’ report that the virus causing COVID-19 has the potential of being transmitted in the form of aerosol. Therefore the surgeons, nurses, anesthesiologists and other operating room staff members are at risk of being infected by the virus. Drs. Mintz and coauthors and the Technology Committee of the European Association of Endoscopic Surgery (EAES) recommend a filtration system that is low cost, safe, effective and immediately implementable for smoke evacuation during a laparoscopic surgery. This system (the key important part thereof is a filter) was well-proven that it was almost 100% effective in protection against hepatitis B and C viruses (the viral particle sizes are 42 to 30–60 nm in diameter), and the SARS-CoV-2 (the pathogen of COVID-19) particle size is larger (70–90 nm) than those of the hepatitis B and C viruses, which can be prevented from being spread into the room air. The filter is actually the one used in operating rooms for ventilation machines, which can be connected through standard tubing to the trocar evacuation port to constitute an evacuation and filtering system. The authors used endotracheal tube connector as shown in their figure. No active suctioning was applied to the system. This system was used clinically in 5 different laparoscopic surgeries in Israel and Italy.

Consulted online, all surgeons in EAES (who used the system) reported simple and quick assembly of the system and showed high efficiency of smoke evacuation. The authors pointed out that the filter system should be...
discarded after proper processing for infection control.

To effectively apply such a filtering and evacuation of smoke produced during laparoscopic surgery in a patient with confirmed or suspected COVID-19, any surgeons outside the EAES have to solve the following important problems:

(1) Is such a filter available in your operating room? If not, is it available commercially in your country or city? Please remember that the filter’s pore size is small enough to prevent passing of viruses larger than 40 nm or preferably larger than 30 nm.

(2) Is the connector as shown in the figure of Drs. Mintz et al’s article available in your operating room? If not, please find the way how to obtain it.

(3) Make sure to connect the filter, connector and the trocar correctly.

(4) After the operation is finished, a designated person working in the operating room should collect, treat and put into a clearly marked container before further processing.

(5) To make yourself very clear with the use of this system, I recommend that every surgeon and every head of department of surgery to read Drs. Mintz et al’s article carefully and understand everything about using the system.

As the authors emphasized in their article: “Dissemination of knowledge and exchange of ideas about this rapidly spreading infection is crucial to healthcare workers globally.” It is also important that we need further thinking and expanding the use of a useful new method and technique for control and prevention of COVID-19. For example, smoke is produced during laparoscopic surgeries, how about other endoscopic surgeries? Is smoke also produced during thoracoscopic, cystoscopic, hysteroscopic surgeries? The answer is probably “Yes”. Then we need to consider how to prevent and control possible spreading of the pathogen via the smoke during the surgery through the different endoscopes as long as the patient is a suspected or confirmed SARS-CoV-2 carrier.

In fact, smoke is also produced during the conventional surgeries. Imagine that if the patient is a SARS-CoV-2 carrier, the smoke that diffused into the air of the operating room can be inhaled by every person in that room and possibly by people in other rooms despite wearing masks. What do we do to prevent possible transmission of pathogens similar to the SARS-CoV-2? We may need to build up one or two special operating room with negative pressure system, and if it is impossible, we may consider to have one or two operating room with a system similar to kitchen (smoke exhaust) ventilator with a specially designed filter that can effectively and immediately collect the air/smoke from on top of the operating table to enter into the filter that can trap viruses as small as < 30 nm in diameter.

Prevention and control of communicable/contagious diseases, especially those transmitted via respiratory routes, aerosol, exhaled droplets including smoke that is produced during surgeries, though the amount can be variable, are very important for reducing the infection and deaths. I think not only the surgeon, physician and nurses need to actively think about any possible methods and techniques, but also all the relevant persons and sectors to make every effort to reduce the sources of infection, to cut off the routes of transmission of the contagious diseases, and protect the susceptible population.

CONFLICT OF INTEREST

None.

REFERENCES

1. Mintz Y, Arezzo A, Boni L, Chand M, Brodie R, Fingerhut A, et al. A low cost, safe and effective method for smoke evacuation in laparoscopic surgery for suspected coronavirus patients. Ann Surg. 2020;10.1097/SLA.0000000000003965.

How to cite this article: Zhaori G. Smoke evacuation, is it important for prevention of COVID-19? Pediatr Invest. 2020;4:84-85. https://doi.org/10.1002/ped4.12207