

An accessible and economical evacuation system for surgical fumes and pneumoperitoneum in laparoscopy during the SARS-CoV-2 pandemic

Editor

The global pandemic produced by SARS-CoV-2 started in the Chinese province of Wuhan in December 2019.¹ It has caused more than four million cases and almost 320.000 deaths. In Spain there are more than 230.000 people infected by the virus and 27.700 deaths have been reported, with an estimate of around 20% of the cases affecting health care professionals according to the reports of the European Center for Disease Prevention and Control².

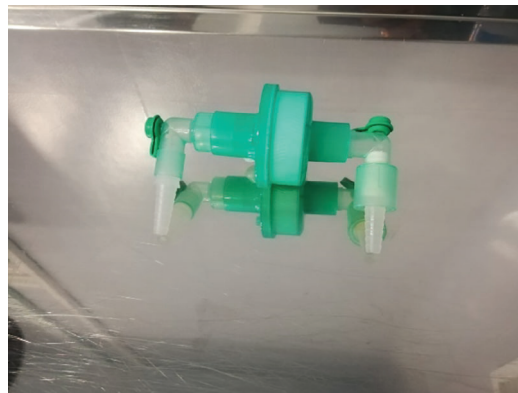
There is enough evidence on the elevated propagation of this microorganism during procedures that generate aerosols, because of which the control of this situation on the operating room is mandatory^{3,4}. This risk does not only take place during the anesthetic process; laparoscopic surgery is one of procedures that generates aerosols⁵, in an even higher concentration than the observed during open surgery⁶. For this reason, the scientific associations recommend to be careful and the use of devices that filter surgical fumes to minimize the possibility of dissemination of particles generated during the surgery⁷⁻¹⁰.

Although there are different fume evacuation systems to use during laparoscopy on the market⁸, these are not always available in every center due to different reasons.

A closed system has been designed for the extraction of surgical fumes, by adapting a generic passive heat and moisture exchange (HME) filter.

The system that we present, (Figure 1) consists in an HME type filter connected with two adapters in L shape and two connectors to the operating room vacuum device with two hollow silicone tubes. This way, the aerosol aspiration is carried out directly from the laparoscopic port by opening the key. In the other ports we place a lid to prevent an accidental opening during the surgery.

Figure. 1 The complete system



There is currently about the possibility of infection during surgery due to exposure to surgical fumes, although harmful effects have been known for years⁵. The lack of these specific evacuation systems during laparoscopy in some centers and the need to perform an urgent surgery or simply maintain surgical activity, the developed system based on HME filters offers an accessible and economical alternative^{8,10}. This type of filters has demonstrated a pathogen filter capacity close to 100%¹¹.

The designed system has been adopted in routine surgical in our hospital since the beginning of the pandemic, along with the rest protection measures¹² with great adaptation and satisfaction of the entire surgical team.

The fume evacuation system based on an adapted HME filter is an easily accessible and economical alternative that should be implanted in all laparoscopic procedures in case of not having any specific fume evacuation systems.

Disclosure

The authors declare no conflict of interest.

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DOI: 10.1002/bjs.11824

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