

Emergency laparoscopic surgery during COVID-19: what can we do and how to do it safely

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Di Saverio and colleagues(1) in their extremely interesting article, have suggested that emergency laparoscopy should be avoided and traditional open procedures be preferred, when a patient is COVID-19 positive or his status is unknown. The article was read with great interest because scant data exist on the current surgical practice and the authors are to be congratulated on their work.

Given the uncertainty of airborne and aerosol transmission risks, the insight of a risk of viral exposure with the use of laparoscopy has arisen worldwide in the surgical community and, recently, Gao and colleagues published a case series where exploratory laparotomy was chosen instead of laparoscopic procedures.(2)

Conversely, other authors consider that laparoscopy remains the preferred surgical approach. Such an assumption is based on the lack of data to support that COVID-19 is transmitted by surgical smoke or pneumoperitoneum, the well-known health benefits for patients and the opportunity for containment and filtration of the surgical gas with smoke evacuation systems, which are widely recommended.(3) Unfortunately, there are several issues: often, smoke evacuation systems are not available and alternative methods do not guarantee the filtration efficiency of the manufactured devices. Moreover, sudden release of trocar valves, non-air-tight exchange of instruments, trocar removal, large incisions for ports, specimen extraction, conversion to open, surgical drains and desufflation can easily cause a leakage of contaminated pneumoperitoneum aerosol. (3)

So, although we disagree with the gross but reasonable change of policy, according to which

laparotomy is to be preferred instead of laparoscopic procedures, we agree with Di Saverio et al that smoke evacuation systems appear however insufficient and may add significant financial burden to healthcare systems which are already under pressure. (1)

Minimizing electrosurgical use and the avoidance of ultrasonic scalpel, may reduce aerosolization and thus reduce the potential risk of viral exposure, and most of authors recommend to minimize use of energy devices in both open and laparoscopic surgery. (1-3)

Therefore, we wondered if we had ever performed any emergency laparoscopic procedure without or with a minimal use of electrosurgical devices. By revising our surgical videos, we have identified the following procedures which are feasible with a minimal production of surgical smoke: appendectomy, repair of small gastro-intestinal perforation, lysis of single adhesion causing small bowel obstruction. Immediate conversion to laparotomy should be considered after assessment of the intra-abdominal status and at any time during the operation, if a significant electrosurgical use is necessary.

Appendectomy.

The appendix-mesoappendix complex can be freed from its adjacent, often inflamed, tissue with blunt dissection. Then the appendix can be removed through either an antegrade (the mesoappendix is ligated first) or a retrograde technique (the appendiceal base is exposed, dissected and transected first). Many different techniques can be used for both mesoappendix dissection and appendicular stump closure, without using energy devices. They can be stapled or safely managed with simple ligation, endoscopic clip, endoloop or Hem-o-lok.

In our opinion, in order to avoid the electrosurgical use, the retrograde approach could be easier, especially when the appendix is very inflamed or it's surrounded by inflammatory tissue. Our preference is to close the appendicular stump performing a simple intracorporeal ligation, tying off the base. Another cost-effective and safe option is to use Hem-o-lok. Once the appendix is divided, mesoappendix can be ligated with ties, endoloop or endoscopic clips.

Small gastrointestinal perforation.

In stable patients, perforated peptic ulcers smaller than 2 cm can be treated with a laparoscopic primary suture, which does not require any energy. Laparoscopy allows for complete abdominal exploration and peritoneal lavage, if needed.

If the surgeon routinely performs omentoplasty, we suggest to do it only if it can be performed without any electrocoagulation, since multiple studies showed the addition of an omental patch does not add benefits to a simple suture repair.

Similarly, small blunt perforations of hollow viscus can be repaired with simple suture. We have recently published a video-vignette showing the laparoscopic management of a blunt perforation of the small bowel,(4) where electrocoagulation was never used (as confirmed by reviewing the uncutted video).

Single adhesion causing small bowel obstruction.

In case of small bowel obstruction, the laparoscopic approach can be beneficial for selected

cases, without very distended loops of bowel and multiple complex adhesions. One cause of small bowel obstruction is a single fibrous band which produces an overhanging or a rotation of an intestinal loop. In such a case, the fibrous band is usually coagulated and cut. We simply suggest to place endoscopic clips and cut between the clips.

We congratulate Dr Di Saverio and coauthors on their study, although we wish to emphasize that we should not stop to perform emergency laparoscopy *tout-court*, because it allows optimizing patient care and outcomes. On the other hand, when clinically appropriate, we have to determine if it is safely feasible. Unfortunately, in the current climate, patients are reticent to access to hospital care even for emergency conditions, because of fear of exposure to COVID 19 (5). Delayed access can lead to more complex local inflammation, for which electric devices (as bipolar energy) are often required, or to conditions of abdominal distension or hemodynamic instability that contraindicates minimally invasive surgery. Patients should be made aware of the risks of delayed access to the emergency department.

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