

# SASGE joint statement, guidance and recommendations on Gynaecological Endoscopy during the COVID-19 pandemic

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## Introduction

The South African Society of Gynaecological Endoscopy (SASGE) is a newly formed society representing the interests of all practicing endoscopists in South Africa, a role previously held by SASREG. It was founded under the leadership of SASOG, SASREG, special interest groups, University representatives and the previous steering committee of SASGE. SASGE is pleased to release this guideline aimed at practitioners performing endoscopy during the COVID-19 global pandemic.<sup>1</sup>

SASGE wishes to acknowledge the input from our sister societies SASREG, SAUGA and SASGO for this guideline.

## Background

The outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which originated in Hubei was declared a pandemic in March 2020 by the World Health Organization<sup>1,2</sup> and now poses a massive health and economic burden.<sup>3,4</sup>

Endoscopic procedures potentially put all involved at risk of inhalation and conjunctival exposure from bioaerosol (endoscopically generated and otherwise), direct contact and contact with faecal matter.<sup>5,6,7,8,9</sup> As gynaecological endoscopists, we must review our current role by evaluating and mitigating risk, to ourselves, colleagues, staff and above all, to our patients.

## Infection risk with SARS-CoV-2

The theoretical risk of infection from endoscopically generated bioaerosols may potentially be increased due to three main factors peculiar to laparoscopy:<sup>10,11</sup>

1. The use of gas insufflation, both during entry and intra-operatively.
2. Creation of bioaerosols from electrosurgery, a cornerstone of endoscopy.
3. A possibility of gas leaks which can potentially result in higher viral counts in the air.

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In a recent article, Mallick *et al.* reviewed the evidence surrounding aerosolization. The authors highlight a paucity of evidence [12]. Studies on HPV, corynebacterium, HBV and HIV have identified pathogens in surgical smoke, notably 40% of HPV during LLETZ procedures and 90% during laparoscopies in HBV infected patients. The high presence of pathogens in smoke plumes translates to very few actual documented cases of transmission, with four documented cases of HPV and none of HBV or HIV. Despite the reassuring nature of these findings, caution should be maintained, especially when extrapolating to potentially more virulent pathogens such as SARS-CoV-2.<sup>5,6,7,8,9</sup>

The main route of transmission is via droplet spread and via contact transmission from contaminated surfaces to mucosal surfaces.<sup>13,14,15</sup> The virus may also become aerosolized during certain airway interventions and cardiopulmonary resuscitation.<sup>16</sup> Additionally, Wang *et al* reported of viral RNA particles of SARS-CoV-2 in stool in 29% of cases and detected live virus in some cases. SARS-CoV-2 uses Angiotensin Converting Enzyme 11 (ACE2) receptors in the gastrointestinal tract to gain entry into the cell, and this receptor seems well expressed in the GIT, however, a lower presence of 1-15% of RNA particles are found in the blood.<sup>17</sup>

The above information and mostly anecdotal evidence highlights a severe paucity of academic ammunition available to us for decision making and we must attempt to apply it with care and caution to our clinical practice. It must also be noted that the risk of open surgery with regards to the spread of COVID-19 infection is also not known, and open surgery also produces electrocautery fumes that can potentially spread the virus.

## Considerations for elective surgery

In this acute phase of the COVID-19 pandemic, all elective surgical procedures should be postponed where it is possible to safely to so without harm to patients.<sup>18,19,20</sup> It is prudent to ensure that postponement is balanced against the patient's outcome and quality of life.

- Decisions regarding the management of malignancies should be undertaken in conjunction with an oncologist.
- SASGE supports medical optimization and delaying surgery for prolapse and incontinence.
- Where a delay in surgery will influence the reproductive

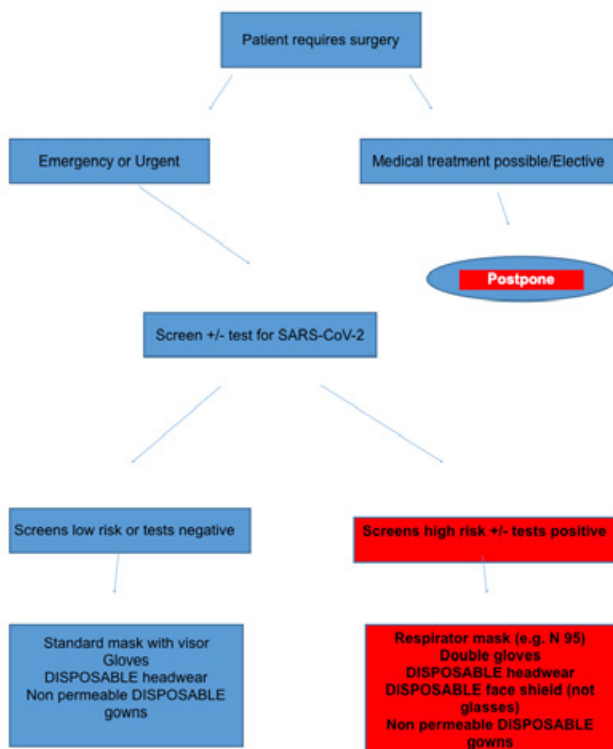
prognosis of a patient, the case should be managed with a reproductive medicine specialist with the aim of optimizing medical management and consideration given to fertility preservation options.

- Surgery for endometriosis should be deferred as it is not life threatening and when bowel involvement is present, the risk of viral exposure is increased during excision.<sup>19</sup>
- Any procedure where there is a risk of bowel involvement including conditions (such as pelvi-abdominal sepsis, or tubo-ovarian abscesses) should be performed by open surgery as studies have found a high amount of viral RNA in stool.<sup>17</sup>

### Recommended algorithm for patients requiring surgical intervention:

Although universal testing is probably ideal for all patients, this may not be practical in all settings. Screening and testing should be employed as per local protocol.

- Patients who require surgery should be screened for symptoms based on the National Institute of Communicable Diseases [21]. Symptomatic patients should be tested for SARS-CoV-2 and managed appropriately.
- Patients who screen or test negative may have general anaesthesia and laparoscopic surgery while strict protocols of infection control are upheld.
- Surgery in screen-positive as well as SARS-CoV-2 positive patients should be undertaken with full Personal Protective Equipment (PPE).



### Approach to COVID positive patients

In addition to laparoscopically generated bioaerosols, SARS-CoV-2 is primarily a respiratory virus and the team involved in general anaesthesia and who perform endotracheal intubation and extubation, are at the highest risk of viral transmission.<sup>16,22,23</sup>

### Anaesthetic considerations:

- In the event that a confirmed case of SARS-CoV-2 is found, every attempt should be made to optimize medical management and defer surgery until the patient has recovered, and only emergency or life threatening surgery should be

performed in these cases.

- Every attempt should be made to avoid intubation and if at all possible local or regional anaesthesia should be utilized.
- SASGE recommends the use of appropriate PPE for all surgical procedures - depending on the risk evaluation of the patient (refer to the flowchart).
- Minimize the operating pressures where possible to reduce gas leaks whilst optimizing ventilation.
- Trendelenburg optimization may facilitate ventilatory needs and this should be balanced between surgical and anaesthetic requirements.

### Open vs laparoscopic surgery

A study by Li *et al.* concluded that the risk of aerosol spread may be lower during laparotomies<sup>10</sup>, however this theoretical risk must be balanced with the advantages associated with laparoscopies, including: earlier discharge, reduced nosocomial infections, reduced rates of complications (and therefore re-admissions into hospital, thus increasing the potential risk of SARS-CoV-2 infection).<sup>24</sup> These advantages are robustly supported in the literature<sup>24,25,26,27,28,29,30,31</sup> and provide much needed capacity in terms of bed space and critical staff for health care institutions during this time.

It must be clearly stated that there is no robust evidence of increased risk of viral transmission during laparoscopy. The current evidence is purely extrapolated from work with other, above mentioned, pathogens. While recognizing these facts, all precautions must still be taken during this time until more evidence becomes available.

Aerosols are also produced during open and vaginal surgery [5,10,12]. Unlike during a laparoscopy there is no way to contain the aerosols by using filters and closed system smoke evacuators. This risk is increased with the use of any electrosurgery including monopolar, bipolar and advanced energy devices such as advanced bipolar, laser and ultrasonic devices.<sup>12,32</sup>

- During open and vaginal procedures suction can be used to minimize droplet and bioaerosol spread.
- In a SARS-CoV-2 positive patient all attempts should be made to avoid intubation and ventilation.
- In a patient who screens low or tests negative, although carrier and false negatives cannot be excluded, laparoscopy should be strongly considered.

Currently we need to balance a hypothetical risk of aerosol spread in low risk patients to the vast array of evidence proving the benefits of laparoscopic surgery.

### Operating room considerations

The importance of infection, prevention and control (IPC) and adequate PPE cannot be over emphasized. Whilst prioritizing patients' needs first, it is imperative that the safety of healthcare workers is not compromised.

- Ensure that only essential personnel are exposed. For example, there is no need for the entire theatre staff to be present during intubation.
- Theatre staff including nursing staff, anaesthetic staff and surgical assistants require in-service training on the infection control protocols.

Negative pressure theatres are scarce and most operating theatres have a positive pressure environment. In contrast to negative pressure theatres, this prevents air from outside the theatre from entering the operating area. Although this principle is effective for standard procedures, it may be counter effective for theatres with patients who are SARS-CoV-2 positive.

- If available, negative pressure theatres should be used for patients who are positive or screen high risk.
- Clear routes of entry, exit, donning, doffing, handling of specimens and sterilization of instruments and theatres should be established, based on institutional infrastructure

and resources. These arrangements should be documented in a clear standard operating procedure (SOP) document.

- Donning and doffing sequence for sterile procedures differ from that used for PPE in other settings and this should be reflected in the theatre SOP.
- Although disposable instruments, tubing and filters are ideal, this should be tailored to resources within the unit.

### Strategies to reduce production of bioaerosols

There is no substitute for practicing sound surgical principles to ensure seamless surgery and good patient outcome. Care should be employed when choosing advanced energy sources. The theoretical risk of increased smoke and particle dispersion is associated with the high frequency oscillating mechanism of ultrasonic devices.<sup>12,32</sup>

- Consider potential particle dispersion when choosing energy devices.
- Employ sound principles of energy to optimize tissue effect.
- Employ basic surgical principles: minimize bleeding, careful handling of tissue, minimal use of energy at the lowest but effective settings and use of atraumatic instruments
- The most experienced, proficient and knowledgeable surgeon available should perform the procedure. This will ensure the implementation of COVID-19 protocols, shortest operating time and minimal exposure of the theatre staff to potential aerosols.

### Strategies to reduce leakage of smoke aerosols

Communication and meticulous planning will result in fewer human errors. Staff should be well briefed on the surgical plan. If needed standard operating procedures and protocols can be simulated for intraoperative strategies such as avoiding leakage by not opening ports to release smoke, use of filters, smoke evacuators, disposable tubing, use of wall suction and removal of specimens to name a few.

- Provide in service training for theatre staff and detail the surgical plan preoperatively.
- Consideration should be given to the number of ports used and size of incisions.
- Minimize the operating pressures where possible to minimize gas leaks.
- Prudent preoperative planning helps reduce gas leaks which occur during instrument changes.

Where gas leaks are anticipated, such as with specimen retrieval and removal of the uterus at total laparoscopic hysterectomy, certain strategies may be employed:

- Use of retrieval devices may minimize gas leaks.
- Ensure all colpocleiators are checked preoperatively for gas leaks.
- Once the vault has been circumcised, all the gas should be removed by suction and/or closed system evacuators, before removing the specimen vaginally.
- If one is not able to maintain colpocleisis during colpotomy, then consider an alternative strategy such as vaginal colpotomy after removing all the gas, as performed at LAVH.

### Strategies to promote safe elimination of smoke

- It is advisable to use closed smoke evacuation filters/ systems intra-operatively when available.
- Wall suction connected to a central system is preferable to mobile suctioning devices.
- Suction should be generously utilized to remove the plumes of smoke generated during surgery.

- Suction should be used at the end of the procedure to remove all the gas from the abdominal cavity prior to removing the ports.
- Use closed system smoke evacuators to safely remove surgical gas at the end of the procedure.

### Port closure

The recent article by Mallick *et al.* discusses the conflict between the traditional practice of port removal under vision before desufflation and the newly adopted practice of desufflating prior to removing the ports to prevent bioaerosol infection.<sup>12</sup> This deviation in practice marginally increases the risk of port site herniation and unrecognized port site bleeding but supports the reasoning and applied practice.

- SASGE supports the interim practice of desufflation prior to the removal of ports for purposes of reducing bioaerosol spread.
- At the end of the procedure, the sheath at port-sites  $\geq 10$  mm must be closed using a J needle.
- Avoid using commercial endoscopic port closure devices as they may allow for gas leaks.

### Considerations during hysteroscopy

As with laparoscopy the evidence on hysteroscopic bioaerosol production is sparse. Electrosurgery during hysteroscopy seems to produce less smoke than laparoscopy, although there are no comparative studies to support this. In this regard mechanical hysteroscopic morcellators pose an advantage.<sup>20,33</sup> In the absence of evidence, we are unable to adequately quantify the risk of bioaerosol production at hysteroscopy but the risk appears low.

- All elective cases should be postponed.
- It is plausible that hysteroscopic tissue removal systems reduce bioaerosol exposure.
- Suction device should be connected to an outflow sheath.
- Standard PPE is recommended unless SARS-CoV-2 positive/ screens high risk at which time full PPE is recommended.
- SASGE recommends no anaesthesia or if indicated conscious sedation, local or regional anaesthesia for hysteroscopy.
- Hysteroscopic morcellators may pose an advantage over hysteroscopic electrosurgical devices.
- Hysteroscopy is preferentially performed on a day case/ outpatient basis to relieve the pressure on main theatre resources.

### Post-operative strategies

The literature supports laparoscopy in allowing for same-day or early discharge.<sup>28,33</sup> This reduces patient exposure and enhances capacity at hospitals during this resource constrained era. Although screened, patients may not have been symptomatic at the time of surgery but may have been infected. It would be prudent to identify false negatives, their contacts (at home and at the hospital) need to be identified and appropriately managed.

- Attempt same-day or early discharge where possible to avoid nosocomial infections.
- Employing ERAS (early recovery after surgery) principles will help facilitate quicker discharge.
- It may be prudent to telephonically contact the post operative patient to screen for symptoms after the surgery.
- A log should be kept of all staff involved in the care of any specific patient in order to aid contact tracing should a patient test positive at a later stage.

### Conclusion

The position of international societies such as the ACOG, AAGL, ESGE, ISGE and BSGE<sup>18,19,20,34,35</sup> recommend the use of laparoscopic procedures over open procedures when appropriately evaluated. SASGE acknowledges the dynamic times we are in and based on current



evidence SASGE largely supports the current international stance favouring laparoscopy over laparotomy on a case by case risk evaluation basis. ISGE also recognises the different levels of skill and access to minimally invasive procedures across various countries, and supports individual clinical decision making during this time with regards to surgical access.

This document will be revised as more data becomes available.

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