

Laparoscopy during COVID-19

Rapid review question

Should laparoscopy be avoided and classed as an aerosol procedure during COVID-19?

In brief

- Surgical smoke during laparoscopy contains bio-aerosols which poses high risk to operating staff
- Operating staff should be cautious, aware, wear protective gear and take precautionary measures if conducting emergency laparoscopic surgery

Background

Recommendation has been made from SAGES on March 19 2020, in regards to surgical response to COVID-19. SAGES recommended that strong consideration be given to the possibility of viral contamination due to laparoscopy. A rapid review on this advice was conducted on 26 March 2020.

Methods

The grey literature (via google searches) and PubMed were searched. Snowball sampling was also used to find information relating to the rapid review question.

Results

Advice from governing and academic bodies regarding laparoscopy was found in the grey literature. A guideline from NSW Health provides advice in regards to the work health and safety procedures to be followed to control exposure to surgical plumes (noxious airborne contaminants generated as by-products through certain surgical instruments). The Royal College of Surgeons of Edinburgh outline in relation to COVID-19, laparoscopy should generally not be used as it risks aerosol formation and infection.

Table one reflects the evidence on surgical smoke and its effects on infection, and table 2 displays laparoscopic surgery during the COVID-19 pandemic

Table One: Surgical smoke and risk of infection		
Source Title	Advice	Source Link
Detecting hepatitis B virus in surgical smoke emitted during laparoscopic surgery	<ul style="list-style-type: none"> • Purpose of study was to sample and analyse surgical smoke from laparoscopic surgeries on patients with Hepatitis B virus. • Hepatitis B virus was detectable in surgical smoke 	https://www.ncbi.nlm.nih.gov/pubmed/27484956
Surgical smoke and infection control	<ul style="list-style-type: none"> • Surgical smoke with or without a heating process contains bio-aerosols with viable and non-viable cellular material that poses risk of infection • The study suggests a higher quality filter mask during surgery, or a smoke evaluation device or filter placed near the electrocautery blade or on endoscope valves could offer additional safety for operating personnel and patients 	https://www.journalofhospitalinfection.com/article/S0195-6701(05)00077-0/fulltext
The Evaluation of Pre-Post Smoke Evacuation Uses on Surgical Smoke and Bio-Aerosols in Operating Rooms	<ul style="list-style-type: none"> • Study aims to evaluate the pre-post smoke evacuation uses on surgical smoke and bio-aerosols particulates in operating rooms 	https://clinicaltrials.gov/ct2/show/NCT02672969
Awareness of surgical smoke hazards and enhancement of surgical smoke prevention among the gynaecologists	<ul style="list-style-type: none"> • A review which describes the components and effects of surgical smoke, as well as methods that can be used to decrease the risk of surgical smoke exposure, such as high-filtration masks, and smoke evacuation system • The review provides legal guidelines for protection in regards to surgical smoke 	https://www.jcancer.org/v10p2788.htm
Recommended practices for the management of surgical smoke and bio-aerosols for perioperative nurses in Thailand	<ul style="list-style-type: none"> • A survey of 377 operating room (OR) nurses was used to assess the incidence of health problems related to surgical smoke exposure, as well as the current practices for these substances. • A high percentage of OR nurses reported little or no use of smoke evacuation tools and suffered from headaches and/or sore throats • The study outlines guidelines that should be followed in the presence of surgical smoke 	https://www.journal.acorn.org.au/cgi/viewcontent.cgi?article=1022&context=jpn
Contamination Resulting From Aerosolized Fluid During Laparoscopic Surgery	<ul style="list-style-type: none"> • Study used a method of measurement for aerolised blood contamination during the evacuation of the pneumoperitoneum in laparoscopic surgery 	https://pubmed.ncbi.nlm.nih.gov/25392644/

	<ul style="list-style-type: none"> The study found blood splatter was present in samples and concluded surgical participants should wear protective barriers and take conscious measures to prevent contamination during laparoscopic surgeries 	
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Table Two: Laparoscopic surgery during COVID-19		
Source Title	Advice	Source Link
<p>Several suggestion of operation for colorectal cancer under the outbreak of Corona Virus Disease 19 in China</p>	<ul style="list-style-type: none"> Article proposes surgery strategies for colorectal cancer patients if operating during COVID-19, suggestions include: <ul style="list-style-type: none"> the screening process should be strictly carried out before surgery to reduce the risk of nosocomial infection in the later stage Laparoscopic-assisted surgery is recommended for radical surgery for patients with colorectal cancer, strict aerosol management must be made during the operation Natural orifice specimen extraction surgery and transanal total mesorectal excision are should be performed prudently Scientific and reasonable prophylactic stoma should be used Personnel protection in surgical ward and operation room must be strengthened. 	<p>https://www.ncbi.nlm.nih.gov/pubmed/32074719</p>
<p>Reflections on Surgery for Colorectal Cancer in the Epidemic of New Coronavirus Pneumonia</p>	<ul style="list-style-type: none"> Article provides surgical experience suggestions for the management measures for pneumoperitoneum during laparoscopic surgery Article suggests the following: <ul style="list-style-type: none"> Carry out a detailed inspection of laparoscopic equipment, suction equipment, etc. before surgery to ensure that all equipment is in a normal working state Carefully check the Trocar hole for air leaks and if the hole size is appropriate 	<p>http://rs.yiigle.com/yufabiao/1182291.htm</p>

	<ul style="list-style-type: none"> ○ The Trocar hole is connected to the negative pressure suction of the water seal and connected to the central negative pressure suction device ○ Use a constant pressure insufflator, which can effectively empty the aerosol with virus in the abdominal cavity ○ Assist incision and laparotomy before the gas in the abdominal cavity should be exhausted as much as possible to prevent the large amount of residual gas in the abdominal cavity from being ejected during the auxiliary incision 	
<p>Recommendations for the prevention and control of general surgery in the context of new coronavirus pneumonia</p>	<ul style="list-style-type: none"> ● The article outlines the challenges of General Surgery during Epidemic situations and provides recommendations in the context of the COVID-19 outbreak ● The article recommends that elective surgeries are not performed until the outbreak is controlled. Patients with limited term surgery, will need surgeons to delay surgery without affecting their condition or treatment effect. Patients with intermediate and advanced malignancies should have the multi-disciplinary team consulted, and neoadjuvant treatments are to be carried out first unless this treatment is not expected to be effective or patients has a strong willingness to undergo surgery. 	<p>http://rs.yiigle.com/yufabiao/1181132.htm</p>
<p>COVID-19 Pandemic: perspectives on an unfolding crisis</p>	<ul style="list-style-type: none"> ● This article provides perspectives on the experience of health professionals during the COVID-19 pandemic in Italy ● The article advises that Laparoscopy may reduce intraoperative exposure to smoke compared with open surgery and devices for smoke evacuation and cleansing are recommended where feasible. ● The author suggests using closed circuit of the pressurized intraperitoneal aerosol chemotherapy (PIPAC), or a cheaper alternative to reduce the contamination from aerosols from Coz during laparoscopies, for e.g. connecting one of the laparoscopic 	<p>https://bjssjournals.onlinelibrary.wiley.com/doi/epdf/10.1002/bjs.11627</p>

	<p>ports to a water seal created with a sealed container by means of extension lines</p>	
<p>Minimally invasive surgery and the novel coronavirus outbreak: lessons learned in China and Italy</p>	<ul style="list-style-type: none"> • This article notes that laparoscopic surgery contains the risk of aerosol exposure to the operating team • The author provides a guide for laparoscopic surgeries based on recent experience in Shanghai and Milan 	<p>https://journals.lww.com/annalsurgery/Documents/Minimally%20invasive%20surgery%20and%20the%20novel%20coronaviruses%20outbreak%20-%20lessons%20learned%20in%20China%20and%20Italy.pdf</p>