

Recommendations on key practical measures in laparoscopic surgery during the COVID-19 pandemic

Editor

The current coronavirus (COVID-19) pandemic has had a significant impact on the organization and delivery of surgical services^{1,2}. Laparoscopic surgery has been discouraged due to concerns about aerosol generation despite no convincing evidence to support an association between laparoscopic surgery and COVID-19 infection³. Nevertheless, recommendations have been made to prevent

the potential risk of viral transmission during laparoscopic surgery^{4,5}. Consequently, we performed a systematic review in compliance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement standards to objectively identify the recommendations on key practical measures in laparoscopic surgery during the pandemic (PROSPERO Registration number: CRD42020185224). We systematically graded the level and certainty of evidence for each recommendation based on the Oxford Centre for Evidence-Based Medicine—Levels of Evidence system and the Grading



of Recommendations, Assessment, Development and Evaluations system, respectively. Review of 10 articles allowed the synthesis of 15 recommendations (Table 1).

The current recommendations are predominantly opinion-based rather than evidence-based. Nevertheless, ‘absence of evidence is not evidence of absence’. Until higher levels of evidence are available, opinion-based recommendations would serve the best available evidence and should be followed to protect staff and patients, and to reduce the potential risk of virus transmission.

Table 1 The recommendations and rationale for each recommendation

Recommendation	Rationale for the recommendation	Level*, certainty [§] and source of evidence
1 Dedicated COVID-19 operating theatre	To minimize possible exposure	Level 5 evidence with very low certainty Two society expert consensus statements, five narrative articles, one opinion article, and one case report
2 Minimum number of staff in operating theatre	To minimize possible exposure To prevent PPE depletion	Level 5 evidence with very low certainty Two society expert consensus statements, four narrative articles, one opinion article, and one case report
3 Full PPE for all theatre staff members regardless of known or suspected COVID status	To protect operating staff	Level 5 evidence with very low certainty Two society expert consensus statements, six narrative articles, one opinion article, and one case report
4 The most experienced surgeon in laparoscopic surgery to perform the procedure	To minimize the operative time	Level 5 evidence with very low certainty One narrative articles, and one opinion article
5 Use of a closed technique to achieve pneumoperitoneum	To minimize gas leakage To prevent aerosol dispersion	Level 5 evidence with very low certainty Two narrative articles
6 Maintaining the intra-abdominal pressure as low as possible (< 12 mmHg)	To aid artificial ventilation	Level 5 evidence with very low certainty Two society expert consensus statements, five narrative articles, one opinion article, and one case report
7 Minimizing the degree of Trendelenburg position	To aid artificial ventilation	Level 5 evidence with very low certainty Two narrative articles, and one opinion article
8 A minimum number of incisions for port sites	To minimize gas leakage To prevent aerosol dispersion	Level 5 evidence with very low certainty One society expert consensus statements, three narrative articles, one opinion article, and one case report
9 Minimizing the size of port site incisions	To minimize gas leakage To prevent aerosol dispersion	Level 5 evidence with very low certainty One society expert consensus statements, two narrative articles, one opinion article, and one case report
10 Keeping taps of trocars closed before insertion and during the operation	To minimize gas leakage To prevent aerosol dispersion	Level 5 evidence with very low certainty One society expert consensus statements, four narrative articles, one opinion article, and one case report
11 Connecting a closed-circuit smoke evacuation device with a HEPA filter or a ULPA filter to one of the ports	To minimize gas leakage To prevent aerosol dispersion	Level 5 evidence with very low certainty Two society expert consensus statements, six narrative articles, one opinion article, and one case report
12 Minimizing the use of energy devices with lowest possible electrocautery power settings and avoiding prolonged activation	To minimize aerosol generation	Level 5 evidence with very low certainty Two society expert consensus statements, five narrative articles, one opinion article, and one case report
13 Minimizing use of ultrasonic devices	To minimize aerosol generation	Level 5 evidence with very low certainty Two society expert consensus statements, four narrative articles, and one opinion article
14 Minimizing introduction and removal of instruments through the ports as much as possible	To minimize gas leakage To prevent aerosol dispersion	Level 5 evidence with very low certainty One society expert consensus statements, one narrative articles, one opinion article, and one case report
15 Evacuation of pneumoperitoneum using filtration device or vacuum suction unit before closure, trocar removal, specimen extraction, or conversion to open	To minimize gas leakage To prevent aerosol dispersion	Level 5 evidence with very low certainty Two society expert consensus statements, six narrative articles, one opinion article, and one case report

PPE: personal protective equipment; HEPA: high-efficiency particle air; ULPA: ultralow particulate air. *Assessed based on the Oxford Centre for Evidence-Based Medicine Levels of Evidence system. [§]Assessed based on the Grading of Recommendations, Assessment, Development and Evaluations system.

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- 1 Spinelli A, Pellino G. COVID-19 pandemic: perspectives on an unfolding crisis. *Br J Surg* 2020; <https://doi.org/10.1002/bjs.11627> [Epub ahead of print].
- 2 Søreide K, Hallet J, Matthews JB, Schnitzbauer AA, Line PD, Lai PBS, et al. Immediate and long-term impact of the COVID-19 pandemic on delivery of surgical services. *Br J Surg* 2020; <https://doi.org/10.1002/bjs.11670> [Epub ahead of print].
- 3 Yeo C, Yeo D, Kaushal S, Ahmed S. Is it too premature to recommend against laparoscopic emergency surgery in COVID-19 patients? *Br J Surg* 2020; **107**: e202.
- 4 Francis N, Dort J, Cho E, Feldman L, Keller D, Lim R, et al. SAGES and EAES recommendations for minimally invasive surgery during COVID-19 pandemic. *Surg Endosc* 2020; 10.1007/s00464-020-07565-w [Epub ahead of print].
- 5 Mowbray NG, Ansell J, Horwood J, Cornish J, Rizkallah P, Parker A, et al. Safe management of surgical smoke in the age of COVID-19. *Br J Surg* 2020; <https://doi.org/10.1002/bjs.11679> [Epub ahead of print].