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Correspondence

Use of 4 robotic arms performing Senhance® robotic surgery may reduce the risk of coronavirus infection to medical professionals during COVID-19

Dear Editor,

Recent guidelines suggest minimizing the staff number participating in an operating theatre during COVID-19 pandemic [1]. It is also recommended that trainees, in particular, should not be involved with cases unnecessarily. To reduce the chances of COVID-19 infection during the hospital stay, patients should be admitted into relatively free COVID-19 hospitals with a strict policy in screening staff. At a minimum checking of temperatures of all staff, entering the hospital and the use of basic surgical mask within the hospital is mandatory. Apart from aerosolizing procedures, which are classed as high-risk situations, the use of simple surgical masks should therefore be encouraged in the hospital when a social distancing of 2 m or more cannot be maintained [2]. The safety and management of surgical smoke in the age of COVID-19 and laparoscopy is an additional source of aerosol airborne pollution generated by pneumoperitoneum [3]. The risk to operating staff for SARS-CoV-2 is likely to be related to aerosol-generating ventilatory procedures (tracheal intubation, non-invasive ventilation, mask ventilation, head and neck surgery etc.) rather than the abdominal surgical procedure which probably have a negligible risk for operating staff although. The recommendations for protection gains surgical smoke are clearly described in a review by Mowbray et al. [3].

Senhance® robotic platform has been introduced in 2012 and the use of three robotic arms plus one trocar for the assistant for gynaecological surgery is still a standard [4]. The issue of using robotic 4 arms and possible advantages related to it have not been addressed in this type of surgery so far. The use of 4 Senhance® robotic arms has been in details described trying to standardize sigmoid resection for diverticular disease [5], but one of the arms stays at rest during different three steps of surgery, allowing to economy docking and re-docking time, as well avoiding repositioning of robotic arms. In our hospital, Senhance® robotic surgery has been implemented in general and colorectal surgery, gynaecology and urology from November 2019, and our overall experience already exceeds 300 cases.

Of 100 different types of gynaecological operations performed in our hospital to date, 10 were performed using 4 robotic arms (Table 1) with single gynaecologist and a scrub nurse, aiming to avoid the need of assistant during the surgery. One robotic arm was used for traction and in a 'stay' mode ('assistant' arm), while one arm holding the telescope and two working arms were in use. The age in this group was 50.5 (age range 39–59), and operating time 117 min (65–175). The collision of robotic arms during 10 operations using 4 robotic arms was seen twice frequently comparing to collision in surgeries, using three arms and a trocar for surgical assistant, and as stated earlier operating time was a not significantly longer in a 4 robotic arm group. None of the 10 operations in a 4 robotic arm group needed conversion to three robotic arm and a trocar for surgical assistant procedure, conventional laparoscopy or open surgery. No other disadvantages of this approach were noted, and different types of gynaecological robotic procedures were able to be performed with one gynaecologist and a scrub nurse. We would suggest using this technique in all COVID-19 positive or suspected patients.

Table 1
Types of procedures performed with 4 robotic arms technique.

Type of robotic procedure	Four arms used
Total hysterectomy with bilateral salpingo-oophrectomy	6
Bilateral or unilateral salpingo-oophrectomy	2
Total robotic assisted vaginal hysterectomy	2
Total	10

Conclusion

Use of 4 robotic arms performing Senhance® robotic surgery may reduce the risk of coronavirus infection to medical professionals during COVID-19 pandemic, as it can be performed with an operating surgeon and a nurse, avoiding a need of surgical assistant being present in an operating room. However, there is lack of evidence of usage of this technique and randomized controlled studies may provide adequate evidence in the future.

Institutional review board approval

Approved.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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