

Telesurgery is promising but still need proof through prospective comparative studies

To the editor: With great interest we read the article "Total laparoscopic hysterectomy versus da Vinci robotic hysterectomy: is using the robot beneficial?" by Soto et al. [1], which was published in your journal. The introduction of any new surgical system is expected to provide added value for existing ones, and we absolutely accept the conclusion of this excellent article that with experience a totally endoscopic hysterectomy still is superior to robotic surgery. Despite extensive work, telesurgery is probably still in its infancy. In our opinion, the main reason for the long operative time is the lack of haptic sensation and the reliance on visual force feedback.

There have been claims that the results of visual force feedback and haptic feedback are comparable [2]. In a novel European telesurgical system, the Telelap Alf-x, the lack of tactile feedback has been overcome, and the surgeon can accurately feel the tensility of the knots she/he ties, which makes the telesurgical endoscopic procedure as similar as possible to open surgery. In experimental surgeries that were performed to find out whether haptic sensation will influence the operation time, the average time for cholecystectomy using the Telelap Alf-x was 31.75 minutes as compared to 91 minutes using a conventional telesurgical system [3]. Haptic sensation probably contributed to the self-confidence of the surgeon, who was not dependent on visual force feedback only.

The Telelap Alf-x system is composed of 1 or 2 consoles and 3 or 4 long arms which enable abdominal or transdouglass access and to move freely around the patient during the surgery. The console supplies open 3D sight and is equipped with an eye-tracking system which moves any point that is looked at to the centre of the screen and instruments are activated by looking at the respective icon. The system stops movement when the surgeon's eyes are not fixed at the screen. All instruments are quickly attached to the arms by magnets and detect the pivot point on the fascia automatically to avoid extension of the incision. The instruments are reusable, and 1:1

haptic feedback is transmitted from the tip of the instrument to the surgeon's fingers when pushing or pulling, enabling to feel tissue consistency and the tension when knotting sutures.

Despite the promising data resulting from our preliminary studies, we insist that telesurgery should have defined indications and should not be used unless prospective comparative studies have proven its superiority over conventional endoscopy.

CONFLICT OF INTEREST

M. Stark is a scientific director of the EU-SOFAR telesurgical project. E. R. Morales is a director of robotic department of SOFAR. S. Gidaro is a surgical consultant of robotic department of SOFAR.

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In reply: In their Letter to the Editor regarding our paper "Total laparoscopic hysterectomy versus da Vinci robotic hysterectomy: is using the robot beneficial?" by Soto et al. [1], the authors Michael Stark, Emilio Ruiz Morales, and Stefano Gidaro agree with our conclusion that the outcomes obtained with a totally laparoscopic hysterectomy are superior than those obtained with robotic surgery in the hands of skilled surgeons.

It is important to state that the findings obtained in our paper are applicable to the specific robotic surgical system used in the study and when surgeries are performed by skilled surgeons in both traditional laparoscopy and robotic surgery. As the authors of the Letter to the Editor correctly state, extensive research is currently being conducted to improve the robotic technology to further narrow the gap between the experience and capabilities of performing robotic-assisted in comparison to traditional surgery. We agree that direct haptic feedback, or sensory substitution (visual and/or auditory) when not available in the robotic platform [2,3], is a key component to narrowing this gap.

Whether surgical outcomes will actually be improved with new robotic platforms (as the one described in the Letter to the Editor) or by complimenting the existing robotic system with direct haptic feedback is yet to be determined. Well designed clinical trials will have to be conducted at the appropriate time to answer this important question.

CONFLICT OF INTEREST

No potential conflict of interest about this article was reported.

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