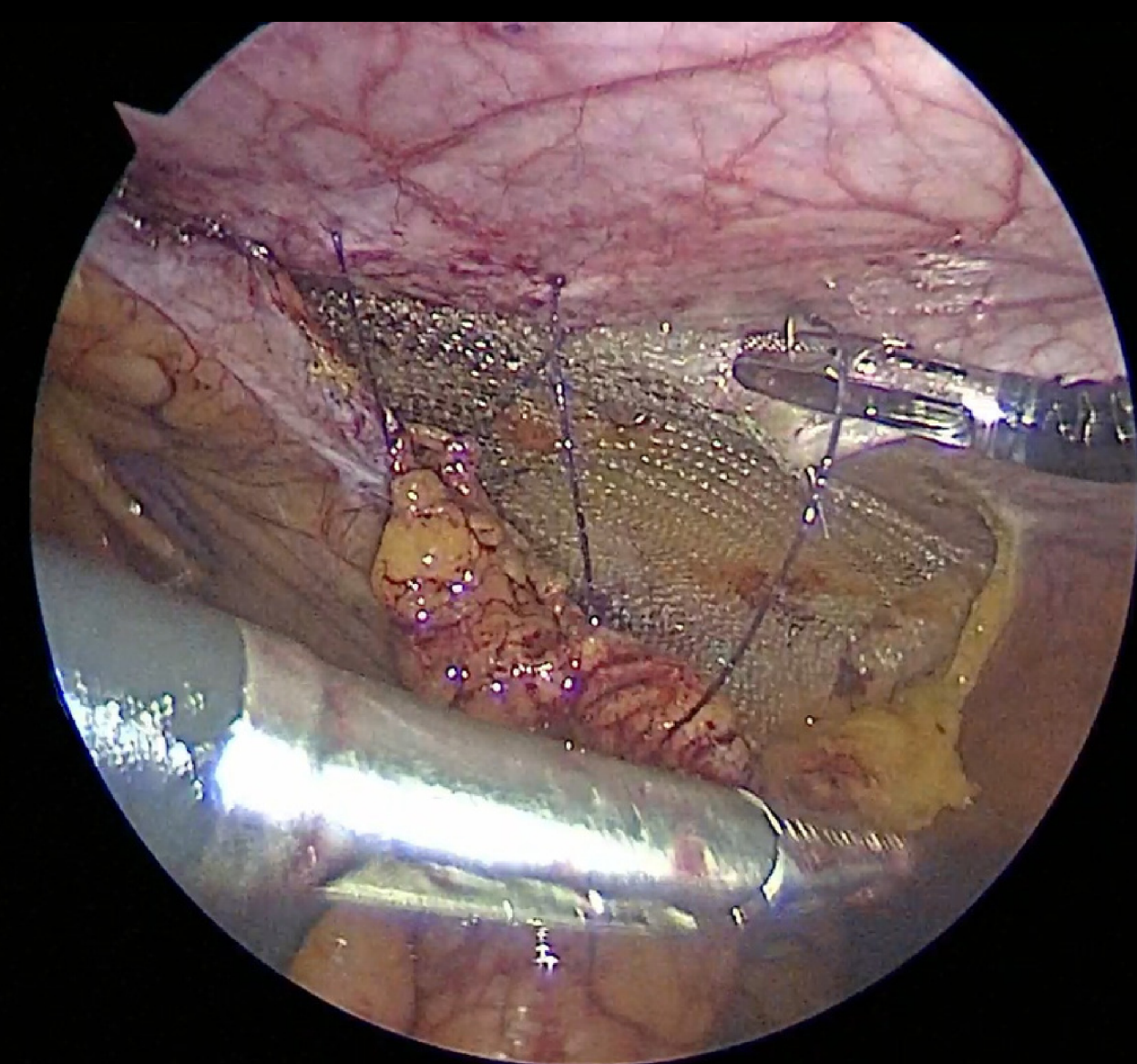


HandX, a Hand-Held Smart Motorized Laparoscopic Device as an Alternative to Robotic Suturing in Laparoscopic Hernia Repair: First Human Cases. Amir Szold MD, FACS

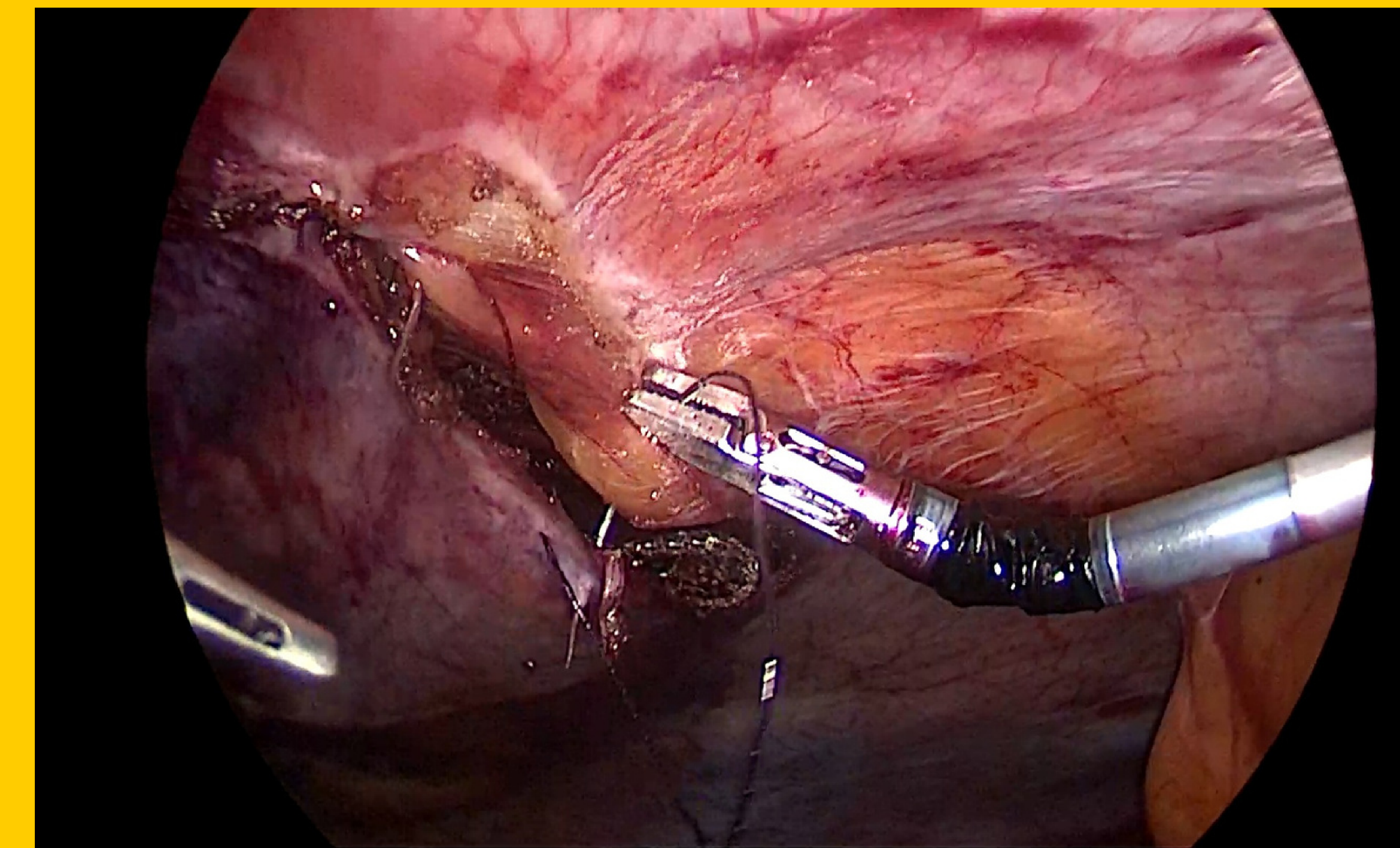
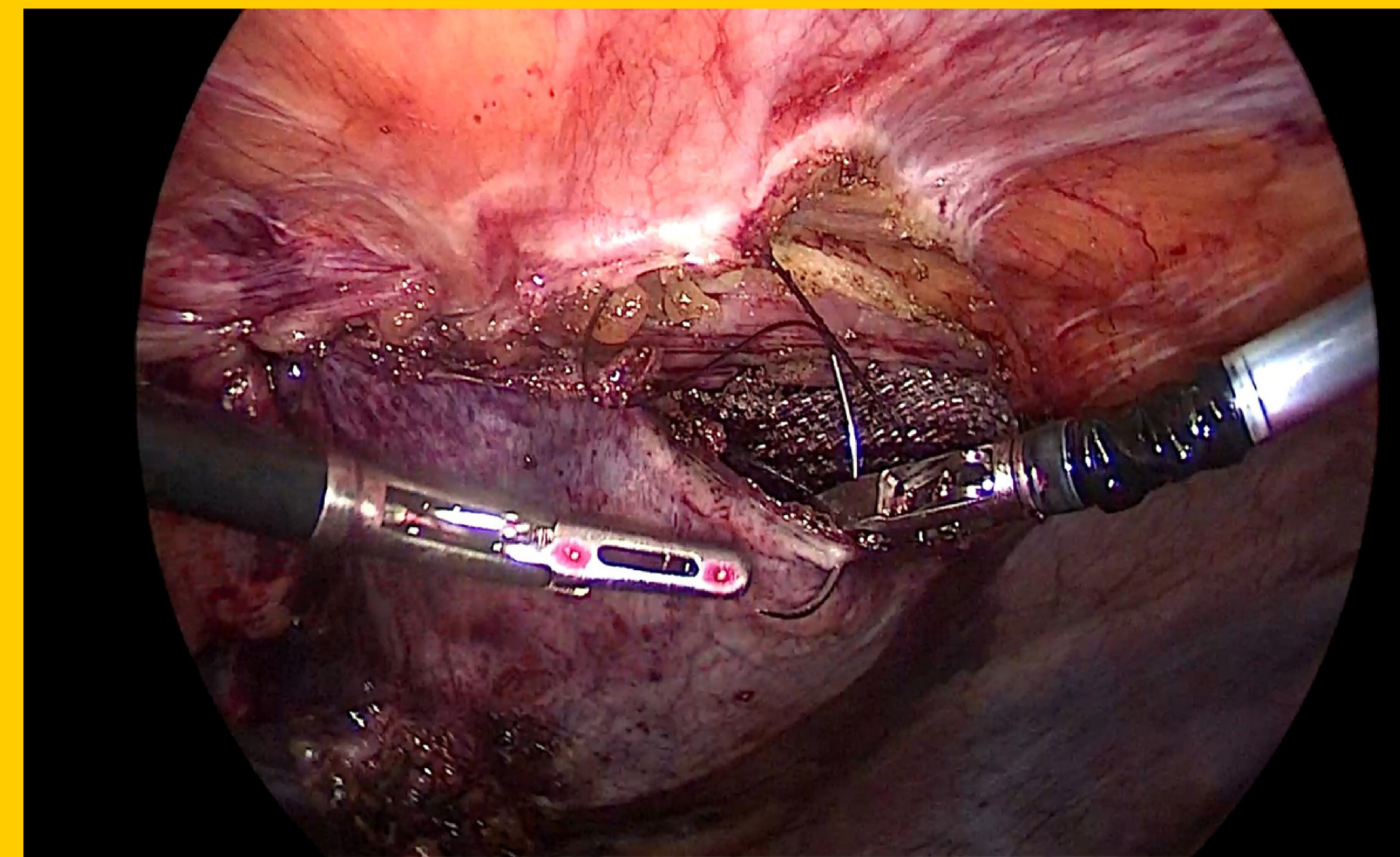
Introduction

Suturing the abdominal wall and peritoneum is becoming a current trend in laparoscopic hernia repair. As laparoscopic suturing is technically demanding, it has justified the use of expensive robotic systems to perform this part of the operation. In order to try and make the procedure more cost-effective we have used a novel, hand-held motorized device, HandX, for suturing during laparoscopic hernia repair.

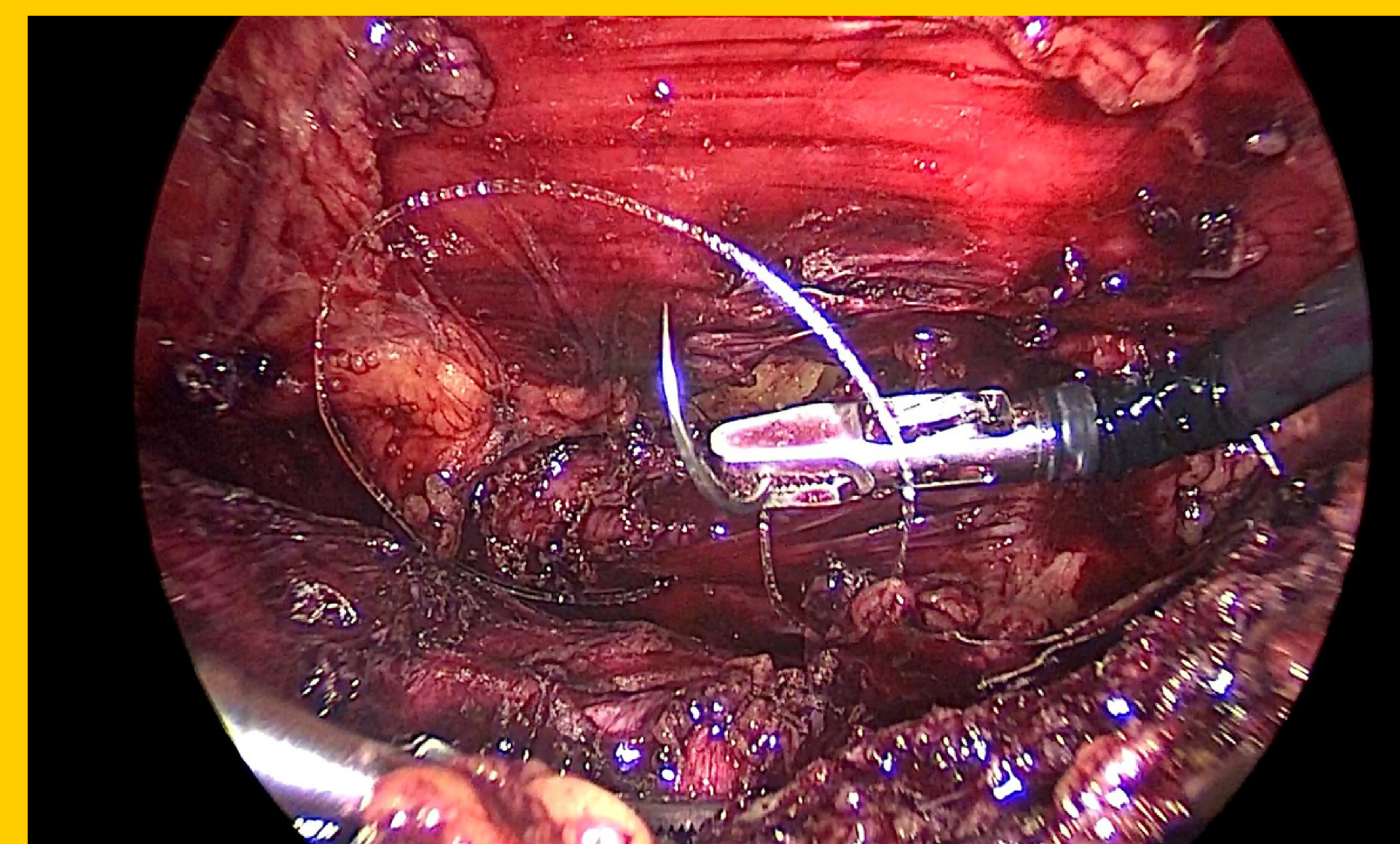
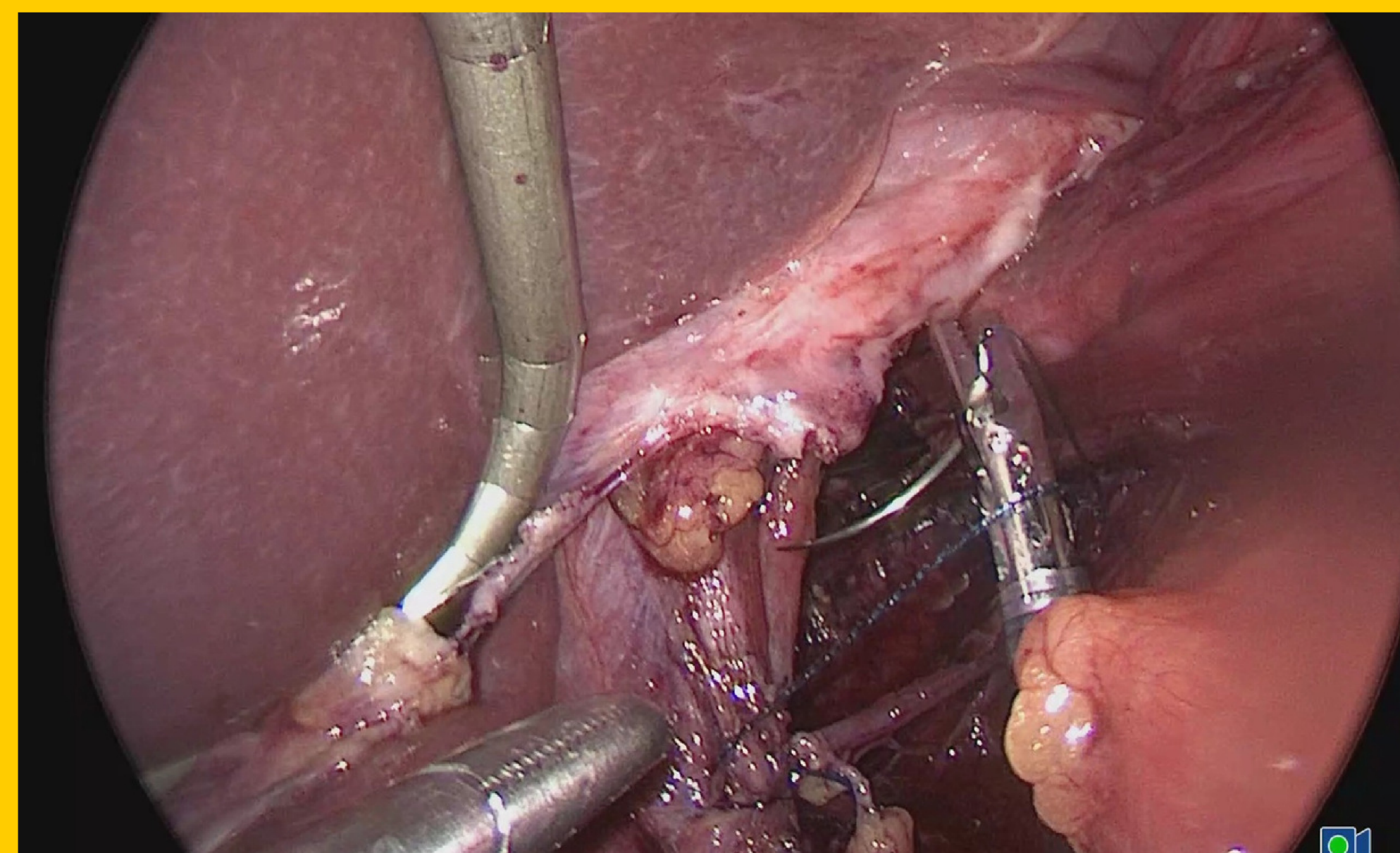


Materials and methods

HandX is a hand-held motorized and computerized device that has all necessary degrees of freedom to perform complex motions in minimally invasive surgery. It is controlled by a sophisticated human interface unit that requires a short learning curve.



We have used the device for laparoscopic suturing and tissue manipulation in various laparoscopic procedure as part of a clinical trial, including in hernia repair, and recorded adverse events and device performance. After surgery the surgeons filled a validated usability questionnaire to assess the device performance. In addition all cases were recorded for further analysis.



Results

HandX was used in 30 human cases, including 15 hernias. These included 2 TAPP procedures where the device was used to suture the peritoneum, 3 cases where it was used for diaphragmatic hernia suturing, and 10 cases in which it was used for primary repair of the abdominal wall defect prior to mesh placement in ventral hernia repairs. Using the device facilitated suturing in difficult angles and was performed following a short learning curve. The usability score of the device for most relevant questions was very good to excellent (SUS Score- 84.75/100).

Conclusions

Although limited by the early experience and small number of patients HandX seems to enhance the surgeons capabilities and allow for more cost effective suturing in laparoscopic hernia repair.

