Senhance robotic platform for ovarian borderline tumor treatment: minimally invasive robotic approach for conservative adnexal surgery

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Abstract: The robotic platforms have become reality in the endoscopic field. Different technologies are suitable with different characteristics. The robotic surgical applications are various in different specialties. The gynecologic applications are different both for benign and malignant conditions. However, one of the main limits is represented by high costs and increased operative time. In this context, the Senhance (TransEnterix Surgical Inc., Morrisville, NC, USA) robotic platform took place thanks to different characteristics as 3D eye tracking camera control system and haptic feedback that allowed to control the tissue traction reducing the risk of surgical damage. The Senhance platform was deeply investigated in the last years and tested in different pathologies as benign and malignant conditions reporting good results even compared with standard laparoscopy. The present surgical technique article is aimed to show the conservative staging for borderline ovarian tumor approached with the Senhance platform. The surgery consists of robotic-assisted right ovarian cyst enucleation and omental and peritoneal biopsies in a 29 years old patient. The surgical setting adopted was the same as standard laparoscopy, with 12 mm umbilical trocar, and 5 mm trocar in left and right iliac fossa, and one in suprapubic area. The operative time was 40 and 9 minutes for robotic arms installation. The estimated blood loss was 25 mL. The hospital stay was 1 day without early and late complications recorded.

Keywords: Gynecological surgery; endoscopy; robotic; Senhance; borderline tumor

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Introduction

The robotic platforms have become reality in the endoscopic field. Different technologies are suitable with different characteristics (1,2). Thanks to the innovative technology, robotic surgery has acquired a leading role in gynecologic surgery. Nowadays, the applications of robotics are used for both malignant and benign conditions. However, one of the main limits is represented by high costs and increased operative time (3).

In this context, the Senhance (TransEnterix Surgical Inc., Morrisville, NC, USA) robotic platform represents an alternative in this field. This technology is characterized by 3D eye-tracking camera and haptic feedback (4,5). The independent robotic arms are installed in common 5- or 3-mm trocars that can be placed wherever in the surgical field (6) allowed recreating a standard gynecological laparoscopic setting with the advantages of the robotic arms.

The present surgical technique article is aimed to show the conservative staging for borderline ovarian tumor approached with the Senhance platform.

Operative technique

The surgical case consists of robotic-assisted right ovarian

cyst enucleation in a 29 years old patient, body mass index (BMI) 24 with history of menstrual dysfunction and infertility. Previous laparoscopic left salpingo-oophorectomy for ovarian torsion, nulliparous woman. Ultrasound (US) pelvic scan showed 5 cm right ovarian mass, suspected for borderline ovarian tumor, with mild CA 125 tumor marker increasing (45 µg/mL). The patient gave her consent to the publication of her data for the publication of this study.

The surgical procedure is showed in the video (*Video 1*).

The surgical setting adopted was the same as standard laparoscopy, with 12 mm umbilical trocar, and 5 mm trocar in left and right iliac fossa, and one in suprapubic area. The suprapubic trocar was used by the assistant surgeon. The ovary was incised and dissected to find the cyst dissection plan. The cyst was then enucleated using the stripping technique. In this maneuver, the haptic feedback allowed to dose the traction applied, avoiding the cyst rupture. The hemostasis was controlled using the bipolar robotic grasper. The cyst was extracted using an endo-bag from umbilical access. The ovary was then sutured using 2/0 Vicryl stitch running suture using the robotic needle-holder. The procedure was completed with peritoneal and omental biopsies performed by standard laparoscopy that, considering the setting adopted, did not required any change in the surgical setting allowing a fast and easy procedure completion.

The operative time was 40 and 9 minutes for robotic arms installation. The estimated blood loss was 25 mL. The hospital stay was 1 day without early and late complications recorded.

Comments

The Senhance platform was deeply investigated in the last years and tested in different pathologies as benign and malignant conditions reporting good results even compared with standard laparoscopy (7).

Moreover, the platform was tested even in a subset of obese patients with good perioperative outcomes (4). Nowadays, the endoscopic surgery is moving towards a reduction in the number and size of the surgical instruments used (8,9).

The present surgical technique video showed a conservative adnexal surgery. The Senhance platform with the haptic feedback allowed to measure the tissue traction to avoid the cyst rupture. The operative time was in line with the literature. Considering all these aspects the platform is an attractive technology not only for demolitive surgery but even for conservative adnexal surgery.

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this study and any accompanying images.

References

1. Cianci S, Rosati A, Rumolo V, et al. Robotic Single-Port Platform in General, Urologic, and Gynecologic Surgeries:

A Systematic Review of the Literature and Meta-analysis. World J Surg 2019;43:2401-19.
2. Peters BS, Armijo PR, Krause C, et al. Review of emerging surgical robotic technology. Surg Endosc 2018;32:1636-55.
3. Bogliolo S, Ferrero S, Cassani C, et al. Single-site Versus Multiport Robotic Hysterectomy in Benign Gynecologic Diseases: A Retrospective Evaluation of Surgical Outcomes and Cost Analysis. J Minim Invasive Gynecol 2016;23:603-9.
4. Gueli Alletti S, Rossitto C, Cianci S, et al. The Senhance™ surgical robotic system ("Senhance") for total hysterectomy in obese patients: a pilot study. J Robot Surg 2018;12:229-34.
5. Gueli Alletti S, Perrone E, Cianci S, et al. 3 mm Senhance robotic hysterectomy: a step towards future perspectives. J Robot Surg 2018;12:575-7.
6. Gueli Alletti S, Rossitto C, Cianci S, et al. Telelap ALF-X total hysterectomy for early stage endometrial cancer: New frontier of robotic gynecological surgery. Gynecol Oncol 2016;140:575-6.
7. Gueli Alletti S, Rossitto C, Cianci S, et al. Telelap ALF-X vs Standard Laparoscopy for the Treatment of Early-Stage Endometrial Cancer: A Single-Institution Retrospective Cohort Study. J Minim Invasive Gynecol 2016;23:378-83.
8. Prodromidou A, Spartalis E, Tsourouflis G, et al. Robotic versus laparoendoscopic single-site hysterectomy: a systematic review and meta-analysis. J Robot Surg 2020. [Epub ahead of print].
9. Rossitto C, Cianci S, Gueli Alletti S, et al. Laparoscopic, minilaparoscopic, single-port and percutaneous hysterectomy: Comparison of perioperative outcomes of minimally invasive approaches in gynecologic surgery. Eur J Obstet Gynecol Reprod Biol 2017;216:125-9.

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