



ORIGINAL ARTICLE

# Needlescopic-assisted laparoendoscopic single-site adrenalectomy



Shogo Inoue\*, Mitsuru Kajiwara, Jun Teishima, Akio Matsubara

Department of Urology, Hiroshima University Graduate School of Biomedical Sciences, Hiroshima, Japan

Received 22 July 2014; received in revised form 4 February 2015; accepted 10 February 2015  
Available online 23 April 2015

## KEYWORDS

adrenal tumor;  
laparoendoscopic  
single-site surgery;  
needlescopic surgery

**Summary** *Objective:* Our objective was to compare the perioperative parameters of needle-assisted and conventional laparoendoscopic single-site adrenalectomy (LESS-A).

*Methods:* We compared 23 patients undergoing needle-assisted LESS-A with 29 patients undergoing conventional LESS-A at Hiroshima University Hospital between November 2009 and February 2014. Needle-assisted LESS-A was performed using a MiniLap instrument (Stryker, San Jose, CA, USA). We used this instrument to protectively retract the liver at the right side of the tumor and the spleen at the left side by grasping with a Securea endoscopic surgical spacer (Hogy Medical Co., Ltd., Tokyo, Japan). Various parameters including insufflation time, estimated blood loss, pain scale, resumption of oral intake, transfusion rate, and complications were analyzed using the Mann–Whitney *U* test.

*Results:* In all cases, LESS-A was completed successfully with no major intraoperative complications. Patients in both treatment groups had similar age, body mass index, sex, and laterality. Significantly, needle-assisted LESS-A was performed using the transumbilical approach rather than the subcostal approach. The insufflation time of the needle-assisted LESS-A was shorter than that of the conventional LESS-A ( $p = 0.0335$ ). No patients required intraoperative or postoperative blood transfusions. Retrospective design and the small sample size are main limitations of this study.

*Conclusion:* Needle-assisted LESS-A was performed safely and in a manner that mitigated many of the difficulties of LESS surgery.

Copyright © 2015, Asian Surgical Association. Published by Elsevier Taiwan LLC. All rights reserved.

Conflicts of interest: All contributing authors declare no conflicts of interest.

\* Corresponding author. Department of Urology, Graduate School of Biomedical Sciences, Hiroshima University, 1-2-3 Kasumi, Minami-ku, Hiroshima 734–8551, Japan.

E-mail address: [inosyogo@hiroshima-u.ac.jp](mailto:inosyogo@hiroshima-u.ac.jp) (S. Inoue).

<http://dx.doi.org/10.1016/j.asjsur.2015.02.004>

1015-9584/Copyright © 2015, Asian Surgical Association. Published by Elsevier Taiwan LLC. All rights reserved.

## 1. Introduction

Since the early 1990s, laparoscopic adrenalectomy has been a standard procedure for the majority of patients with a surgical adrenal tumor.<sup>1</sup> In conventional laparoscopic adrenalectomy, three or four ports are used. A paradigm shift in the field of minimally invasive surgery is now underway, and laparoscopy is progressing ever closer toward scarless surgery. With the advent of multichannel single ports as well as articulating instruments, laparoendoscopic single-site (LESS) surgery has been reported and the use of LESS surgery has increased. Over the past few years there has been increasing enthusiasm and growing interest in this novel, minimally invasive surgical technique.<sup>2</sup> LESS surgery has been performed for various urological diseases, and studies have shown that it results in less pain, shorter hospital stays, and excellent cosmetic outcomes compared to other techniques.<sup>3</sup> However, the LESS procedure is a technically challenging approach, which limits broader application of the technique.<sup>4</sup> Surgeons are confronted with a number of difficulties not evident in conventional laparoscopy, such as the lack of instrument triangulation, instrument shaft clashing, and the need for ambidexterity. LESS adrenalectomy (LESS-A) through umbilical access can be extremely challenging due to the angle of approach and the difficulty of organ retraction.

Needlescopic-assisted LESS is a variation of LESS. In this approach, instead of introducing conventional LESS instruments through the multichannel port, additional needle-like 2–3 mm instruments are used. This results in minimal trauma to the abdominal wall and is promising for scarless surgery because the abdominal entry points do not necessitate closure of the insertion site after instrument retrieval.<sup>5</sup>

The main advantage of needlescopic-assisted LESS is that it overcomes one of the basic limitations of LESS, which is the lack of instrument triangulation. Additional instruments are regularly used to retract target tissues, and retracting the liver in the case of right-sided adrenal surgery and the spleen in the case of left-sided adrenal surgery are the most common indications of the placement of the additional instruments.<sup>6</sup> In short, needlescopic-assisted LESS surgery avoids many of the major difficulties encountered using the single-site approach. In this study, we compare perioperative parameters between needle-assisted and conventional LESS-A.

## 2. Patients and methods

### 2.1. Participants

We compared 23 patients undergoing needle-assisted LESS-A with 29 patients undergoing conventional LESS-A at Hiroshima University Hospital, Hiroshima, Japan between November 2009 and February 2014. All patients consented to LESS-A and additional incisions if necessary. Fifty-two consecutive patients underwent transperitoneal LESS-A by two surgeons (S.I and A.M.). S.I. had experienced only three cases of multiport laparoscopic adrenalectomy and performed most cases of LESS-A (45 cases; 87%). For the first 20 cases, we used only the subcostal approach, but the by

transumbilical approach for female patients after that. Various parameters including insufflation time, estimated blood loss, pain scale, resumption of oral intake, transfusion rate, and complications, were analyzed. Convalescence was measured by using a visual analog scale (VAS) ranging from 0 (negligible pain) to 10 (severe discomfort).

### 2.2. Surgery

Under general anesthesia, the patients were placed in the 60° modified flank position and the operators stood facing the abdomen between the arcus costalis on the ipsilateral side and the umbilicus. A 2-cm skin incision and an access into the peritoneal cavity were made by open laparotomy. A single-port device was constructed using Lap Protector (Hakko Co. Ltd., Tokyo, Japan) and a powder-free surgical glove. The wound retractor was inserted into the incision site and the upper part of the wound retractor ring was covered with a size-7<sup>1</sup>/<sub>2</sub> surgical glove. The three trocars were 5-mm EZ trocars (Hakko Co. Ltd.).

To minimize instrument collision, a flexible 5-mm 0° high-definition laparoscope (Olympus, Tokyo, Japan) was used. Pneumoperitoneum was induced by CO<sub>2</sub> gas insufflation to 12 mmHg. The surgical strategy followed that for a conventional transperitoneal adrenalectomy.<sup>6</sup> Specifically, the Toldt line and the typical vascular landmarks (inferior vena cava and renal vein for right- and left-sided adrenal tumors, respectively) were dissected and exposed using a bent laparoscopic instrument (Roticulator Endo Dissect; Covidien, Mansfield, MA, USA) and straight standard instruments. For the right-sided adrenal tumor, the right liver lobe was retracted using a snake retractor in the conventional laparoscopic adrenalectomy approach. We used a 2.3-mm MiniLap instrument (Stryker, San Jose, CA, USA) in this series. This instrument protectively retracted the liver on the right side (Fig. 1) and the spleen on the left side of the tumor (Fig. 2) by grasping the endoscopic surgical spacer Securea (Hogy Medical Co., Ltd., Tokyo, Japan) to avoid a traumatic procedure as cushioning to retract.

The adrenal veins were identified, controlled with two 5-mm polymer locking clips (Hem-o-lok, Teleflex Medical, Research Triangle Park, NC, USA), one proximally and one distally, and then divided. A 5-mm LigaSure (Covidien) was used to complete the adrenal gland dissection. After hemostasis was ensured, the entire adrenal gland associated with the tumor was freed within the abdomen. In all cases, the specimen was retrieved through the Lap Protector without any further skin incision. A surgical suction drain was left in place through the surgical port. Transperitoneal LESS-A was successfully performed for all patients.

## 3. Results

### 3.1. Demographics

The patient demographics are listed in Table 1. There was no conversion to open surgery for any patient. Two patients, however, were switched to a conventional laparoscopic adrenalectomy by the placement of two additional 12-mm trocars. For the remaining 52 patients, the LESS-A

Download English Version:

<https://daneshyari.com/en/article/4282612>

Download Persian Version:

<https://daneshyari.com/article/4282612>

[Daneshyari.com](https://daneshyari.com)