Research Article

Outcome of Gynecologic Laparoendoscopic Single-Site Surgery with a Homemade Device and Conventional Laparoscopic Instruments in a Chinese Teaching Hospital

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Objective. To demonstrate various benign gynecologic diseases that can be performed by laparoendoscopic single-site surgery (LESS) with conventional laparoscopic instruments. Method. Patients with benign gynecologic diseases that need ovarian cystectomy, fallopian tube resection, or myomectomy were divided into experimental group and control group, and perioperative outcomes of these patients were analyzed. Results. From November 2017 to May 2018, 65 LESS gynecological surgeries were performed, among which there were 25 ovarian cystectomies, 28 unilateral fallopian tube resections, and 12 myomectomies. All the surgeries were completed smoothly, and only one surgery needed one more additional port. No patients have severe complications. Operative time, intraoperative blood loss, and perioperative complications have no difference between the two groups. The LESS laparoscopy group had less postoperative pain scores and longer bowel recovering time, compared with the conventional laparoscopy group (<0.05). Conclusion. Compared with traditional laparoscopy, LESS surgery with conventional laparoscopic instruments is feasible and safe, but postoperative exhaust time is longer than the control group.

1. Introduction

As one type of the laparoscopic surgery, the laparoendoscopic single-site (LESS) surgery has been developed in an attempt to further reduce the morbidity and scarring associated with surgical intervention [1, 2]. Single-site gynecologic Surgery is widely carried out all over the world during the recent years. More and more gynecological endoscopic surgeries use this single-site technology, especially transumbilical single-port. Many research studies have indicated advantages of it, such as less postoperative pain, quick recovery, and less skin scar. Some results are conflicting [3–10]. The advantages of LESS are still uncertain. In this study, we analyzed perioperative and postoperative data of single-site laparoscopic surgery and multihole laparoscopic surgery to explore the difference in clinical efficacy between the two groups.

2. Methods

This study was a retrospective study performed in GuangZhou women and children’s Hospital, from November 2017 to May 2018. The study was approved by the hospital’s ethics committee. All the patients signed the informed consent. The patients who have a history of previous abdominal surgery or BMI >30 were excluded. All the operations were performed by the same doctor who had completed more than 20 LESS surgeries before the research. Similar cases in the research period through conventional laparoscopy were involved into the control group.

2-3 cm longitudinal umbilical incision was measured by a sterile ruler and single-port access by sequence incision to the peritoneum through the periumbilical incision. We inserted the inner ring of the wound retractor and fixed a 6½ size surgical glove on the outer ring of the retractor. One
10 mm trocar and two 5 mm trocars were inserted into the
glove fingers and fixed by silk thread. The 10 mm rigid 30°
Karl Storz laparoscopy was inserted into the abdominal
cavity through the 10 mm trocar, and the conventional
laparoscopic instruments were inserted through the other
two trocars (Figure 1).

We reviewed all the medical records including the operation
time, blood loss, length of hospital stay, bowel recovering
time, and postoperative Visual Analog Scale (VAS)
score. The VAS was used to score incisional pain on a 10-
point scale ranging from 0 (no pain) to 10 (worst possible
pain). All the perioperative outcomes of LESS surgery group
were compared with the traditional multiport laparoscopic
surgery groups.

3. Statistical Analyses

The parametric variables were expressed as mean ± standard
deviation (SD), minimum and maximum, and were com-
pared with a t-test. Categorical variables were compared
with a Chi-squared test. We used SPSS 22.0 for statistical
analyses. The level of statistical significance was set at
p < 0.05.

4. Results

25 ovarian cystectomies, 12 myomectomies, and 28 uni-
lateral fallopian tube resections have been involved in the
LESS group.

In our study, there was no significant difference from the
general clinical data between the two groups of patients
whether performing adnexal surgery, salpingectomy, or
myomectomy. The differences of hospital stays and bowel
recovering time between the two groups are significant for
the ovarian cystectomies, and the LESS group needed longer
time for bowel recovering (Table 1).

For the myomectomies, there is a significant difference of
bowel recovering time between the two groups, and the LESS
group needs longer time for bowel recovering compared with
the conventional laparoscopy group. The difference of
24 h pain between the two groups is significant, and the LESS
group has less 24 h VAS compared with the conventional
laparoscopy group (Table 2).

For the salpingectomy, there is a significant difference of
VAS between the two groups. We did not find differences of
other items between the two groups (Table 3).

5. Discussion

Laparoendoscopic single-site surgery (LESS) is a single-port
technique through the umbilicus, in the past 10 years, and it
has emerged as a potentially less-invasive alternative to
multiport laparoscopy. It has enhanced the cosmetic benefit
of minimally invasive surgery. At the beginning, a home-
made single port is easier to get, low cost and has a good
socioeconomic performance, especially for the countryside
hospitals. YH Park was the first person who reported that he
use a homemade single port device to perform laparoendoscopic single-site nephrectomy [11]. Several meta-

analysis researches have been published on the safety and
efficacy of LESS in recent years [9, 12–14]. However, it has
been unclear whether LESS offers benefits over multiport
LH. Sandberg et al. [15] reported that potential benefits were
cosmetic satisfaction and less postoperative pain, but the
small differences for these outcomes appear not to be of
clinical relevance in their systematic review and meta-
analysis report. In our study, most items we observed have
no difference between two groups.

In the application of any new technique, the safety of the
patients is always the most important. In our study, all the
surgeries were successfully performed. After a median fol-
low-up period of 3 months, there is no complaint of the LESS
surgery. All the LESS group patients were fully satisfied with
the appearance of the incisions.

Operating time is routinely considered as a parameter
to estimate the surgical learning curve. In our study, there
is no difference for adnexal surgery, salpingectomy, or
myomectomy. We considered there are different possible
reasons for it. (1) Regarding salpingectomy, it is relatively
simple for a doctor who passed the learning curve of
LESS. (2) For myomectomy, although the surgeon faced
additional challenges such as crossing or collision of
LESS surgery is less invasive, suitable and safe for gynecological surgery. The homemade single-port device is cheap and suitable to spread especially in the developing region.

Data Availability

The data (tables) used to support the findings of this study are included within the article and available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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References


