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Comparison between transumbilical and transabdominal ports for the laparoscopic retrieval of benign adnexal masses: a randomized trial

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ABSTRACT

Objective: To compare the feasibility, operative time, specimen retrieval time, and effect on postoperative pain of laparoscopic retrieval of benign adnexal masses between a 10-mm transumbilical and a 10-mm transabdominal port.

Study design: Fifty women with adnexal masses who were scheduled for a laparoscopic procedure between July 2008 and April 2009 were enrolled. The patients were randomized into two groups; these were patients where a transumbilical port was used for specimen retrieval (transumbilical group, $n = 25$) and patients where a transabdominal port was used for specimen retrieval (transabdominal group, $n = 25$). Preoperative suspicion of malignancy and indications suggesting a need for hysterectomy or myomectomy were considered to be exclusion criteria. Randomization was centralized and computer-based. Patients recorded the severity of incisional pain on a visual analog scale (VAS) with 0 meaning no pain and 10 meaning unbearable pain.

Results: There were no significant differences in age, body mass index, umbilical thickness, abdominal thickness, cyst size, cyst amount, cyst weight, histology, complications and duration of hospital stay when the two groups were compared. Patients in the transumbilical group had a significantly shorter specimen retrieval time (0.7 ± 1.8 min *vs.* 4.9 ± 12.6 min, $p = 0.006$) and a significantly lower postoperative day (POD) 0 VAS pain score (5.2 ± 2.1 *vs.* 6.6 ± 2.2, $p = 0.015$). Significantly fewer patients in the transumbilical group had a specimen retrieval time of $\geq$10 min (0% *vs.* 20%, $p = 0.025$) and a POD 0 VAS pain score of >5 (36% *vs.* 84%, $p < 0.001$). However, the average POD 1 VAS pain score (3.2 ± 1.8, *vs.* 3.6 ± 1.6) and the proportion with a POD 1 VAS pain score >5 (12% *vs.* 12%) were similar for the two groups.

Conclusion: When laparoscopic surgery on benign adnexal masses is carried out using a 10-mm incision wound, removal of the specimen via the umbilical port has a shorter retrieval time and produces less postoperative pain than retrieval via a lateral abdominal port.

1. Introduction

Adnexal masses are a common clinical problem encountered in the practice of gynecology. Increased surgical skill and improvements in equipment have allowed the performance of extensive pelvic and abdominal surgery using minimum invasive techniques. The advantages of laparoscopic surgery include not only a small incision, less postoperative pain, a shorter hospital stay and earlier recovery, but also an improved quality of life during the postoperative period [1–3]. In many surgical fields, enthusiasm for the excellent outcomes obtained by laparoscopy has driven efforts to refine operative techniques in an attempt to further minimize the overall wound size in order to obtain a better cosmetic appearance and greater patient satisfaction [4,5]. Up to the present, no study has compared the difference in retrieval time, using the same-sized wound, between a transabdominal and transumbilical port. Similarly, the effect of using the same-sized wound but different incision ports on postoperative pain has also not been established using a controlled study. The aim of this study was to evaluate the operative time, specimen retrieval time, and effect on postoperative pain during laparoscopic retrieval of adnexal masses when either a 10-mm transumbilical or a 10-mm transabdominal port was used.

2. Materials and methods

Between July 2008 and April 2009, 50 consecutive patients who had a suspected benign adnexal mass underwent laparoscopic

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surgery, either a cystectomy or oophorectomy, at the National Taiwan University Hospital. All patients had an ultrasound investigation performed before surgery to evaluate the nature and size of the adnexal mass, the thickness of umbilicus and the thickness of the lateral abdominal wall. Patients with suspected malignancy or where hysterectomy, myomectomy and pelvic adhesions might be indicated were excluded from the study. Women who entered the study were randomized in terms of which laparoscopic procedure they would undergo for specimen retrieval, either a transumbilical port (transumbilical group, $n = 25$) or a transabdominal port (transabdominal group, $n = 25$). In the transabdominal group, two patients with recurrent breast cancer underwent prophylactic oophorectomy. The patients were randomized according to a computer-generated list. The surgeon was then informed about the site to be used. The patients and care nurses were blinded with respected to the surgical technique assignment. The baseline characteristics of the patients, including age, body mass index, obstetric history, preoperative diagnosis, umbilical thickness, abdominal thickness and cyst size were recorded at admission. After the operation, each patient was asked by their care nurse to record the severity of her incisional pain on a visual analog scale (VAS) with 0 meaning no pain and 10 meaning unbearable pain. This was done on operative day (POD) 0 and postoperative day 1 (POD 1). In addition, the surgical technique, the size of the cyst, the cyst weight, total operative time, cyst retrieval time, estimated blood loss, and the length of hospital stay were also recorded before discharge.

2.1. Operative technique

The patients were placed in the lithotomy position. The laparoscopic procedure was performed under general endotracheal anesthesia. The umbilicus was cleaned using a cotton swab before skin disinfection (Fig. 1A), and then the bladder was drained by Foley catheterization. A uterine manipulator was inserted to provide adequate exposition of the pelvic organs. Following pneumoperitonization, a 10-mm trocar was inserted through the umbilical port to hold the optic camera. Under direct visualization, a second ancillary trocar was inserted into the left

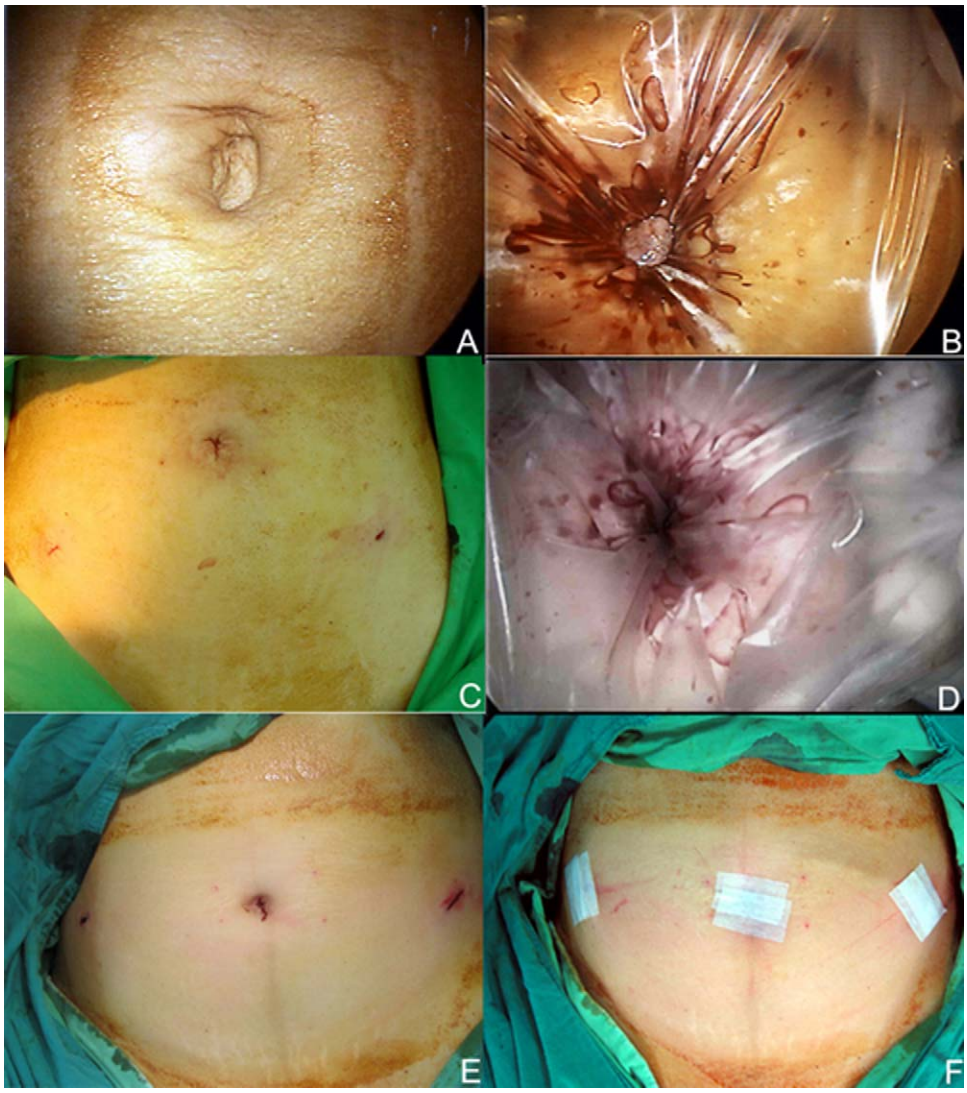

Fig. 1. (A) The umbilicus was cleaned using a cotton swab. (B) The thinner umbilical wall allows the specimen in the bag to be seen clearly and this helps to prevent iatrogenic rupture of the bag. (C) In the transumbilical group, the diameter of the second accessory trocar was 5-mm and it was positioned in the left abdominal quadrant. A 5-mm third ancillary trocar was inserted in the right abdominal quadrant. (D) The wall is distinctly thicker in the lateral abdomen compared to the umbilicus and this can result in the endobag becoming stuck in the abdominal wall more often. (E) In the transabdominal group, the diameter of the second accessory trocar was 10-mm in the left abdominal quadrant. A 5-mm third ancillary trocar was inserted in the right abdominal quadrant. (F) The patient and the care nurse who evaluated the pain score did not know to which group the patient had been allocated because the wounds were covered by gauze.