

Single-Incisions Hysterectomy

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ABSTRACT

Introduction: Although the conventional method of total laparoscopic hysterectomy has been multi-port access, advances in equipment have permitted fewer and smaller incisions.

Case Description: We present the first known case of single incision, 8.5-mm total laparoscopic hysterectomy employing 3-mm instruments. Three separate trocars were inserted through a single skin incision in a triangular array and hysterectomy was performed in the usual manner.

Conclusions: With advancements in laparoscopic instrumentation fewer and smaller incisions can be used to accomplish hysterectomy. This case represents the continued convergence back toward total vaginal hysterectomy as the "gold standard" minimally invasive hysterectomy.

Key Words: Total laparoscopic hysterectomy, Single incision, Multiple incision.

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INTRODUCTION

The conventional method of total laparoscopic hysterectomy has been multiple-port access.³ Advances in endoscopic technology through robotics has allowed for improvements to conventional methods of laparoscopic hysterectomy. Novel methods such as total laparoscopic hysterectomy and single-port access have allowed for minimizing the risk and improving the benefits associated with conventional hysterectomy methods.⁴ Robotic application has evolved to single-port hysterectomy by decreasing number of incisions, incision size, and port size.² Previously, the smallest known single-port laparoscopic incision was reported to be 12 mm.² The first reported single-port robotic hysterectomy was done through 15-mm incision. We are presenting the first known case of single-incision, 8.5-mm total laparoscopic hysterectomy.

CLINICAL CASE

A 34-year-old G3 P3003 with three uncomplicated vaginal deliveries was referred with profuse menorrhagia and iron-deficiency anemia to our outpatient hysterectomy program. The patient requested a single-incision approach for cosmetic reasons. She was consented for single-incision laparoscopic hysterectomy and bilateral salpingectomy.

Because of the restricted mobility associated with a single entrance point for laparoscopic instruments, an articulating vaginal uterine manipulator was essential. The Rumi II system (Cooper Surgical, Trumbull, Connecticut USA) was employed. Assembly was conducted after the endometrial cavity was sounded and cervical diameter assessed. Appropriate tip and cap were selected and configured.

An 11 blade with greatest diameter of 5 mm was used to make a single stab incision in the skin fold at the base of

the umbilicus. An 8-mm bladeless trocar measuring 8.5 mm at the widest point was then used to dilate the 5-mm skin incision. A conventional Verres needle was used to insufflate to a filling pressure of 15 mm of mercury.

Next, a Microlap (ConMed, Utica, New York, USA) trocar with a 4.8-mm external diameter was inserted as caudad as possible on the midline and CO₂ insufflation tubing was configured. Two additional 3.5-mm in external-diameter trocars were placed cephalad to the first trocar and slightly lateral to the midline. In this configuration there were three individual fascial punctures in a triangular array (**Figure 1**). Triangular, as opposed to linear, placement of trocars accomplished two things. It allowed us to do this surgery through an 8-mm skin incision. It also approximated most closely our normal trocar placement with two lateral ports opposite the umbilical port. Crossing-over of instruments was also more easily accomplished to achieve traction while cutting or coagulating tissue. As all instruments and the scope were 3 mm in diameter, changing ports is possible to

address particular access needs during surgery can be accomplished.

Technique for coagulation and division was uniform throughout the principal dissection. A 3-mm bipolar forceps was used to desiccate three contiguous areas, then 3-mm endoscopic scissors were used to divide intercurrently. Opportunistic bilateral salpingectomy was performed in the usual manner. Round ligaments and utero-ovarian ligaments were divided and bites were taken down the sides of the uterus until the area of the vesico-uterine plicae was reached. The uterus was forced cephalad in the midline with the vaginal manipulator while the bladder was filled retrograde through the Foley catheter with 200 cc of warm sterile saline to identify its anterior, cephalad extent. The bladder was then drained. The 3-mm J hook was used beginning at the Right visceral-peritoneal defect to create the bladder flap. Filling the bladder to identify its margins is a technique we have employed successfully on more than 2000 prior lapa-



Figure 1. Single incision laparoscopy set up.



Figure 2. Skin incision immediately post-op.

roscopic hysterectomies with very low incidence of cystotomy.

The bladder was reduced on the pubo-cervico-vesical fascia past the caudad ridge of the cervical cap using the grasping device. The J Hook with a coagulation current setting of 50 W was used to divide the pubo-cervico-vesical fascia circumferentially on the anterior ridge created by the cervical cap. Dissection was started at 12 o'clock. The blue cap was immediately evident and served to precisely guide the dissection. Anteflexing the uterus facilitated the posterior dissection while minimizing potential for injury to bowel either through direct thermal injury or through arcing.

This uterus was delivered intact on the Rumi II system transvaginally.

Because sewing was impractical with the 3-mm laparoscopic system, vaginal closure was required. Vaginal apices were plicated to the utero-sacral ligaments on both sides. Prior to tying those sutures the peritoneum was closed with a purse-string stitch of 3-O absorbable suture. The intercurrent vaginal epithelium was closed using a running, locking stitch of O-absorbable suture. We have performed vaginal closure on all laparoscopic hysterectomies with a lower cuff dehiscence rate than observed in most articles in the literature for lapa-



Figure 3. Skin incision at six weeks post-op visit.

roscopic or robotic closure. Estimated blood loss was 150 mL. Operating time was 82 min.

Recovery Room course was uneventful and patient was discharged to home 45 minutes postprocedure. Pathology returned a 98-g uterus with adenomyosis.

Principals of Enhanced Recovery After Surgery were employed pre and postprocedure.⁶ Carbohydrate loading, pre-procedure hydration, mixed analgesic regimen and antiemetics were used before the surgery. Postoperatively immediate return to general diet, mixed analgesic regimen, low-dose opioids, antiemetics, gastrointestinal adjuvants, sequential compression devices, and immediate ambulation were employed.

The patient returned to 75% of her preoperative level of functionality within 6 days of her procedure.⁷ Photos of the incision immediately postprocedure and again at the 6-week examination are included (**Figure 2** and **Figure 3**).

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