
Laparoscopic Hysterectomy Using the VCARE Uterine Manipulator

Prabhat K. Ahluwalia, MD Utica, NY

Summary

Between September 1991 and March 1997, 400 patients underwent laparoscopic hysterectomies using the VCARE uterine manipulator device (Vaginal-Cervical Ahluwalia's Retractor-Elevator). Of these, there were 336 Total Laparoscopic Hysterectomies (TLH), as well as 64 Laparoscopically-Assisted Vaginal Hysterectomies (LAVH).

OR Time decreased from an average of 187 minutes for the first 50 patients, to an average of 113 minutes and 84 minutes for the patient subsets 201 - 250, and 251 - 300, respectively. Patients 301 - 336 had an average OR time of 72 minutes. Overall, average OR time was decreased by 103 minutes or 55% from subset 1—50 to subset 251—300, and decreased by 115 minutes or 61% from subset 1 - 50 to subset 301 - 336.

The average estimated blood loss (EBL) of 92 ml in patients 1—50, decreased to 33 ml and 37 ml in subsets 201 - 250 and 251 - 300, respectively. VCARE subset 301 - 336 averaged an estimated blood loss of 27 ml.

The VCARE uterine manipulator/elevator is intended for use in both Laparoscopically-Assisted (LAVH) and Total Laparoscopic (TLH) hysterectomies, with a specially designed double-cup system. The cervical cup displaces the ureters, retracts the urinary bladder, and defines the colpotomy incision. A second vaginal cup prevents loss of pneumoperitoneum during colpotomy.

The VCARE uterine manipulator, and surgeon familiarity with the instrument, resulted in a significant decrease in both OR time and estimated blood loss (EBL).

Materials & Methods

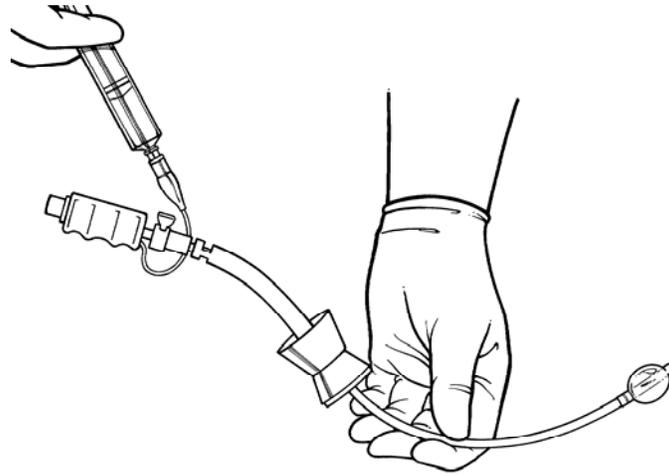
Patient Selection

Excluded from this study were patients requiring pelvic floor corrective surgery, and were therefore treated by vaginal hysterectomy with or without colporrhaphy. Patients were selected for either Total Laparoscopic Hysterectomy (TLH) or Laparoscopically-Assisted Vaginal Hysterectomy (LAVH) by the following criteria:

Table 1: Patient selection criteria.

Criteria for LAVH	Criteria for Total Laparoscopic Hysterectomy
1. Minimum 1 st degree of uterine prolapse.	1. Lack of pelvic floor relaxation.
2. Previous vaginal child birth.	2. Previous Caesarian Section without vaginal birth .
3. Uterine size less than 10 weeks.	3. Uterine size greater than 10 weeks.
4. No obliteration of the cul-de-sac from endometriosis.	4. . Advanced endometriosis
5. Patients requiring adnexal surgery who were candidates for vaginal hysterectomy.	5. Nulliparity.
6. Patients requiring pelvic floor corrective surgery with other pelvic pathology, i.e., <ul style="list-style-type: none">• Endometriosis• Ovarian cysts• Pelvic mass• Adhesions	6. Early stage malignancy - <ul style="list-style-type: none">• Uterine• Ovarian without metastatic disease.

Figure 1: VCARE



Instruments and Surgical Method

The VCARE uterine manipulator (see Figure 1) incorporates specially designed forward (cervical) and back (vaginal) cups. The cervical cup displaces the ureters laterally, retracts the urinary bladder, compresses the uterine vessels, and defines the incision for the colpotomy. The vaginal cup forms a seal to prevent loss of pneumoperitoneum during colpotomy and displaces the sigmoid colon away from the uterus. The manipulator tube conforms to the shape of the pelvic curve, and allows for easy manipulation of the uterus. A 10 cc inflatable balloon at the distal end is used to stabilize the manipulator tube within the uterine cavity. Properly inserted, in the supine position, the VCARE handle rests at a level above a patient's thighs, where it is conveniently accessible for uterine manipulation. The handle is designed to be grasped and held by the assistant surgeon or the nurse with ease.

The VCARE manipulator tube is inserted into the cervix so that the forward balloon is located in the uterine cavity. After inflation, the cervical cup is inserted so that it encompassed the cervix. With the vagina against the cervical cup, the vaginal cup is then placed into position and locked in place.

The hysterectomies proceeded under three-puncture laparoscopic technique, which includes the ligation and transection of the Round Ligament, Infundibulopelvic ligament and/or ovarian ligament, as well as the uterine arteries. The ligation method most commonly employed was bipolar coagulation, with the EndoGIA (AutoSuture) and ligatures used as needed. Peritoneal stripping for endometriosis is performed as part of the hysterectomies, and not as a separate procedure.



Figure 2: VCARE cups

Circumferential colpotomies were performed using the double-lip rim of the forward cup as a guide (see Figure 2). The laparoscopic L-Hook (CONMED Corp.) was used for the colpotomies using a setting of 40 watts in the pure cut monopolar mode. Additional coagulation of bleeding tissue was performed as needed. The specimen was then removed vaginally with the VCARE device.

Results

Table 2 shows the comparison of estimated blood loss and OR Time for the various patient groups in this series.

The decrease in OR Time is related to both the progressive learning experience of the surgeon , and the benefits of the VCARE instrument. It benefits lie in outlining the pelvic anatomy, decreasing operative blood loss, and in maintaining the pneumoperitoneum following colpotomy. Beginning in subset 151 - 200 routine ureter dissection (UrD) was discontinued unless indicated by surgical pathology. During subset 201 - 250 the surgeon introduced routine use of multi-functional bipolar cutting and coagulating devices (MFBP), as well as peritoneal stripping for endometriosis (Edx) at the time of hysterectomy.

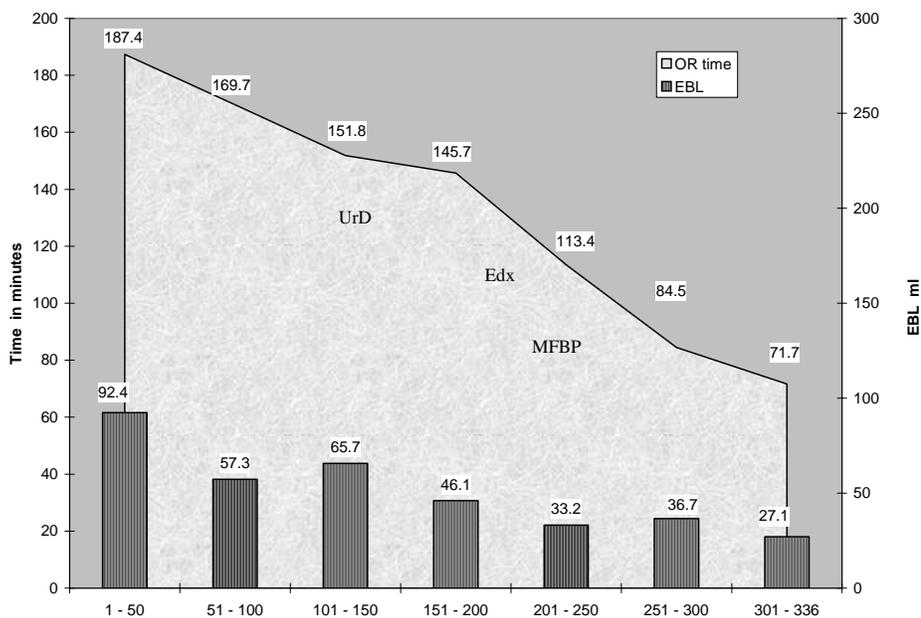


Table 2: Comparison of OR time and estimated blood loss (EBL).

Complications

One patient, in 1992, sustained a urinary bladder laceration which was repaired laparoscopically. Patient had previous cesarean section. A second patient, five weeks postoperative, had vaginal vault dehiscence secondary to unauthorized use of Prednisone (30 mg daily) for three weeks.

Conclusion

Analyses to date show that the VCARE design aids the laparoscopic surgeon in identifying the pelvic anatomy and facilitating the surgical dissection.

The cervical (forward) cup displaces the ureters laterally, retracts the urinary bladder anteriorly, displaces the sigmoid colon away from the uterus, compresses the uterine vessels, and defines the incision line for the colpotomy. The vaginal (back) cup prevents loss of the pneumoperitoneum during the colpotomy. Especially efficient, since both cups are inserted at the beginning of the procedure. VCARE also helps to minimize blood loss by its partial compression of the uterine arteries.

The VCARE cups worked efficiently and effectively for patients of varying physical stature from 100 lbs to 306 lbs. Size of the uterus also did not impose any surgical risk; the largest being 993 gms. Based on the surgical experience, obesity itself is not a constraint to Total Laparoscopic Hysterectomy in a patient who is medically suitable for surgery. No complications resulted either directly or indirectly from the use of the VCARE device.