Introduction

The UPLIFT procedure, a simple and durable laparoscopic technique, restores a retroverted uterus to its normal anatomic position. With the UPLIFT procedure, the round ligaments are invested with permanent suture, using them as a conduit to establish a bridge between the lateral abdominal wall and tissue just proximal to the uterus.

The UPLIFT procedure has been used successfully to relieve pain associated with a retroverted uterus; to lift the uterus out of the cul-de-sac after endometriosis surgery to help prevent adhesion formation; and as an adjunctive treatment for pelvic congestive syndrome.

This surgical guide describes how to use the Metra PS® Procedure Kit to perform the UPLIFT procedure with specially designed single-use instruments:

- **MetraPass™ suture passer**
- **MetraGrasp™ ligament grasper**
- **MetraTie™ knot pusher**
- **Investa® suture**
- **Pilot® guides: 5 mm and 10-12 mm**

Surgical Technique

The UPLIFT procedure may be performed with either one 5 mm suprapubic or two 5 mm lateral ports. Place trocars according to concurrent procedures and physician preference. Place a uterine manipulator for uterine positioning to facilitate the procedure.
**Locate the Skin Nicks**

1. Under laparoscopic visualization, externally palpate the abdominal wall to identify the superior point where the round ligament attaches to the lateral abdominal wall. This location will be used to position the skin nick lateral and superior to the entry point of the round ligament to the inguinal canal.

Imagine a straight line from the skin nick to the uterus that passes through the round ligament (Figure A).

As a general rule, measure two finger breadths up from the pubic symphysis and two finger breadths over.

2. To locate the suture passer path and guide placement of the skin nicks, puncture the skin with a 20-22 gauge spinal needle filled with 10 cc of 1% lidocaine or 0.5% bupivacaine and insert it along the proposed path of the suture passer. Inject the local anesthetic while withdrawing the needle. Local anesthetic injection assists with post-operative pain management. It also enhances the volume of the round ligament for easier identification and navigation.

Use a scalpel tip to make a 2-3 mm skin nick. Repeat the process on the other side.

**Invest the Round Ligaments**

1. Use the MetraPass suture passer to grasp the Investa® suture. Investa suture is a size “0” monofilament, polybutester suture. It is lubricious and designed to pass through tissue easily and maintain strength under tension.

2. Insert the suture passer tip in line with the round ligament. Pass through the fascia and muscle (Figure B). The suture passer tip should be positioned preperitoneally at the entrance to the round ligament.

3. Ensure that the Investa suture rests fully within the recessed portion of the MetraPass suture passer (Figure C). The MetraPass suture passer is designed to hold suture securely within a recessed notch and closes to a needle point to facilitate passage through tissue.

4. Position the MetraGrasp ligament grasper through a trocar port. Hold the round ligament as the suture passer traverses within the ligament, exerting counter pressure as necessary to facilitate passage (Figure D). The MetraGrasp ligament grasper features an indentation designed to prevent trauma to the round ligament. Use the uterine manipulator to move the uterus to the contralateral side to stretch the round ligament to facilitate suture passage. Some resistance may be encountered.
5. Traverse the length of the round ligament with the suture passer and exit about 1 cm proximal to the attachment point with the uterus. The Investa suture is then dropped, leaving an approximately 6-inch tail. (Figure E).

![Figure E]

It is not necessary to remain within the round ligament as it is traversed. If the MetraPass suture passer pushes through the round ligament, withdraw the suture passer until it is back within the round ligament and continue to traverse. If the round ligament becomes friable as it is traversed, weave in and out with the MetraPass suture passer to obtain bites of tissue along the round ligament to create a secure suspension.

To facilitate exit of the suture passer from the round ligament and avoid puncture of the uterus, use the MetraGrasp ligament grasper to exert counter pressure on the ligament.

After dropping the suture in the abdominal cavity, grasp the suture with the MetraGrasp ligament grasper. Hold the suture in place while removing the MetraPass suture passer from the ligament and abdominal wall.

6. For the second pass, insert the MetraPass suture passer through the same skin nick, so that the tip is positioned preperitoneally at the entrance to the round ligament (Figure E). Leave a 0.5 cm space between the first insertion and second insertion at the fascial level to create a fascial bridge to support the tied suture.

**When creating the fascial bridge, the second entry point should be made across the fibers of the fascia from cephalad to caudad. Entering along the fibers may cause the suture to pull out.**

7. Traverse the round ligament with the MetraPass, exiting the ligament about 1 cm proximal to the initial exit point (Figure F). Grasp the free end of the suture with the MetraPass. Retrieve the suture through the round ligament and abdominal wall.

8. Place a clamp on the suture ends to temporarily hold the suture in place while the other round ligament is invested.

9. Repeat steps 1-7 on the opposite side of the uterus.

**Reposition the Uterus**

1. Once both sides have been invested with suture, remove the uterine manipulator so a correct anatomic position can be approximated. Pull on the ends of the suture until the round ligaments are shortened appropriately, gently lifting the uterus into a slightly antverted position on the midline. Tie the suture (Figure G).

2. Use the MetraTie knot pusher to position the knot below the skin and above the fascia (Figure H). Do not over tighten. Over tightening may cause post-operative pain. The MetraTie knot pusher is designed with a slot which will allow approximately 0.25 inches of slack when tying sutures.

3. Close the skin nicksites according to physician preference.
Close the trocar Wounds

Perform full-thickness closure of all trocar sites as described below:

1. Insert the Pilot guide with the holes aligned cephalad to caudad. Use the MetraPass suture passer to push suture material through the Pilot guide, fascia, muscle and peritoneum into the abdomen. Drop the suture, and remove the suture passer.

2. Push the suture passer through the opposite side of the Pilot guide and pick up the suture.

3. Pull the suture up through the peritoneum, muscle, fascia and guide.

4. Remove the Pilot guide and tie.

Surgical Tips

TIP: Managing post-operative pain

To help prevent post-operative pain, a local anesthetic may be injected percutaneously through the course of the round ligaments.

To help prevent irritation at the skin nick sites, bury the suture tails.

- Leave approximately 0.25 inches of suture material after the final throw.
- Grasp the tail with the MetraPass suture passer and bury it between the skin and fascia.

In case of post-operative pain, the patient may require injection of a local anesthetic such as 0.5% bupivacaine. Pain resolution following the procedure may take 1-3 days while any swelling decreases. Referred or radiating pain in the labia or upper thigh may be indicative of nerve entrapment. In this case, the suture should be cut on the painful side to relieve tension on the nerve. Unilateral suture release may resolve the pain and still maintain uterine position.

Minimizing the Possibility of Nerve Entrapment

To help minimize the possibility of nerve entrapment, locate the skin nick lateral and superior to the origination of the round ligament at its most superior attachment to the abdominal wall (the exit point of the round ligament from the inguinal canal). Locating the nicks at this level will allow for suspension of the uterus without entrapment of the iliohypogastric, ilioinguinal and genitofemoral nerves (Figure 1).

TIP: Concurrent procedures

When the uplift procedure is performed in conjunction with other laparoscopic procedures, it is best to perform it last. Removal of the uterine manipulator allows the uterus to be lifted gently into a slightly anteverted position on the midline.

TIP: Define the round ligaments

To increase the tissue volume of the round ligaments for easier traverse, gently squeeze along the length with the Metra-Grasp ligament grasper.

REFERENCES

