

# A Safer, Simpler, Classic Intrafascial Supracervical Hysterectomy Technique

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## ABSTRACT

**Objectives:** Our aim is to introduce the technical aspects and advantages of a new classic intrafascial supracervical hysterectomy (CISH) technique over the conventional technique.

**Methods:** We performed a retrospective evaluation (Canadian Task Force classification II-2) of 200 women who underwent conventional CISH technique (100 cases), between March 2000 and September 2000, or the new CISH technique (100 cases) between May 2002 and November 2002. The charts of these 200 women were reviewed regarding patient characteristics, indications, uterine weight, estimated blood loss, operating time, and hemoglobin change.

**Results:** The women who underwent the new CISH had significantly shorter operating time as compared with operating time for the conventional method. Although no significant difference existed in the estimated blood loss, the hemoglobin change, which is an objective sign of blood loss, was significantly smaller using the new CISH technique than using the conventional CISH technique.

**Conclusions:** The new CISH technique is safer, more convenient, faster, and results in less blood loss than the conventional technique, especially when the uterus is markedly enlarged by a large myoma, the ovarian ligament is too short, or the ovary and uterus are very closely adherent.

**Key Words:** Conventional CISH technique, New CISH technique.

## INTRODUCTION

Since Semm<sup>1</sup> first described coring the cervix intrafascially without colpotomy using the calibrated uterine resection tool (CURT) and removing the transformation zone of the cervix as prophylaxis against cervical cancer in 1992, classic intrafascial supracervical hysterectomy (CISH) has been performed in medical centers worldwide. We began to perform CISH in April 1993.

CISH has several advantages over minimally invasive techniques, including reducing ascending infection, support of the pelvic floor and vagina, more rapid recuperation, no feelings of disfigurement, and reduced complication rates, specifically as regards damage to ureters, bowel, bladder, and large vessels.<sup>2</sup>

In our experience, we believe that CISH should be the standard procedure for benign uterine disease without cervical lesions; this approach is very safe and simple from a technical perspective, and has many advantages, as described above. Nevertheless, it has not found widespread acceptance. This might be because it is initially considered challenging, as it involves new instruments and unusual technical aspects.<sup>3</sup>

CISH was performed using suture techniques (the conventional CISH technique) at our institution until September 2000. However, some limitations exist to the conventional CISH technique, such as the need for advanced laparoscopic suture skills and the risk of the proximal endosuture slipping off after separating the adnexa. In an attempt to overcome these limitations, we developed a new CISH technique, which is simpler and more convenient, which we have used since October 2000.

This article introduces the technical aspects of the new technique and reports the advantages of the new CISH technique over the conventional technique.

## METHODS

We reviewed the hospital records of 100 women who underwent conventional CISH between March 2000 and September 2000, and 100 women who underwent the new CISH procedure between May 2002 and November 2002. We recorded age, parity, operating time, uterine

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weight, estimated blood loss, and hemoglobin change. Patients with a very large uterus, severe adhesions, and other complications, which required a longer operating time, were excluded. The indications for surgery in both groups were leiomyoma, adenomyosis, and abnormal uterine bleeding.

### Operative Procedures

In a hysterectomy by laparoscopy or by laparotomy, the first step is to separate the adnexa from the uterus. While various methods can be used to separate the adnexa from the uterus, such as bipolar, monopolar, or laser methods, the suture technique is the safest because it minimizes tissue damage, allows a clear field of vision, and ensures hemostasis. Unfortunately, the conventional suture technique is a time-consuming procedure, as it requires advanced laparoscopic techniques. As described elsewhere for CISH,<sup>4</sup> 2 endosutures (proximal and distal) are first placed medial to the adnexa and then the tissue between the 2 endosutures is cut; consequently, the conventional technique requires much time and suture material. Sometimes bleeding results when the proximal endosuture slips off after separating the adnexa. Occasionally, this method cannot be carried out, such as when the ovarian ligament is too short or the ovary and uterus are very closely adherent.

To overcome these limitations, we modified the sequence of procedures in conventional CISH as follows: First, we dissect the vesicouterine peritoneum and make a window in the relatively avascular plane of the broad ligament (**Figure 1**). The posterior leaf of the broad ligament is opened down to the level of the uterosacral ligament. If a pulsating uterine artery is found during the fenestration process, the uterine artery is ligated with an Endoloop. When the adnexa are to be left in situ, an endoligature is placed medial to the adnexa through the window in the broad ligament, which includes the fallopian tube, utero-ovarian ligament, and round ligament. An extracorporeal Roder knot is tied, and 2 security knots are made. The same procedures are performed on the opposite side.

A polydioxanone endoligature is placed around the cervicocorporeal junction at the level of the uterosacral ligament through the window. This involves passing the polydioxanone endoligature through the window in the left broad ligament, posterior to the uterus, through the window in the right broad ligament, and bringing it anterior to the uterus. An extracorporeal Roder knot is tied and loosely cinched over the cervix. Then, the surgeon's attention returns to the vaginal step. As described elsewhere



**Figure 1.** Making a window on an avascular plane of broad ligament.

for CISH,<sup>4</sup> a guide rod is inserted through the endocervical canal into the endometrial cavity, perforating the uterine fundus under pelviscopic vision. An adequately sized CURT morcellator is placed over the guide rod and used to core out a tissue cylinder from the exocervix to the fundus. When the tissue cylinder has been removed, the previously placed polydioxanone endoligature is immediately and securely cinched, and several security knots are tied to prevent loosening of the extracorporeal slipknot.

As a result, the blood supply to the uterus, which originates from the ascending branch of the uterine artery and the right and left ovarian arteries, is completely blocked by ligating those arteries. In other words, this triple ligation technique completely blocks the blood supply to the uterus. In some cases, an additional ligation over the cervicocorporeal junction may be needed. Based on our experience, however, additional ligation is unnecessary if safety knots are made after completing the extracorporeal slipknot. Both adnexa are separated from the uterus, which is then amputated 1 cm above the endoligature site by using hook scissors.

In addition, 1 polyglactin loop and 1 catgut loop are tied over the cervical isthmus to ensure safe hemostasis.

The vaginal portion of the cervical stump is closed in the 3 o'clock and 9 o'clock direction and, if necessary, additional sutures can be used (from 12 to 6 o'clock). The peritoneum is closed over the remaining cervical stump with a chromic catgut suture. The uterus is morcellated and removed with a 20-mm serrated macromorcellator.

**Data Analysis**

Statistical analysis was performed using the Student *t* test. Probability below 0.05 was considered statistically significant. Results are presented as mean±SD.

**RESULTS**

The mean age at the time of surgery was 47.3 and 44.7 years in the new and conventional CISH groups, respectively. No significant differences were present in the mean age or mean parity (2.2 vs. 2.3) (**Table 1**).

The mean operating time with the new CISH technique was significantly shorter than that with the conventional technique. The mean uterine weight was similar in both groups because we excluded overly large uteruses. Also, this study evaluated the operative data without complications to compare the consequence of basic conventional and new techniques.

Although no significant difference was found in the estimated blood loss between the 2 groups, the mean hemoglobin change was smaller in the new method group than in the conventional group (**Table 2**).

**DISCUSSION**

Classic intrafascial supracervical hysterectomy is a minimally invasive organ-preserving procedure used for benign uterine disease, and it is associated with few operative complications and low morbidity in our experience.<sup>5</sup> With this technique, the cardinal and uterosacral ligaments are not severed, and neither the vagina nor the abdomen is opened. The physical stress on the patients is minimal, and pelvic floor support is maintained. The paravaginal and paracervical network of nerves is usually not injured.

Coring out the cervix with CURT may minimize the risk of cervical carcinoma in the transformation zone,<sup>6</sup> and major complications such as ureteral injury,<sup>7</sup> bowel injury,<sup>8</sup> con-

**Table 2.**  
Comparison of the Surgical Outcome in the 2 Groups

Surgical Outcome	New Method	Conventional Method	P Value
Number of patients	100	100	
Operative time (minutes)	90.4±13.5*	106.7±21.9*	<0.05
Weight of uterus (grams)	247.9±105.7*	219.8±115.3*	NS†
EBL (mL)	372±130*	357±116*	NS†
Hemoglobin change	1.64±0.84*	1.98±0.58*	<0.05

\*Mean±SD.  
†NS=not significant.

version to laparotomy, vesicovaginal fistula formation,<sup>9</sup> pelvic abscess,<sup>10</sup> and intraabdominal hemorrhage caused by laparoscopic hysterectomy are markedly decreased.

In either pelviscopic or abdominal hysterectomy, the first step is to separate both adnexa from the uterus. While various methods can be used to separate the adnexa from the uterus, such as bipolar, monopolar, or laser methods, a suture/ligation technique is the safest method to minimize tissue damage, obtain a clear field of vision, and ensure hemostasis.<sup>4</sup> However, the conventional CISH technique using sutures has several limitations. First, because the laparoscopic suture procedure requires much skill, much more effort and time are required. Second, at least 2 sutures (proximal and distal) are required to separate each adnexa. Sometimes it is difficult to cut between the 2 sutures when the ovarian ligament is too short or the ovary and uterus are very closely adherent. Third, at times, bleeding occurs when the proximal ligation slips off after separating the adnexa. Fourth, occasionally, polydioxanone Endoloop application is not feasible when the uterine body is too large for a pretied Endoloop due to a huge myoma or severe adhesions present between the uterus and adjacent pelvic organs.

To overcome these limitations, we developed a new CISH technique that changes the sequence used in the conventional technique. With the new technique, CISH or subtotal hysterectomy under pelviscopy can be performed very simply and more safely.

First, we make a window in the relatively avascular plane of the broad ligament. Then, we dissect the vesicouterine fold, to expose the isthmic portion of the uterus, and proceed with ligation sequentially using an Endoknot with the needle removed for both adnexa and the uterine

**Table 1.**  
Patient Characteristics

	New Method*	Conventional Method*
Number of patients	100	100
Age	46.0±4.5	45.1±4.2
Parity	2.2±1.0	2.3±1.0

\* Mean±SD.

isthmus portion through the window. By adopting this triple ligation method, the blood supply to the uterus is completely blocked by tying off the ovarian artery and ascending branch of the uterine artery. Consequently, the new technique does not require a laparoscopic endosuture, one of the most difficult laparoscopic procedures, and there is no risk of the ligation between the uterus and adnexa slipping off or loosening. In addition, suture material, cost, and operating time are saved because at least 2 sutures are omitted.

As we mentioned above, in the conventional CISH technique, it is difficult to position the endosuture for adnexal separation and apply polydioxanone Endoloop to the isthmus portion when severe anatomic distortion occurs due to a huge myoma or severe adhesions. Conversely, with the new CISH technique, the procedure is easier in such cases, since we use triple ligation through the window. Moreover, improved vision due to low intraoperative bleeding reduces the operating time. As expected, the operating time and hemoglobin change were significantly lower in the patients who underwent the new CISH technique as compared with that in patients who underwent the conventional technique in a comparison of patients who underwent the 2 techniques in our hospital.

Moreover, this study compared the most recent patient data for both procedures, since the surgeons' experience and surgical technique will improve with practice and time.

At present, the instruments that we use are very straight and rigid, making it difficult to approach a target. We need a flexible instrument (eg, needle holder) to facilitate reaching the point where the triple ligation through the window is performed. The operating time could be further reduced by the development of instruments that facilitate making the window, holding the cervix tightly, and grasping an endoligature more easily through the window. At present, we are developing such instruments.

We hope that this report will lead to suggestions that will further increase the safety and convenience of CISH.

## CONCLUSION

The new CISH technique is safer, more convenient, faster, and results in less blood loss than the conventional tech-

nique, especially when the uterus is markedly enlarged by a large myoma, the ovarian ligament is too short, or the ovary and uterus are very closely adherent.

## References:

1. Semm K. Hysterectomy via laparotomy or pelviscopy: a new CASH method without colpotomy. *Geburtshilfe Frauenheilkd.* 1991;51:996–1003.
2. Semm K. Endoscopic subtotal hysterectomy without colpotomy: classic intrafascial SEMM hysterectomy. A new method of hysterectomy by pelviscopy, laparotomy, per vagina or functionally by total uterine mucosal ablation. *Int Surg.* 1996;81(4):362–370.
3. Morrison JE, Jacobs VR. 437 classic intrafascial supracervical hysterectomies in 8 years. *J Am Assoc Gynecol Laparosc.* 2001; 8(4):558–567.
4. Kim DH, Lee JC, Bae DH. Clinical analysis of pelviscopic classic intrafascial Semm hysterectomy. *J Am Assoc Gynecol Laparosc.* 1995;2:289–297.
5. Kim DH, Bae DH, Hur M, Kim SH. Comparison of classic intrafascial supracervical hysterectomy with total laparoscopic and laparoscopic-assisted vaginal hysterectomy. *J Am Assoc Gynecol Laparosc.* 1998;5(3):253–260.
6. Tervila L. Carcinoma of the cervical stump. *Acta Obstet Gynecol Scand.* 1963;42:200–210.
7. Woodland MB. Ureter injury during laparoscopy-assisted vaginal hysterectomy with endoscopic linear stapler. *Am J Obstet Gynecol.* 1992;167:756–757.
8. Liu CY. Laparoscopic hysterectomy. Report of 215 cases. *Gynecol Endosc.* 1992;1:73–77.
9. Summitt RL, Stoval TG, Lipscomb GH, et al. Randomized comparison of laparoscopy assisted vaginal hysterectomy with standard vaginal hysterectomy in an outpatient setting. *Obstet Gynecol.* 1992;80:895–901.
10. Maher PJ, Wood EC, Hill DJ, et al. Laparoscopically assisted hysterectomy. *Med J Aust.* 1992;156:316–318.