The CISH technique (Classic Intrafascial Supracervical Hysterectomy)

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The first carefully described abdominal supracervical hysterectomy was performed by Wilhelm Alexander Freund in 1878 and it was the leading technique for over 80 years. Tervilä described the danger of cervical cancer to be 0.3-1.9% following supracervical hysterectomy. Since 1950, hysterectomy has been performed almost exclusively as total hysterectomy, though since the 1990 interest in supracervical hysterectomy has been reawakened thanks to the introduction of Classic Intrafascial Supracervical Hysterectomy CISH pelviscopic and laparotomy techniques.

Introduction

The first carefully described abdominal supracervical hysterectomy was performed by Wilhelm Alexander Freund in 1878 and it was the leading technique for over 80 years (1). Tervil (2) described the danger of cervical cancer to be 0.3-1.9% following supracervical hysterectomy. Since 1950, hysterectomy has been performed almost exclusively as total hysterectomy, though since the 1990 interest in supracervical hysterectomy has been reawakened thanks to the introduction of Classic Intrafascial Supracervical Hysterectomy (CISH) pelviscopic and laparotomy techniques (3-9). Earlier, in 1984, Semm described separation of the adnexa pelviscopic to facilitate vaginal hysterectomy; it was at that time called vaginal hysterectomy with pelviscopic assistance (10). In 1989, Reich successfully improved the procedure by including ligation of the uterine artery and removal of the uterus via colpotomy (11).

During the past few years, new techniques have complemented the vaginal and abdominal techniques of hysterectomy. The first CISH was successfully performed by Semm in Kiel on September 7, 1991 (7). It combines the advantages of traditional supracervical hysterectomy, including shorter operative time and preservation of major parts of the pelvic floor, with prevention of cervical cancers by coring the inner cervix and resection of the transformation zone. From CISH procedure the Intrafascial Vaginal Hysterectomy (IVH) was developed as a new minimally invasive technique.

Numerous publications Nisolle and Donnez 1997, Mettler and Semm 1997, Milad et. al. 2001 followed (12-14). The question if the mode of hysterectomy influences micturition and defecation was widely answered by a paper of Roovers et. al. 2001 (15). An increased prevalence of urge incontinence and feeling of incomplete evacuation was observed among patient who had undergone vaginal hysterectomy as compared to patients who had undergone total abdominal hysterectomy. The prevalence of urge incontinence and difficulty emptying the rectum was higher among patients who had undergone vaginal hysterectomy compared to patients who had undergone subtotal abdominal hysterectomy. According to Farrel and Kieser, 2000 (16) the majority of research evaluating effect of hysterectomy on sexuality is poorly designed. Their conclusion was that the quality of life is improved for most women who had hysterectomy and that the way of hysterectomy did not adversely effect sexuality. However, a number of compounding factors with the potential to have either a positive or negative impact on sexuality, independent of hysterectomy should be taken into account in future studies. It became evident that not laparotomy or laparoscopy seemed to be the key question but the resection of the cervix seemed to be essential. Patients with a remaining cervix had less sexual disturbances.

Material and Methods

Between January 1999 and December 2000, 368 hysterectomies were performed at the Department of Obstetrics and Gynecology, Kiel University, on women with benign indications for hysterectomy (46 vaginal hysterectomies, 54 abdominal hysterectomies, 103 laparotomy CISH, 113 pelviscopic CISH operations, 50 IVH and 22 Laparoscopic Assisted Vaginal Hysterectomies (LAVH) (Table 1).

Patients were assigned to an individual group based on the size of the uterus, patient's complaints and the experience of the surgeon. Pelvicscopic hysterectomies were not considered if the uterus was larger than 12 weeks' gestation.

The operating time (OP-time) was calculated from the entrance to the anesthetized patient into the operation theater until completion of surgery. Patient's preparation in the operating Theater (OT) takes an average of 15 min, which should be subtracted from the OP-Time.

All the data were analyzed by the repeated measures analysis of variance, when appropriate, p<0.01 being considered statistically significant.

The technical detail

1. Pelviscopic CISH

The cervix is grasped at 3 and 9 o'clock with two tenaculae, and the cervical canal is dilated up to Hegar 6. To minimize intraoperative blood loss, 10-20 ml POR-8 (synthetic vasopressin derivative, Sandoz in 0.05%) is injected into the cervix. The perforation rod is introduced transcervically up and through the fundus uteri under pelviscopic control. To core out the transcervical transuterine cylinder we use a 15, 20 or 24 mm Calibrated Uterine Resection Tool (CURT). The setting of the tool...
depends upon the diameter of the cervix, as measured at the previous sonographic examination. The remaining cervix is endocoaugulated at 100 - 120°C. The bladder is separated from the cervix and vagina by aquadissection. Adnexal dissection either from the uterus or from the pelvic wall is carried out bilaterally with sutures or staples to the level of the cardinal ligaments. Three Roeder loops are placed around the cervix. The uterine body is separated from the cervix with a scissors. The cervical stump may be suspended to the round ligaments and peritonealized or the visceral peritoneum is left open. The uterus is morcellated and extracted by means of the SEMM=Serated Edged Macro Morcellator.

2. CISH by laparotomy
After abdominal subtotal hysterectomy, the perforation rod is introduced through the cervical stump and the cervical canal is cored out with the CURT and the remaining cervical tissue is coagulated as above.

3. Intrafascial Vaginal Hysterectomy (IVH)
After having punched out the cervical tissue with the CURT, vaginal subtotal hysterectomy is performed with the Stoeckel (17) technique. Using only an anterior colpotomy incision, the uterovesical pouch is opened, delivering the uterus anteriorly through the vaginal incision and thereby excluding a dissection of both cardinal and sacrouterine ligaments with the cervix in place.

4. Vaginal hysterectomy
The Stoeckel technique with the resection of the uterus through an anterior colpotomy is performed without coring the cervical canal.

5. Total abdominal hysterectomy
Total abdominal hysterectomy is performed as described by Freund and Stoeckel.

6. Laparoscopic Assisted Vaginal Hysterectomy (LAVH)
Hysterectomies are initially started with pelviscopic separation of the adnexa from the uterus or the pelvic wall, and always completed vaginally.

Results
The various techniques used on the 368 patients are presented in table 1. No significant differences in mean parity and body mass index were found between the groups of patients. Surgery was performed by more than 15 different doctors.

The patient who underwent IVH (47.5 years), abdominal and pelviscopic CISH (47.9 and 46.9 years) were significantly younger (mean age) than those who underwent vaginal hysterectomy (62 years) and abdominal hysterectomy (55.8 years). Table 1 shows the different indications for hysterectomy.

The decision for the individual surgical procedure was made on the basis of a thorough anamnesis, physical examination and ultrasonographic evaluation. In 4 cases which started as pelviscopic surgery, an intraoperative conversion to laparotomy was performed. These cases were concluded in the laparotomy CISH group. A significant difference in blood loss was found between pelviscopic CISH (401 ml), vaginal hysterectomy (387 ml), IVH (364 ml), and laparotomy CISH (575 ml) and abdominal hysterectomy (718 ml).

According to the histopathological findings, most myoma patients were treated by abdominal hysterectomy and by CISH operations, either pelviscopically or by laparotomy, while patients with genital descensus, operated on mainly with vaginal hysterectomy or IVH techniques, showed normal histology (Table 3).

Uterine size and weight can significantly affect the type of hysterectomy operation needed. The average uterine weight was 145g (range 33-360g). Uteri weighing less than 200g were removed by IVH and pelviscopic CISH operations, while larger uteri weighing less than 400g (average) were removed by abdominal hysterectomy or laparotomy CISH operations.

The shortest period of postoperative hospitalization was found among the patients undergoing pelviscopic CISH operations. The analgesics applied postoperatively did not show any statistically significant differences between surgical procedures.

Only in 4 patients (1.08%) in the pelvic surgery group was laparotomy necessary because of technical difficulties or uncontrolled bleeding from uterine pedicle. These cases were included in the laparotomy CISH group. Also, 3 patients had a postoperative stump infection confirmed by ultrasound and diagnostic laparoscopy. One of these patients needed pelviscopic drainage, while the other 2 were treated with antibiotics. Four patients of CISH group returned to the clinic a few days after operation with secondary haemorrhage from the cervical stump. They were treated as outpatients with endocoagulation of the bleeding points and vaginal tamponade.

Discussion
This paper describes the impact of a new method of hysterectomy (CISH) on the pattern of hysterectomies performed at the University of Kiel. The advantages of this procedure in selected cases are that it is associated with less blood loss and shorter hospital stay than other procedures.

The supracervical approach does not require formal anatomic location of the urethras and uterine arteries and should result in less postoperative disturbance to the function of rectum, bladder and vagina. It may also be associated with better preservation of sexual sensations in the vaginal and cervical stumps.

These results were obtained by at least 15 surgeons and it is possible that a fairly long training period is required to obtain the best result from pelviscopic procedures. The real advantage of subtotal versus total hysterectomy can not yet be established, though the "old-new" surgical technique leads to reflections on our surgical procedures for hysterectomies on benign indications.
Long term experiences of classic intrafascial supracervical hysterectomy was evaluated by Morisson and Jacobs in 2001 who postulated after reviewing their 237 cases of classic intrafascial supracervical hysterectomy, that CISH leaves the pelvic floor intact, has short rehabilitation time and high patient acceptance and is cost effective at a low complication rate (18). They found CISH an advanced laparoscopic procedure, which is initially technically challenging with a quick learning curve. Another evaluation postulated that patients undergoing laparoscopic supracervical hysterectomy had short operation times, shorter hospital stays and less morbidity than those who underwent laparoscopic assisted vaginal hysterectomy (14). The practice of routine cervicectomy at laparoscopic hysterectomy should be reconsidered. Okaro et. al. published in 2001 symptoms related to the cervical stump requiring further surgery frequently following a laparoscopic supracervical hysterectomy. These data could not be verified in our own retrospective evaluation (13).

**Table 1**
The different techniques of hysterectomy applied in 368 patients (1999-2000)

<table>
<thead>
<tr>
<th>Technique</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal hysterectomy (VH)</td>
<td>46</td>
</tr>
<tr>
<td>Abdominal hysterectomy (AH)</td>
<td>54</td>
</tr>
<tr>
<td>Laparotomy CISH procedure (Lp CISH)</td>
<td>103</td>
</tr>
<tr>
<td>Pelviscopy CISH procedure (Pelv.CISH)</td>
<td>113</td>
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<tr>
<td>Intrafascial vaginal hysterectomy (IVH)</td>
<td>2</td>
</tr>
<tr>
<td>Laparoscopically assisted vaginal hysterectomy (LAVH)</td>
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<tr>
<td>Total</td>
<td>368</td>
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**Table 2**
Indications for hysterectomy (n=368, 1999-2000)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Vaginal Hysterectomy</th>
<th>Abdominal Hysterectomy</th>
<th>Abdominal CISH %</th>
<th>Pelviscopy CISH %</th>
<th>Intrafascial Vaginal Hysterectomy %</th>
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<tbody>
<tr>
<td>Myomas with Menstrual abnormalities</td>
<td>9.1</td>
<td>25.6</td>
<td>27.7</td>
<td>33.4</td>
<td>36</td>
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<td>Myomas with pressure symptoms</td>
<td>4.5</td>
<td>37.2</td>
<td>45.5</td>
<td>17.9</td>
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<td>Endometriosis</td>
<td>0</td>
<td>2.3</td>
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<td>Chronic pelvic pain</td>
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<td>2.3</td>
<td>1.9</td>
<td>6.6</td>
<td>2</td>
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<tr>
<td>Menometrorrhagia and Hypermenorrhea Dysfunctional bleeding</td>
<td>13.6</td>
<td>9.3</td>
<td>13.8</td>
<td>33.0</td>
<td>28</td>
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<td>Refractory to therapy</td>
<td>9.1</td>
<td>11.7</td>
<td>7.3</td>
<td>3.8</td>
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<td>Prolapse</td>
<td>61.4</td>
<td>11.6</td>
<td>3.9</td>
<td>1.9</td>
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<tr>
<td>Total</td>
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<td>100</td>
<td>100</td>
<td>100</td>
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</table>

**Table 3**
Main histological diagnosis of hysterectomy specimens (n=368, 1999-2000)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Vaginal Hysterectomy</th>
<th>Abdominal Hysterectomy</th>
<th>Abdominal CISH %</th>
<th>Pelviscopy CISH %</th>
<th>Intrafascial Hysterectomy</th>
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<tr>
<td>Leiomyomas</td>
<td>27.3</td>
<td>51.2</td>
<td>54.4</td>
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<td>Adenomyosis</td>
<td>22.7</td>
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<td>adenomatous</td>
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<td>Hyperplasia</td>
<td>6.8</td>
<td>7.0</td>
<td>2.0</td>
<td>2.8</td>
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<td>No pathology</td>
<td>36.4</td>
<td>16.3</td>
<td>12.9</td>
<td>13.2</td>
<td>14</td>
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<tr>
<td>Other pathology</td>
<td>6.8</td>
<td>4.6</td>
<td>7.9</td>
<td>6.6</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
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<td>100</td>
<td>100</td>
<td>100</td>
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References:


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