Utility of bipolar electrocautery scissors for cervical conization

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Summary

Objective: To evaluate the usefulness of bipolar electrocautery scissors for cervical conization.

Methods and Materials: Forty patients with severe dysplasia/in situ carcinoma of the uterine cervix underwent cervical conization: 20 randomly selected patients were operated on with the unipolar energy scalpel and the other 20 were operated on with bipolar electrocautery scissors. In both groups operating time, number of ligations, blood loss, duration of recovery, perioperative complications and adequacy of the margins of the lesion were assessed. Data were compared by analysis of variance.

Results: In the bipolar group the average operating time and duration of recovery were significantly reduced (halved), no ligations were needed and the amount of blood loss was significantly reduced. Regarding perioperative complications, in the bipolar group there were no hemorrhages nor need of a second operation or transfusion. Infections did not occur in either group. We found no difference between the two groups regarding adequacy of the margins of the lesion for a good pathologic examination.

Conclusion: Bipolar electrocautery scissors were safe and useful in cervical conization by reducing the operating time and blood loss without increasing postoperative morbidity.

Key words: Bipolar electrocautery scissors; Cervical conization.

Introduction

Cervical conization is one of the most frequent minor operations in gynecologic oncology surgery. It is used for investigation and treatment after a histologic diagnosis of cervical intraepithelial neoplasia (CIN) II and III/severe dysplasia or persisting CIN I even after diathermy [1]. Other indications are multicentric or spray diffusion human papilloma virus (HPV) lesions and microinvasive cervical carcinoma in young women who want to have children.

The "high" cervical conization that causes a cervix amputation may represent also the definitive treatment of in situ carcinoma in women older than 40 years as an alternative to hysterectomy which has more elevated complications [2].

There are several approaches to cervical conization such as cold knife, loop diathermy, monopolar energy, and CO_2 laser [3, 4]. These latter, in contrast to the cold knife, do not need the use of "Sturmdorf" suture threads which have the disadvantage of covering parts of the esocervix which then can not be accessible for cytologic and/or histologic diagnosis.

Recently, bipolar electrocautery scissors have been introduced as surgical equipment. Bipolar electrocautery scissors are widely used in laparoscopic surgery [5-7] and we [8] have shown their utility even for abdominal hysterectomy by reducing the blood loss and permitting the performance of operations in a shorter time.

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In this study we wanted to evaluate the utility of the bipolar electrocautery scissors in cervical conization and to compare it with the monopolar energy scalpel that we have used for many years.

Materials and Methods

Forty patients with severe dysplasia/in situ carcinoma of the uterine cervix underwent cervical conization in the period 1996-2001: 20 randomly selected patients were operated on with the monopolar energy scalpel (monopolar group) and the other 20 patients were operated on with bipolar electrocautery scissors (bipolar group). Groups were homogeneous with respect to age, weight, parity and type of cervical pathology (Table 1).

The surgical methods were assigned randomly by drawing a sealed envelope in which the kind of technique was written. Monopolar or bipolar assignment was obtained by means of a table of random digits [9]. An independent party filled and sealed the envelopes which were placed in a sealed box. On the day of the operation, all the patients agreed to be operated on

Table 1. — *Features of the patients*

	Monopolar group	Bipolar group	Statitistical significance
Age (yrs, mean±SD)	34.2±5.3	35.3±6.2	NS*
Weight	58.7±7.8	56.8±8.3	NS*
Parity	1.1±1.5	1.2±1.4	NS*
Preoperative biopsy	16 CIN II, 4 CIN III	15 CIN II, 5 CIN III	NS*

NS, Not significant

* t-test assuming equal variances

with either of the two techniques; selection of the type of procedure was done in a blinded manner.

Patients provided both oral and written consent. The protocol was approved by the Institutional Review Board.

The patients of the unipolar group underwent operation by the use of the monopolar energy scalpel (Medizin-Elektronik Elektroton 300, MARTIN, Tuttlingen, Germany). The patients of the bipolar group underwent cervical conization, with the only difference being the use of bipolar electrocautery scissors (Power Star; Ethicon, Inc, Somerville, NJ). Bipolar electrocautery scissors are easy to handle; they have the same shape as surgical scissors, with an isolated nylon handle, and the two blades are separated by a thin ceramic layer, thus producing two active bipolar electrodes.

The same surgical team performed all the operations.

All patients met the following criteria: a Pap cytologic examination which revealed CIN, colposcopic examination and biopsy which showed CIN II or CIN III, and no colposcopic evidence of invasive disease.

Before performing cervical incision, the patients of both groups underwent dilation and curettage (D & C) and then an intraoperatory Schiller's test in order to visualize the margins of the lesion. Then stay sutures of 0 Vicryl were placed in the cervix at 3 and 9 o'clock to partially occlude the descending branches of the uterine arteries as well as to stabilize the cervix during surgery. The cone biopsies were marked at 12 o'clock with a stitch, fixed in 10% formalin and sent to Pathology for sections.

In both groups the following parameters were evaluated:

- operating time (min)
- need of ligations (number) on the cervical stump after removal of the surgical specimen
- The amount of intraoperative bleeding was assessed by the number of swabs and their weight
- Duration of recovery
- Presence of perioperative complications (hemorrhage, infections, need of second operation, transfusion)
- Adequacy of the margins of the lesion for the pathologic examination
- Local evaluation of the healing of the cervix (days)

Operating time and the number of ligations were recorded by the anesthesiologist and the ward nurse, respectively. They were not informed about the study.

The patients were examined at a 6-month follow-up visit and at that time a cervical Pap smear was performed.

Statistical significance of between-group comparisons was assessed by the t-test two-sample assuming equal variances and chi-square test as appropriate [9].

Table 2. — *Operating time, number of ligations, estimated intraoperative blood loss (evaluated by the number of swabs), duration of recovery, perioperative complications, adquacy of the margins of the lesion for pathologic examination and healing of the cervix (days)*

	Monopolar group	Bipolar group	Statitistical significance
Operating time (min)	24.3±9.4	12.4±6.2	p<0.01
No. of ligations	4.5±1.7	0	–
No. of swabs	11.2±3.4	4.3±1.7	p<0.01*
Duration of recovery	6.4±3.2	3.5±1.5	p<0.01*
Complications:			
• Hemorrhages	4/20	0	–
• Infections	0	0	–
• Need of second • operation	2	0	–
• Transfusion	2/20	0	–
Adequacy of margins of the lesion	9/20	11/20	NS°
Healing of the cervix (days)	35.2±6.3	28.3±4.4	p<0.05*

NS, Not significant

* t-test assuming equal variances

°chi-square test

Results

Table 1 shows the features of the patients with respect to age, weight, parity and type of cervical pathology assessed by presurgical histology.

Table 2 shows the evaluated parameters.

The average operating time was significantly reduced in the bipolar group (the time was almost halved).

In the bipolar group no ligations for hemostasis were needed in comparison to a mean of 4.5 in the monopolar group.

The average number of sterilized swabs used, which permitted the assessment of intraoperatory blood loss, was significantly lower in the bipolar group (4.3) than in the monopolar group (11.2).

The average duration of recovery was halved in the bipolar group with a mean of 3.5 days versus 6.4 days in the monopolar group.

With regard to perioperative complications, hemorrhages occurred in four cases out of 20 (20%) patients in the monopolar group; one patient on the first postoperative day underwent abdominal hysterectomy, two patients needed transfusions (10%) and one case underwent a vaginal operation on the tenth postoperative day and in this latter case we coagulated small local blood losses in the cervix and had to use suture threads in the cervical margins.

We did not encounter infective complications in either group.

We observed no difference between the two groups regarding the adequacy of the margins of the lesion for a good pathologic examination.

A significant difference in the average time for the cervix to heal was found between the two groups (35.2 days in the monopolar versus 28.3 in the bipolar group).

In all the cases the pre- and postoperative diagnoses were identical.

The squamocolumnar junction was visualized at six months in both groups.

Discussion

In this study we have demonstrated that the use of bipolar electrocautery scissors in cervical conization was useful both for the performance of operations in a shorter time and for the decrease of intraoperatory blood loss. Furthermore this tool allowed us to reduce the duration of recovery and to have a significant reduction of the perioperative complications.

In cervical conization, the only disadvantage of bipolar electrocautery energy, as well as for monopolar energy and other procedures, such as CO2 laser and diathermy, is the thermal injury (artifact) on the margins of the cervical surgical specimen which makes it difficult to be studied by the pathologist because of the necrosis and destruction of the adjacent tissue [3, 4]. We studied the histology of our cones in both groups to assess whether the specimens were suitable for reliable pathologic assessment. No difference between the two groups in the adequacy of the margins of the cones was observed.

On the other hand the use of the bipolar electrocautery technique implies advantages both for the patient and for the public health system. By reducing the blood loss bipolar electrocautery affords the patient a more speedy postoperative recovery. In addition, it permits the performance of operations in a shorter time, with shortened anesthesia, and minimum use of the operating theater, while at the same time providing the most safety for both the surgeon and the patient.

Thus this tool may be useful in all gynecologic surgery [8] and especially in patients who require surgery for vulval disease. In fact, the patients with vulval carcinoma, because of advanced age and poor general health condition, need shorter anesthesia and a reduction of blood loss in order to decrease perioperative morbidity and to ameliorate the course of the disease.

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