日 本 農 村 医 学 会 雑 誌

第 50 卷 2 0 0 1 年 5 月 第 1 号

Original Article :

Evaluation of a Surgical Instrument with Right-triangle Mounts for Diathermic Conization of the Uterine Cervix

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Evaluation of a surgical instrument with right-triangle mounts for diathermic conization of the uterine cervix.

Objective : The purpose of this study was to evaluate a surgical diathermic instrument with right-triangle mounts for conization of the uterine cervix.

Method : Twenty-five patients who received conization with the surgical instrument were enrolled for this study. Conization feasibility, complications, histopathologic interpretability and therapeutic outcome were assessed.

Results : The mean operating time and amount of bleeding were 10.6 ± 4.1 minutes and 6.8 ± 9.0 g, respectively.

There were two cases of post-operative stenosis of the uterine cervical canal. Another two cases had positive margins in cone biopsies. Post-operative smears were positive in still another two cases.

The mean follow-up period was 9.4 ± 11.6 months.

Conclusion : A surgical instrument with right-triangle mounts for diathermic conization of the uterine cervix proved to be usefull.

①conization ②electrosurgical instrument ③right triangle mount

INTRODUCTION

Conization is done for diagnosis and therapy of cervical dysplasia and early cervi-

cal carcinoma of the uterus¹⁾. Cold-knife cone biopsy is the traditional surgical procedure and the standard by which all other methods are judged¹⁾. However, cold-knife conization has been regarded as a slightly difficult procedure and has involved many postoperative complications. Lasers make conization easier than the cold knife, although the laser proce-

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(受付 : 2000年10月10日)

cedure is expensive and not easy.

When the loop electrosurgical excision procedure (LEEP) was first introduced to manage cervical intraepithelial neoplasia (CIN), its advantages of simplicity, low cost, and low perioperative complications attracted attention²⁾. However, LEEP conization requires a lot of practice³⁾, and the reconstruction and histopathologic interpretation of resected specimens are difficult.

A electrosurgical instrument with right-triangle mounts is as easy to handle as LEEP. Furthermore, with this instrument conization of the uterine cervix can be performed for one pass in most cases. The shape of the mount for resection is a right triangle. It has a diathermic wire on its oblique line. We evaluated the treatment efficacy and diagnostic utility of the instrument, and complications involved postoperatively.

MATERIALS AND METHODS

Patients

Enrolled for this study were a total of 25 patients who underwent cervical conization under colposcopic guidance and subsequent careful Papanicolaou tests from October 1994 to October 1999. The mean age was 50.4 ± 18.3 years ranging from 22 to 78 years.

All the patients but a few of them underwent preoperative evaluation by cervical cytology, colposcopy, and colposcopically directed cervical biopsy. Each woman was recalled to our hospital once or twice a week during the first four weeks after operation for cone base evaluation. Periodic Papanicolaou tests were performed at three-month intervals after an elapse of two months since conization.

Data used included extracted age, date of surgery, preoperative diagnosis, operating time, pathology reports and postoperative

complications. For continuous data, mean and standard deviations (SD) were used to summarize the results.

Methods

The diathermic excision instrument, MGI-202 (Honest Medical, Tokyo, Japan), was used. Its frequency was 6.83 MHz with 150 W. The instrument has several kinds of mounts to adjust to the extent of the disease (Fig. 1). The wire is held in tension by the mount so that the wire forms an angle delta to the longitudinal axis of the mount.

Diathermic conization was performed under epidural anesthesia in most patients to relieve pain completely. Dots were marked 5 mm outside of the squamo columnar junction (SC junction) under colposcopic guidance. The mount was inserted into the cervical canal

Fig. 1 Right-triangle mounts and instrument

Fig. 2 The scheme of the diathermic excision mount fitted to the cervix of the uterus

while the wire was cutting the cervix at 0 O'clock (Fig. 2), and the mount was turned through a complete revolution. The wire then cut out a cone. Diathermy conization was performed in one-pass application in most cases. The cone base was cauterized with a ball shape electrode. Cauterization was extended about 5 mm from the margins on both sides. Conization was performed by the authors or by a doctor under their direct supervision.

All excised specimens were submitted in their entirety for histopathologic examination. The cone specimens were already opened lengthwise through the canal as conization was being performed and, in the pathology department those were sectioned radially into 12 portions. We assessed the margin status and the presence of thermal artifacts on the electrosurgical excision specimens. In these cases when the dysplastic or malignant cells were within 500 μ m from the resection margin we defined the margin as a positive margin¹⁾.

RESULTS

Twenty-five women underwent conization by the electrosurgical excision procedure. No invasive cancers were found in those elec-

trosurgical excision specimens. The width and depth of the specimens are shown in Table 1. The operation time was 10.6 ± 4.1 minutes and intra-operative bleeding was 6.8 ± 9.0 g. Delayed bleeding, more than 30 ml (up to 30 days postoperatively), did not occur. Postoperative stenosis that Cytobrush, a stick for smear, could not be inserted into occurred in two cases. Thermal artifacts were within 300 μ m in all cases. Positive margins were recognized in two cases (Table 2). The patients had been followed for 9.4 ± 11.6 months from 1 to 42 months. One singleton pregnancy with a term vaginal delivery was identified in this study. In two cases who had negative margins, postoperative abnormal smears were recognized. One of the patients with postoperative abnormal smears had been diagnosed severe dysplasia in punch biopsy, mild dysplasia in conization and moderate dysplasia in hysterectomy specimens.

DISCUSSION

In many Western countries the incidence of cervical cancer has dropped dramatically, whereas the number of cervical precancers detected has risen sharply⁴⁾. Formerly, radical hysterectomy was performed on patients

Table 1 Width and depth of the conization specimens

	Conization width (mm)	Conization depth(mm)
Mean	17.0	19.0
Standard deviation	2.9	2.2
Minimum	12.0	15.0
Maximum	20.0	22.0

Table 2 Characteristics of patients with positive margins

Name	M. M.	T. Y.
Age	42	31
Diagnosis	CIS	sever dysplasia
Positive side	endocervix (severe dysplaisa)	endocervix (severe dysplaisa)
Number of positive sections	3 /12	3 /12

with CIN⁵).

As a less aggressive procedure, conization is employed. Cold-knife conization has been performed traditionally. Although this procedure is associated with significant morbidity, mainly hemorrhage and cervical stenosis⁶). Laser operations for the treatment of CIN offer the gynecologist a wide variety of methodologies and allow the surgeon to most appropriately tailor the operation to the geographic extent of the disease⁷). However, this method remains to require much time for the operation and the instrument is expensive. In 1990 Mor-Yosef et al. described a technique for cone biopsy using loop diathermy²). They observed no major postoperative complications and performed the procedure quickly and safely with local anesthesia in an outpatient clinic²). Although in general, LEEP needs two or, rarely, 3 sequential passes to resect the transformation zone³) and histological reconstruction was sometimes difficult.

A surgical instrument with right-triangle mounts for diathermic conization of the uterine cervix can perform conization with one pass in most cases. When a SC-junction withdraws from the external os of the cervix, the mounts which are long in depth and narrow in width are used (Fig. 1). In the patient whose SC-junction is visible entirely, the mount, 2 cm in depth and 2 cm in width, is used.

Loop excision caused less intraoperative blood loss and had fewer immediate postoperative complications than cold-knife excision⁸). In our cases, the amount of bleeding was very little. In this instrument, hemostasis can be made with a ball shape mount which can also cauterize the inner and outer sides of the cone base. That may destroy residual dysplastic cells if existed⁹). Because of the technical simplicity, we needed only a

short time to perform the operation. Two cases of stenosis were experienced. Within four weeks after the conization, the wound of conization was sterilized with strong acid twice a week. Infection was not experienced in any cases.

Several researchers^{10~12}) validated the pathologist's ability to define the status of the surgical margins with these thermally destructive excision tools and Montz et al.¹³) reported any difficulty in this area. The thermal artifacts in our specimens were less than 0.3 mm. The significance of having dysplasia at the core margin of a cone specimen obtained by loop excision was comparable to the previous report on the results of cold-knife conization¹⁴). Paterson Brown et al.¹⁵) found 41% margin involvement and White et al.¹⁶) had a 19% rate of margin involvement in dysplasia. Focusing on endocervical margins alone, Felix et al.¹¹) reported that 33% of patients had dysplasia extending to the endocervical resection margins. In our cases there were two patients (8%) with dysplasia involving endocervical margins (see Table 2). However, some degree of cautery artifact is expected at the cut margin of the cone specimen because of the nature of the excision procedure. Although Bennett et al. reported that in two loop excision cases and three cone biopsy cases residual cervical intraepithelial neoplasia was found in the uterus in spite of free endocervical and ectocervical margins, indicating a multifocal abnormality¹⁷).

Cervical intraepithelial neoplasia after conization may recur on follow-up in about 5% to 10% of women¹⁸). Cytological abnormality after conization was found in two cases. One patient underwent hysterectomy. The preservation rate of the uterus was 91%.

CONCLUSION

A surgical instrument with right-triangle mounts for diathermic conization of the uterine cervix rarely needed additional sections. So histopathologic reconstruction was easy. Thus, we concluded that it is a useful instrument for conization of the cervix.

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直角アダプターによる子宮頸部円錐切除術の検討

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〔目的〕直角アダプターによる子宮頸部円錐切除術を評価することを目的とした。

方法：子宮頸部円錐切除術を受けた25人について、円錐切除術の容易さ、合併症、病理組織学的診断への影響、そして治療の転機を検討した。

〔結果〕平均手術時間は 10.6 ± 4.1 分、そして平均出血量は 6.8 ± 9.0 gであった。頸管狭窄が2例あった。2症例が切除断端陽性であった。切除断端が陽性ではない2例で術後細胞診が陽性であった。平均経過観察期間は 9.4 ± 11.6 か月であった。

〔結論〕直角アダプターによる子宮頸部円錐切除術は有用と考えられた。

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