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The Indication and Evaluation of Diagnostic Conization of the Uterine Cervical Neoplasia

Shoji KODAMA, Hiroaki KASE and **Kenichi TANAKA**

Department of Obstetrics and Gynecology, Niigata University School of Medicine, Niigata, Japan

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Summary. **Diagnostic conization is performed especially in the case of endocervical lesions with early cervical neoplasia because it is diffiucult to biopsy endocervical canal lesions in such cases. We analyzed the indications and usefulness of diagnostic conization by comparing its results with those of preoperative cytology and histology. The subjects consisted of 69 patients who underwent diagnostic conization at our hospital between January 1, 1988 and August 31, 1995. Preoperative histology by biopsy showed under diagnosis in 34 (49.3%), and over diagnosis in 16 (23.2%) compared with the diagnosis by conization, respectively. When the cytology indicated mild or moderate dysplasia and biopsy indicated moderate dysplasia or a less advanced lesion, no diagnostic conization was required because the final diagnosis bore out the earlier indications. When the cytology indicated carcinoma *in situ* (CIS) or invasive cancer, diagnostic conization was required because CIS or microinvasive cancer was ultimately diagnosed even if the biopsy showed no neplastic change. When the cytology indicated severe dysplasia to invasive carcinoma, 18.2% of the patients diagnosed as moderate dysplasia or a less advanced lesion by conization did not undergo hysterectomy. This study showed indication for diagnostic conization and the usefulness of conization for the reservation of the uterus.**

Key words—cervical neoplasia, cytology, diagnostic conization.

INTRODUCTION

It is commonly believed that the squamocolumnar junction (SCJ) of the uterine cervix, where squamous cell carcinoma and related lesions frequently occur, localizes into the cervical canal with aging.[1,2] When the lesions at the cervical canal are not visible by colposcopy, biopsy from the optimal area of the lesion becomes difficult. In such cases with lesions in the cervical canal, cytology, colposcopy and histology often show differing diagnoses. Conization for diagnosis (diagnostic conization) is considered when: 1) the cytology shows lesions from dysplastic change to carcinoma; 2) the colposcopy shows inadequate findings without detection of the columnar area unsatisfactory colposcopy: (UC); and 3) clearly invasive carcinoma has been ruled out by biopsy or curette.[1-5] However, it has not been sufficiently evaluated whether diagnostic conization is necessary in all patients who have either a cytological diagnosis as dysplasia or a more advanced change and contradictory findings by biopsy with colposcopy.

In this study, the histology by diagnostic conization was compared with preoperative cytology and histology by biopsy, and the indications and usefulness of diagnostic conization were evaluated.

SUBJECTS AND METHODS

Sixty-nine patients underwent diagnostic conization at Niigata University School of Medicine Hospital between January 1, 1988 and August 31, 1995. Indications for diagnostic conization in our institution were as follows: 1) the cytology did not coincide with histological diagnosis; and 2) colposcopic examination was insufficient UC (unsatisfactory colposcopy): and the most advanced area of the lesion could not be observed.[7] Cytological findings for neoplastic changes with squamous lesions were classified into four categories: mild or moderate dysplasia, severe dysplasia, carcinoma *in situ* (CIS), and invasive cancer. The cytology was based on the most advanced cytological findings during the follow-up course. Histology of the

Correspondence: Shoji Kodama, Department of Obstetrics and Gynecology, Niigata University School of Medicine, Asahimachi 1, Niigata 951, Japan.

Table 1. Correlation between diagnoses before and after conization

Histology of Biopsy/Curettage	Histology of final diagnosis by conization							
		Dysplasia						
	n.p.	Mild	Moderate	Severe	CIS	MIC	Invasive	Total
Satisfactory colposcopy								
Dysplasia								
Severe	2	3	7	6	15	1		34
CIS	6	5	5	7	67	4		94
MIC	1				3	11		15
Total	9	8	12	13	85	16		143
Unsatisfactory colposcopy								
n.p.	1	4	1	1	3	1		11
Dysplasia								
Mild	1	1	1	1	2			6
Moderate	1	3		2	2	1		9
Severe	1	2	4	4	4		1	16
CIS	1		1	1	12	9		24
MIS					1	1	1	3
Total	5	10	7	9	24	12	2	69

n.p., nothing particular; CIS, carcinoma *in situ*; MIS, microinvasive carcinoma.

Table 2. Histologic correlation between pre and post conization in cases with cytological diagnosis of mild or moderate dysplasia by unsatisfactory colposcopy

Biopsy/ Curettage	Histology by conization							
		Dysplasia						
	n.p.	Mild	Moderate	Severe	CIS	MIC	Invasive	Total
n.p.		4						4
Dysplasia								
Mild	1	1	1					3
Moderate	1	2						3
Severe		1	1					2
CIS					1	1		2
Total	2	8	2		1	1		14

n.p., nothing particular; CIS, carcinoma *in situ*; MIC, microinvasive carcinoma.

endocervix was diagnosed by biopsy and by endocervical curettage with Kevorkian curette in all cases. Histological specimens of the conization were made on ten or more sections for each case. Conization was performed initially with a CO_2 laser, and—after April, 1993—with a KTP laser, and hysterectomy was performed in principle when the findings by conization were severe dysplasia or more advanced changes. As for the type of hysterectomy, total hysterectomy was indicated for severe dysplasia and CIS, modified radical hysterectomy was indicated for microinvasive, and radical hysterectomy with pelvic lymphadenectomy indicated for invasive carcinoma. The heat degenerated layer resulting from laser irradiation was unremarkable and posed no problems in the pathological diagnosis for specimen.

RESULTS

Table 1 shows correlations between the preoperative histology by biopsy or by curettage, satisfactory or

Table 3. Histologic correlation between pre and post conization in cases with cytological diagnosis of severe dysplasia by unsatisfactory colposcopy

Biopsy/ Curettage	Histology by conization							
		Dysplasia						
	n.p.	Mild	Moderate	Severe	CIS	MIC	Invasive	Total
n.p.								
Dysplasia								
Mild								
Moderate		1						1
Severe		1	2		1			4
CIS					1			1
Total		2	2		2			6

n.p., nothing particular; CIS, carcinoma *in situ*; MIS, microinvasive carcinoma.

Table 4. Histologic correlation between pre and post conization in cases with cytological diagnosis of CIS by unsatisfactory colposcopy

Biopsy/ Curettage	Histology by conization							
		Dysplasia						
	n.p.	Mild	Moderate	Severe	CIS	MIC	Invasive	Total
n.p.	1			1	1	1		4
Dysplasia								
Mild					1			1
Moderate				2	2	1		5
Severe				1	2			3
CIS			1	1	5	2		9
MIC					1			1
Total	1		1	5	12	4		23

n.p., nothing particular; CIS, carcinoma *in situ*; MIS, microinvasive carcinoma.

unsatisfactory colposcopy, and histology by conization. In satisfactory colposcopy, the diagnoses before and after conization coincided in 84 of 143 cases (58.7%). The numbers of cases with under and over diagnoses were 20 cases (14.0%) and 39 cases (27.3%), respectively. In unsatisfactory colposcopy, the diagnoses before and after conization coincided in 19 (27.5%) of the 69 patients (no abnormal change in 1, dysplasia in 5, CIS in 12, and microinvasive cancer in 1). Preoperative histological diagnoses in comparison with histology by conization were under evalualed in 34 (49.3%) (dysplasia in 10, CIS in 11, microinvasive cancer in 11, and invasive cancer in 2). The number of cases with over diagnosis with unsatisfactory colposcopy was 16 cases (24.2%) (no abnormal change in 4, dysplasia in 11, and CIS in 1). In this way, histologic diagnoses with satisfactory colposcopy were more accurate than those with unsatisfactory colposcopy in the rate of under diagnosis.

Preoperative cytological diagnosis in each classified category was compared according to histological diagnoses before and after conization.

In 14 patients diagnosed as mild or moderate dysplasia by cytology (Table 2), 4 patients with no neoplastic change, and 8 patients with dysplasia diagnosed histologically before conization showed moderate dysplasia or less advanced changes by conization. These to patients did not undergo hysterectomy after conization. Only two patients whose preoperative diagnosis was CIS underwent hysterectomy after conization.

In six patients diagnosed as severe dysplasia by cytology (Table 3), 4 pateients with severe dysplasia diagnosed histologically before conization were found to have mild or moderate dysplasia (3 patients) or CIS (1 patient) by conization. Two patients diag-

Table 5. Histologic correlation between pre and post conization in cases with cytological diagnosis of invasive carcinoma by unsatisfactory colposcopy

Biopsy/ Curettage	Histology by conization							
		Dysplasia						
	n.p.	Mild	Moderate	Severe	CIS	MIC	Invasive	Total
n.p.			1		2			3
Dysplasia								
Mild				1	1			2
Moderate								0
Severe	1		1	3	1		1	7
CIS	1				5	6		12
MIC						1	1	2
Total	2		2	4	9	7	2	26

n.p., nothing particular; CIS, carcinoma *in situ*; MIS, microinvasive carcinoma.

nosed as CIS after conization underwent hysterectomy. Diagnosic conization was necessary in this cytodiagnosis, and hysterectomy was avoided in four of the 6 patients by conization.

In 23 patients diagnosed as CIS by cytology (Table 4), lesions from no neoplastic change to microinvasive cancer were detected by conization. In 4 patients diagnosed as no neoplastic change histologically before conization, 1 with severe dysplasia, 1 with CIS, and 1 with microinvasive carcinoma were revealed by conization. Concerning dysplasia, conization revealed CIS in 1 patient with mild dysplasia, 2 of 5 with moderate dysplasia, 2 of 3 with severe dysplasia, 5 of 9 with CIS, and 1 microinvasive cancer diagnosed preoperatively. No advanced invasive cancer over microinvasive carcinoma was detected by conization in patients with this cytology, and the possibility of total hysterectomy without diagnostic conization was suggested in such cases.

In 26 patients diagnosed as having invasive cancer by cytology (Table 5), conization revealed CIS in 2 of 3 with no neoplastic change, with 2 of 9 with dysplasia diagnosed preoperatively. In patients with microinvasive cancer after conization, 6 were diagnosed as CIS before conization. In 2 patients ethibiting invasive cancer after conization, 1 patient was diagnosed as severe dysplasia, and 1 as microinvasive cancer before conization. The patient diagnosed as severe dysplasia before conization had an intravascular invasion of less than 3 mm in depth.

Concerning the treatment after diagnostic conization (Table 6), 29 (43.5%) received conization alone, and 39 (56.5%) received additional hysterectomy. Of the six patients whose findings by conization were benign, 1 underwent hysterectomy. In this patient,

Table 6. Diagnostic conization and hysterectomy after unsatisfactory colposcopy

Histology by Conization	No. of Cases	Conization only	Conization plus Hysterectomy
n.p.	5	4	1[a)]
Dysplasia			
Mild	10	10	0
Moderate	7	7	0
Severe	9	4[b)]	5
CIS	24	5[c)]	19
MIC	12	0	12
Invasive	2	1[d)]	1
Total	69 (100%)	29 (43.5%)	39 (56.5%)

n.p., nothing particular; CIS, carcinoma *in situ*; MIS, microinvasive carcinoma; [a)], Preoperative diagnosis of CIS; [b)], Patients desiring uterine reservation; [c)], Intracavitary radiotherapy performed; [d)], Radiotherapy performed.

biopsy indicated CIS, but no lesions were observed in the resected uterus; thus preservation of the uterus might have been possible. In the 17 patients whose postoperative diagnosis was mild or moderate dysplasia, treatment was finished by conization. Of the nine patients who showed severe dysplasia, 5 underwent hysterectomy, but 4 have been followed up at the outpatient clinic because of their strong wish to preserve the uterus. All 38 patients who had CIS or more advanced changes received additional treatments. In the 24 patients with CIS by conization, 20 underwent hysterectomy, and 4 received intracavitary radiotherapy. All of 12 with microinvasive and 1

of 2 with invasive cancer underwent hysterectomy, and 1 patient received whole pelvic and intracavitary radiotherapy.

DISCUSSION

Patients with squamous neoplastic lesions located in the endocervical canal increase in ages above 40, and are reported to account for 50% of all women after menopause.[2] When colposcopic diagnosis has difficulty detecting the endocervical neoplastic regions, the diagnosis is evaluated as unsatisfactory colposcopy.[7] In this case, histological specimens by punch biopsy are insufficient for diagnosis, and cervical curettage is required. When the specimens obtained by endocevical curettage show fragments, it is difficult to make a judgment of obscure stromal invasion. If clearly invasive cancer is not detected by examination of these specimens, diagnostic conization is performed for indefinite neoplastic lesions in the endocervix. If invasive cancer is detected, appropriate therapy is selected for clinical stage and general conditions.[1]

In the surgical treatment for dysplasia of the uterine cervix, there seems to be no consensus on the degree to which the dysplasia should be indicated. Richart et al.[8] considered that cervical intraepithelial neoplasia (CIN) ranges from mild dysplasia to carcinoma *in situ* and that dysplasia eventually develops into carcinoma *in situ* if it is followed up without biopsy. From this viewpoint, treatment should be started with the diagnosis of CIN. However, according to a study on dysplastic epithelium in Japan, the frequency of progression from mild dysplasia to carcinoma *in situ* is 1.6%, but that from severe dysplasia to carcinoma *in situ* is much higher at 22.4%,[9] unlike the report by Rechart et al.[8] Therefore, we consider severe dysplasia or more advanced lesions to be indications of surgical treatment, including conization. If the colposcopic finding is UC and the finding on diagnostic conization is severe dysplasia or a more advanced lesion, we perform an additional hysterectomy, because recurrence has occurred in some cases with these lesions.[10,11]

In a previous study, the ratio of coincidence between tentative diagnosis by cytology and the final histological diagnosis was 52%, and the lesions were under diagnosed preoperatively in 33.7% of the cases, indicating the limitations of cytological diagnosis.[12] The ratio of coincidence between the diagnosis by biopsy and the final diagnosis by conization in patients with UC was 26.5%,[3] 43.2%,[13] and 58.0%,[14] and 27.5% in our patients. Under diagnosis was observed in 38.0%,[14] 43.2%,[13] 70.7%,[3] and 49.3%. Diagnostic conization is indispensable for the prevention of under diagnosis, but the detection rate of severe dysplasia or more advanced lesions which need treatment is reported to be 67.5%,[3] 63.3%,[13] and 100%[14] even in patients with a normal preoperative histology, and was 45.5% for our patients.

In this study, the indication for diagnostic conization was shown according to cytology and histology biopsied and curetted. When the cytology showed mild or moderate dysplasia and when the histology showed moderate dysplasia or a less advanced change, the final diagnosis of histology after conization was also moderate dysplasia. In this case, diagnostic conization or hysterectomy was considered to be unnecessary. When the cytology showed severe dysplasia, the histology on conization showed moderate dysplasia or a less advanced change in about half of the patients even when the histological diagnosis by biopsy was severe dysplasia or CIS. In this case, hysterectomy was avoided in half of the cases after conization. When the cytology showed carcinoma *in situ* or invasive cancer, microinvasive cancer was detected by examination of conization specimens even if the histological diagnosis by biopsy was a benign lesion. In this case, diagnostic conization should be performed. In fact, 8.7% of patients of the lesions diagnosed to be carcinoma *in situ* and 15.4% of patients with lesions diagnosed to be invasive concer by cytology were found to have moderate dysplasia or less advanced lesions by conization, and additional hysterectomy could be avoided.

When the cytology shows CIS and histology shows CIS or microinvasive carcinoma, total hysterectomy may be selected immediately without diagnostic conization, because in this study no invasive cancer was detected by diagnostic conization even when the preoperative histological diagnosis was severe dysplasia or microinvasive cancer. Even when the cytology showed invasive cancer and the histology ranged from severe dysplasia to microinvasive carcinoma, diagnostic conization was considered to be necessary because various diagnoses from CIS to invasive cancer were detected and different types of hysterectomy were recommended.

As observed above, diagnostic conization may be avoided, and outpatient follow-up may be possible even in patients with UC, depending on the preoperative cytological and histological findings. Also, additional hysterectomy may be avoided by diagnostic conization.

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