
Colposcopy in a Family Practice Residency

The First 200 Cases

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Background. The incidence of abnormal Papanicolaou smears has increased dramatically in the last decade. Many family physicians now find it necessary to perform colposcopies themselves to provide optimal care for their patients. There is little literature that evaluates the performance of this procedure by family physicians.

Methods. The findings of the first 200 colposcopies performed in a community hospital-based family practice residency program are reported. Descriptive data were prospectively gathered between August 1987 and December 1989.

Results. The median age of the patients was 25 years, the median number of sexual partners was three, and the median age at the time of first sexual intercourse was 17 years. The majority had colposcopy performed because of a class III Papanicolaou smear (108 [54%]).

Twenty-five (12.5%) were pregnant at the time of colposcopy; for this reason a biopsy was not performed on 19 of the patients. An average of three distinct cervical lesions were seen in each patient. The most frequent histologic finding was some degree of dysplasia (116 of 181 biopsied [64%]). Twenty-two cases of severe dysplasia (carcinoma in situ) were found. However, no cases of invasive carcinoma were found.

Conclusions. High-quality colposcopy and effective treatment with appropriate referral can be done at the primary care level for most patients. Many patients failed to return for follow-up evaluation after treatment, indicating the need for better tracking of patients.

Key words. Colposcopy; papillomaviruses; cervix dysplasia; cervix neoplasms. *J Fam Pract* 1992; 34:67-72.

The incidence of invasive cervical cancer has stabilized in recent years. However, the rate of cervical dysplasia (cervical intraepithelial neoplasia [CIN] or squamous intraepithelial lesions [SIL]) has dramatically increased, especially in younger women.¹⁻³ A number of factors contribute to this phenomenon, but the identification of human papillomavirus (HPV) as a causative co-agent is perhaps the most important.⁴ In light of the widespread occurrence of condyloma in the sexually active population and its insidious nature, CIN will continue to be a growing problem in the future.⁵ The need for colposcopic evaluations by primary care physicians is clear. The results of the first 200 colposcopic examinations in a community hospital-based family practice residency program are described.

Methods

The Mid Michigan Regional Medical Center family practice residency program is located in a community hospital in Michigan. It serves a city population of approximately 37,000 with an additional 70,000 in surrounding counties. There are 27,000 patient visits to the family practice center per year. Women comprise 58% of the patients, 68% of these are between 18 and 40 years of age, and they represent all socioeconomic levels of society.

A faculty physician (J.L.P.), who is a board-certified family practice physician, completed training and supervision in colposcopic examinations, and either performed or directly supervised 95% of the examinations reported in this study. Binocular, variable-power colposcopes, one with an attachable teaching head and another with video display, were used.

Data were gathered prospectively on all patients. The colposcopy form used in these procedures is shown in the Appendix.

Typically, a complete colposcopic examination was performed in the following manner: the data form was initiated, the patient placed in the standard dorsolithot-

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Table 1. Characteristics of 200 Colposcopy Patients

| Characteristic | Range | Mean |
|------------------------------|-------|------|
| Age (y) | 15-87 | 28.5 |
| Living children (n) | 0-10 | 1.5 |
| Sexual partners (lifetime) | 1-100 | 5.5 |
| Age at first intercourse (y) | 9-27 | 16.7 |

omy position, and a speculum inserted into the vagina. The cervix was carefully cleared of mucus with a cotton swab if necessary, and a preliminary examination under colposcopic magnification was carried out. Then a Papanicolaou smear was repeated using a Cytobrush for endocervical samples and a plastic spatula for ectocervical smears. The cervix and vagina were stained with 3% acetic acid. The cervix and vagina were reexamined with the colposcope and any lesions that were found were recorded. Under colposcopic direction, biopsies were taken with a Kevorkian-Young Biopsy Punch or a "baby" Tischler Cervical Biopsy Punch. If the patient was pregnant and the lesion appeared to be of low grade, biopsies were deferred until the postpartum period. Bleeding was controlled with Monsel's solution when necessary. An endocervical curettage (ECC) was performed with a Kevorkian endocervical curette without a basket; however, ECC was not performed on pregnant patients. The vulva, perineum, and anus were then stained with acetic acid and examined. The data form was completed and the specimens were sent to the laboratory for pathologic examination. After the procedure, the patient was given thorough instructions and detailed handouts. When resident education took place throughout the examination, the procedure usually took 45 to 60 minutes. Without resident teaching, an entire examination, including patient counseling, required approximately 30 minutes.

Results

Two hundred women, ranging in age from 15 through 87 years, underwent colposcopy between August 1987 and December 1989. Tables 1 and 2 summarize patient characteristics and their medical history. Highlights of these data show that the median age was 25 years, 56 (28%) were nulliparous, 57 (28.5%) had one child, the median number of lifetime sexual partners was three, and the median age of first sexual intercourse was 17 years. Of interest is that 34.5% of all the patients had only one (39 [19.5%]) or two (30 [15%]) lifetime sexual partners. Twenty-five (12.5%) were pregnant at the time of the

Table 2. Medical History of 200 Colposcopy Patients

| Medical History | Number | Percent |
|---|--------|---------|
| Pregnant | 25 | 12.5 |
| Current smokers | 102 | 51 |
| History of condyloma | 55 | 27.5 |
| History of partner(s) with condyloma | 35 | 17.5 |
| Previous cryocautery | 23 | 11.5 |
| Previous conization | 4 | 2 |
| Previous cervical cancer per patient's report | 3 | 1.5 |
| History of sexual abuse | 18 | 9 |

evaluation. Smoking status, other historical information, and past treatments are listed in Table 2.

Analysis of the indications for colposcopic evaluation revealed that 108 (54%) patients had a class III Papanicolaou smear as a reason for having the evaluation. Table 3 is a list of all of the indications cited in the charts. Some of the miscellaneous indications included postcoital bleeding (1), recurrent vaginal itching or discharge (3), perineal dysplasia (1), and a previous history of carcinoma in situ (2). Among these seven miscellaneous cases, six were found to have warty changes on histologic biopsy specimens, and five had mild dysplasia.

Table 3. Indications and Selected Pathology Findings in a Series of 200 Colposcopy Patients

| Indication/Finding | Number | Percent |
|--|--------|---------|
| Indication | | |
| Class III | 108 | 54 |
| Class II with condyloma | 21 | 10.5 |
| Class II with atypia | 18 | 9 |
| History of condyloma | 30 | 15 |
| Partner with condyloma | 10 | 5 |
| Miscellaneous | 7 | 3.5 |
| Abnormal appearing cervix | 4 | 2 |
| High-risk behavior | 2 | 1 |
| Results of endocervical curettage (ECC) | | |
| No histological changes | 135 | 67.5 |
| Focal dysplasia | 4 | 2.0 |
| Miscellaneous changes | 22 | 11.0 |
| ECC not performed | 39 | 19.5 |
| Cervical biopsy results | | |
| Mild dysplasia | 88 | 44 |
| Moderate dysplasia | 10 | 5 |
| Severe dysplasia (carcinoma in situ) | 11 | 22 |
| Miscellaneous changes | 52 | 26 |
| No diagnostic abnormality | 5 | 2.5 |
| Chronic cervicitis | 4 | 2 |
| Biopsy not performed (pregnant) | 19 | 9.5 |

Endocervical curettages were performed on 161 (80.5%) of the patients (Table 3). Miscellaneous changes included nine (5.5% of 161) cases of dyskeratosis or atypia, ten (6% of 161) cases in which koilocytic changes had occurred, and four (2.5% of 161) cases having some other benign diagnosis, ie, endocervicitis.

Cervical biopsy specimens were taken on all but 19 pregnant patients who had mild disease identified by colposcopy. An analysis of the cervical histological reports combined in Table 3 shows that 120 (66%) of the patients on whom a biopsy was performed had some degree of cervical dysplasia. Of the 52 (29%) who were classified as having miscellaneous changes, 38 had warty changes without dysplasia, and 14 had other changes such as atypia, hyperkeratosis, or parakeratosis. One patient with a history of pemphigus showed endocervical changes consistent with that diagnosis. One hundred fifty-eight (87%) had biopsy-proven evidence of dysplasia or human papillomavirus (HPV). Only two patients had persistent bleeding after biopsy. One was pregnant and the other was subsequently discovered to have von Willebrand's disease. Bleeding in both was controlled with pressure and Monsel's solution. There were no other complications from the colposcopic examinations, cervical biopsies, or endocervical curettages.

Eighty-eight (49%) of the biopsied patients had vaginal, introital, perineal, or anal biopsies in addition to the cervical specimens. These biopsies resulted in 82 diagnoses of condyloma, 3 of squamous dysplasia, 2 of benign polyps, and 1 with normal findings.

The examiner recorded a visual description of the primary cervical changes observed after staining and an impression or prediction of the likely histologic changes that could be expected on biopsy specimens in all 200 cases (Table 4). The examiner also recorded an assessment of the adequacy of the colposcopic examination. An adequate examination, which included the ability to see the entire squamocolumnar junction, the transformation zone, and all the borders of any lesion was completed for all but 18 patients (9%). These patients were referred to gynecological specialists.

The majority of patients (57%) received cryocautery of the cervix as the treatment of choice for dysplasia, warts, or chronic cervicitis⁶ (Table 5). Twenty-nine (14.5%) received a 10-week course of 5-fluorouracil (5-FU) vaginal cream after cryocautery, and four (2%) others received 5-FU cream only, as described by Krebs.⁷ Twenty-two (11%) patients were lost to follow-up treatment, nineteen (9.5%) were monitored just by regular Papanicolaou smears, six (3%) of the pregnant patients were scheduled for follow-up in the postpartum period, and six (3%) others returned to their primary care physician outside of our center. Twenty-nine patients (14.5%) were referred to gynecology specialists. Indications for referral included an

Table 4. Examiner Findings and Clinical Impressions Made During Colposcopy

| Finding | Number (N = 200) | Percent |
|-----------------------------------|---------------------|---------|
| Visual findings | | |
| White epithelium (WE) | 84 | 42 |
| WE, punctation | 49 | 24.5 |
| WE, punctation, mosaicism | 33 | 16.5 |
| WE, mosaicism | 21 | 10.5 |
| Normal cervix | 8 | 4 |
| Other | 5 | 2.5 |
| Examiner's impression | | |
| CIN I | 75 | 37.5 |
| CIN I and warts | 42 | 21 |
| CIN II | 34 | 17 |
| Other | 32 | 16 |
| Normal cervix | 17 | 8.5 |
| Colposcopic adequacy | | |
| Squamocolumnar junction well seen | 108 | 54 |
| Squamocolumnar junction not seen | 9 | 4.5 |
| Not recorded* | 83 | 41.5 |
| All of lesion seen | 191 | 95.5 |
| All of lesion not seen | 9 | 4.5 |

*Colposcopic adequacy was not recorded specifically, but was assumed to be adequate based on review of colposcopy forms.

inadequate colposcopic examination, lesions requiring laser surgery, carcinoma in situ, advanced lesions while pregnant, and failure to respond to treatment. Among the referred patients, 16 had conization, 5 had laser treatment only, 4

Table 5. Treatment, Referrals, and Follow-up of Patients After Colposcopy

| Patient Management | Number (N = 200) | Percent |
|------------------------------------|---------------------|---------|
| Follow-up treatment | | |
| Cryocautery | 85 | 42.5 |
| Cryocautery and 5-fluorouracil | 29 | 14.5 |
| Referral to specialist | 29 | 14.5 |
| None indicated in chart | 22 | 11 |
| Observation and Papanicolaou smear | 19 | 9.5 |
| Returned to primary medical doctor | 6 | 3 |
| Other | 6 | 3 |
| 5-Fluorouracil only | 4 | 2 |
| Follow-up Papanicolaou smear | | |
| None indicated in chart | 86 | 43 |
| Class I | 40 | 20 |
| Class II | 56 | 28 |
| Class III | 16 | 8 |
| Other | 2 | 1 |
| Referred to specialist | | |
| Conization | 11 | 5.5 |
| Conization and laser | 5 | 2.5 |
| Laser | 5 | 2.5 |
| Repeat colposcopy | 2 | 1 |
| Colposcopy and cryocautery | 2 | 1 |
| Did not show | 2 | 1 |
| Hysterectomy | 1 | .5 |

had repeat colposcopies by a gynecologist, 2 of whom eventually had cryocautery. Two patients failed to keep their consultant appointment, one was referred to an oncologist because of a concomitant lymphoma in addition to mild dysplasia, and one elected to undergo a hysterectomy because of recurrent disease.

Follow-up Papanicolaou smears were recommended for almost all patients, generally at 4 months after treatment, but only 114 (57%) had a Papanicolaou smear within 9 to 12 months following their examination (Table 5). Of the Papanicolaou smears performed, 40 (35%) were class I, 56 (49%) were class II, and 16 (14%) were class III.

Discussion

Our findings are consistent with reports that cervical dysplasia is found increasingly in younger women.¹ While no cases of invasive carcinoma were found among our study population, the patients with dysplasia will be followed closely because of the potential of CIN conversion to invasive carcinoma; a small but significant number of cases progress to invasion despite initial treatment.³

The high incidence of HPV disease among these patients is also consistent with the reported "epidemic" of condyloma and points to the need for greater scrutiny of this high-risk population.⁴ In this regard, a woman with multiple sexual partners stands a greater chance of exposure to sexually transmitted diseases, and cervical carcinoma could be considered one of them.⁸ The findings in this study suggest that the sexual behavior of the partner may be as important as the ultimate number of partners a woman has, especially relative to the transmission of HPV. Thirty-nine (19.5%) of the patients had had only one lifetime sexual partner at the time of the examination, 69 (34.5%) had had one or two partners, and 99 (49.5%) had had three or fewer partners. The risk history of one or two partners may be misleading with the current population of sexually active men and women. In addition, approximately 75% of all the patients examined had not seen or recognized warts on their partners. It has been our experience that most condyloma are not visible to the naked eye on male genitalia.⁹

Smoking has been linked to the development of cervical neoplasia.¹⁰ Fifty-one percent of the patients examined were current smokers. Data were not collected on former smokers or those exposed to passive smoke. All patients should be discouraged from smoking, and those patients with cervical dysplasia should be targeted for special antismoking efforts.

Our experience with colposcopies performed on pregnant patients has led us to exercise caution. Pregnancy causes many changes in the cervix that make ab-

normalities appear worse than they might be under other circumstances. Detecting cancerous changes may be difficult during pregnancy because of the engorged, redundant cervix covered with abundant mucus.³ Of the 25 pregnant patients in our study, 19 (76%) had class III prenatal screening Papanicolaou smears. Carcinoma in situ was diagnosed in one patient after examination of colposcopy biopsy specimens. There was no residual in the postpartum cone specimen. Mild dysplasia was found in three (12%) patients, and severe dysplasia in two (8%) others. One patient with severe dysplasia was lost to follow-up. Nineteen (76%) pregnant patients had mild disease identified by colposcopy and clinical impression; therefore, a biopsy was not performed. The patients were followed with repeat colposcopic examinations at 8- to 12-week intervals. Treatment was carried out postpartum if considered necessary after repeat colposcopic examination.

Only 22 (11%) patients failed to return for treatment after colposcopy, but 86 (43%) patients failed to return for recommended follow-up Papanicolaou smears after treatment. The typical case was the patient who had an abnormal Papanicolaou smear and underwent colposcopy during which mild dysplasia was detected and cryocautery was performed but then failed to return for a follow-up Papanicolaou smear. We suspect that patients assumed that they were cured, that the costs were too high, or that the procedures were uncomfortable or embarrassing. Lack of follow-up could have serious consequences; therefore, diligent monitoring or follow-up visits is advised. Further research into patient feelings about having genital warts, their responses to procedures, and the effects of residency training being conducted during the procedure need to be done.

None of the studies cited describe how often a family physician requires a consultation after colposcopy. In this study, 28 (14%) cases required referral. These situations most frequently involved pregnancy, postmenopausal situations, treatment failures, inadequate colposcopy and the necessity for laser treatment or conization. Consultation was more frequent earlier in the study when experience was lacking. With more experience, the percentage of referrals would more than likely diminish. The clinician in this study did not carry out conizations, although some family practice physicians do. If consultations were not obtained for conization, it is estimated that the experienced family physician would require consultation in 5% to 8% of all cases.

Although this study reviewed 200 colposcopic procedures that took place in a learning situation where consultation was readily available, supportive, and sought liberally, a referral rate of 8% (excluding conization) indicates that family physicians can manage most cervical lesions without consultation.

Failure to respond to treatment was defined as persistent class III Papanicolaou smears obtained after cryocautery was performed. The failure rate of 14% in this study is consistent with previously reported findings.¹¹ Cryocautery was used for warty atypia and the full range of dysplasias, unless severe dysplasia was found to extend greater than 2 cm or over two quadrants, or if there was a diffuse lesser lesion not covered well by the cautery tip.

Townsend has shown that the two main reasons colposcopy fails are that physicians do not perform enough cervical biopsies and that the ECC is not done.¹² In the present study, ECCs were not done on 14 (7%) nonpregnant patients. The standard of care, especially in a learning situation, should be that an ECC is always done unless the patient is pregnant.

The colposcopies performed during this study were done in a residency training program setting, and residents participated in the examinations. The need for more colposcopic examinations at the primary care level has been addressed by several authors,^{13,14} and the efficacy of performing colposcopy in general practice demonstrated.^{1,15,16} Our experience shows that high-quality colposcopic examinations can be carried out at the primary care level, taught effectively to residents, and can lead to effective treatment or referral. Learning this valuable technique expands the availability of diagnostic care and increases comprehensiveness and continuity of care. Improved techniques to ensure that patients receive follow-up care are needed.

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Appendix

Colposcopy Procedure Form

Date _____/_____/_____
 Name _____
 Phone No. _____

Referring physician _____
 Physician doing colposcopy _____
 Reason for colposcopy _____
 Results of last Pap _____
 Current meds _____

History:
 Age _____
 G _____ P _____ Ab _____
 Smoker _____ Y N
 Previous abnormal Paps _____ Y N
 History of previous cryocautery _____ Y N
 History of STD _____ Y N

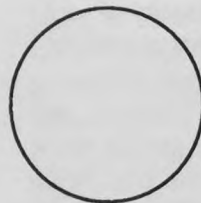
LMP _____/_____/_____
 History of other cancers _____
 Family history of cancer _____

History of condyloma _____ Y N
 Number of sexual partners _____
 Partner(s) with warts _____ Y N
 Age at first intercourse _____
 Sexual abuse _____
 DES exposure _____ Y N
 Is the patient pregnant? _____ Y N

PROCEDURE:

Pap repeated _____ Y N
 Observation without staining _____

Observation w/ staining _____



SCJ well seen _____ Y N
 Entire lesion seen _____ Y N
 ECC done _____ Y N

LK = leukoplakia
 WE = white epithelial
 PN = punctation
 MO = mosaicism
 ATZ = abnorm transformation zone
 AV = atypical vessels
 BE = bulk effect
 X = biopsy sites
 SCJ = squamocolumnar junction

Vaginal vault _____
 Perineum _____

Clinical Impression: CIN I, CIN II, CIN III _____

Plan: Discourage smoking
 Need at least annual Pap smears rest of life regardless
 Handout on cryocautery
 Follow-up Pap 4, 8, and 12 months after cryo
 ? follow-up colposcopy in 8-12 months
 ? partner needs androscopy
 Other _____

Recommendations: Cryocautery _____ Y N
 Referral to Ob/Gyn _____ Y N
 Other: _____

Physician _____