# 'See and Treat' Electrosurgical Loop Excision of the Cervical Transformation Zone

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*Background.* "See and treat" electrosurgical loop excision of the cervical transformation zone (ELECTZ) is an excisional surgical procedure that enables simultaneous histologic diagnosis and treatment of premalignant cervical disease, thus eliminating the need for a preliminary cervical biopsy and an additional patient visit. Indications for the procedure include an abnormal cervical Papanicolaou (Pap) smear and a colposcopic impression of cervical intraepithelial neoplasia (CIN). The purpose of this study was to assess the "see and treat" ELECTZ procedure performed by family physicians.

*Methods.* Women who were scheduled for colposcopic evaluation because of an abnormal cervical cytology report were enrolled from the practices of three family physician colposcopists located at three sites. The "see and treat" ELECTZ procedure was performed on patients with both abnormal Pap smear results and abnormal colposcopic findings. Procedural complications were documented. Subjects were evaluated at follow-up examinations during the first postoperative year to determine therapeutic cure.

*Results.* "See and treat" ELECTZ was performed on 48 women. The histologic results from "see and treat" ELECTZ were normal for 36.1% of subjects. When subjects with a low-grade lesion on Pap smear were considered, 40.7% had normal loop histologic findings. Of women with a preoperative colposcopic impression of low-grade lesion, 54.2% had normal histologic results, and 12% of women with a high-grade colposcopic impression had normal histologic results ($P<.001$). When the colposcopic impression was reported as high-grade disease, 82% of loop specimens were reported as CIN 2 or 3.

*Conclusions.* Selective use of "see and treat" ELECTZ may be appropriate only when practiced by experienced colposcopists who are able to reliably differentiate low-grade from high-grade disease by means of colposcopy, and if cytologic and colposcopic findings unequivocally indicate high-grade cervical disease.

*Key words.* Electrosurgery; cervical neoplasia; primary care. (*J Fam Pract 1996; 42:253-257*)

"See and treat"[1-3] electrosurgical loop excision of the cervical transformation zone (ELECTZ) is an excisional surgical procedure that permits a simultaneous histologic diagnosis and treatment of premalignant cervical disease, ie, a traditional two-step process is combined into a single step of biopsy and treatment. Patient prerequisites for this procedure include both an abnormal cervical Papanicolaou (Pap) smear and a colposcopic impression of premalignant cervical neoplasia. The simplified approach eliminates the need for a preliminary cervical histologic sample acquired by biopsy. Advocates of "see and treat" ELECTZ claim that this practice results in decreased cost, greater patient convenience, a reduction of follow-up noncompliance by patients, a larger histologic specimen compared with that obtained by means of cervical biopsy, equivalent cure rates compared with other therapies, and a shorter time interval from the detection of cytologic abnormalities to treatment.[1,4]

The "see and treat" ELECTZ procedure has been practiced by many physicians, particularly by clinicians

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from Europe.[1,4-6] The early commercial marketing strategy for electrosurgical loop excision procedures in the United States emphasized the advantages of "see and treat" patient management. Clinicians who tend to be more cautious have considered a universal "see and treat" approach as overly aggressive. The purpose of this study was to determine whether "see and treat" ELECTZ should be used by family physicians, and if so, under which circumstances the procedure would be appropriate.

## Methods

### *Patient Population*

Women between the ages of 16 and 65 years were enrolled from the practices of three family physician colposcopists at three clinical sites: The Medical University of South Carolina, Charleston, South Carolina; the National Procedures Institute, Midland, Michigan; and East Carolina University, Greenville, North Carolina. Inclusion criteria were minimum age of 16 years, an abnormal Pap smear result, colposcopic evidence of cervical dysplasia, and voluntary agreement to undergo "see and treat" ELECTZ following informed consent. Exclusion criteria were the presence of invasive cervical cancer, severe cervicitis, pregnancy, postpartum duration of less than 3 months, allergy to iodine or local anesthetics, and hemorrhagic disorder or anticoagulation therapy.

### *Equipment and Materials*

Each clinician independently provided the necessary equipment and supplies required for the electrosurgical procedures as previously described.[7]

### *Study Design*

Subjects with abnormal cervical Pap smears, colposcopic evidence of cervical intraepithelial neoplasia (CIN), or an unsatisfactory colposcopic examination were treated by simple ELECTZ or ELECTZ conization ("cowboy hat"). No cervical biopsy specimens were collected prior to "see and treat" ELECTZ. Surgical complications and postoperative findings were documented. Subjects were then evaluated by serial Pap smears and colposcopy at follow-up examinations during the first postoperative year to determine therapeutic cure. This clinical trial was part of a larger study of ELECTZ by family physicians, the design of which has been previously reported.[7]

### *Statistical Analysis*

Simple frequency measures were performed on demographic and descriptive data. Statistical analyses were performed using the chi-square test for nominal variables and the *t* test for continuous variables. Kappa statistics were calculated to determine agreement among pathology data.

## Results

Forty-eight women were enrolled in the study and had "see and treat" ELECTZ. The average age of the subjects was 31.8 years and the range was 16 to 63 years. The mean parity of subjects was 1.6. Approximately 23% of subjects reported previous treatment for cervical neoplasia, 19% by cryotherapy and 4% by laser therapy. The size of cervical lesions was reported as follows: 29% of the lesions occupied one quadrant of the cervix, 38% occupied two quadrants, 19% occupied three quadrants, and 14% occupied all four quadrants.

Fifteen simple ELECTZ and 33 ELECTZ conization procedures were performed. There were few complications. Loop histologic specimen excisional margins for 10.9% of subjects were reported as demonstrating CIN. Histologic thermal artifact was reported for four specimens, three of which were reported to be uninterpretable because of thermal injury. A blended cutting-coagulation mode was used for all of the excisional procedures. The mean estimated blood loss was 18.1 mL (standard deviation [SD], 18.3; range, 3 to 75 mL). Two women reported minor postoperative bleeding. Postoperative cervicitis was reported for one woman.

"See and treat" loop excisions were performed on 48 women, but complete data were available for only 47 women. Of the 47 loop histologic specimens, 17 (36.2%) were interpreted as normal. The colposcopic impression for 13 of 17 of the specimens was reported as a low-grade lesion. Pap smear alone was not a good predictor of loop histologic results: 36.8% of high-grade loop specimens were underestimated by Pap smear (Table 1). When subjects with low-grade abnormal findings on Pap smear were considered, 40.7% had normal loop histologic results and 18.5% of loop specimens were interpreted as high-grade disease. However, when only subjects with high-grade lesions on Pap smear were considered, 85.5% of histologic specimens were reported as high-grade disease. The correlation of initial Pap smear findings with those of loop histologic findings was poor ($\kappa$=.382).

Thirteen (54.2%) of 24 subjects with a colposcopic impression of a low-grade lesion had a normal loop histologic specimen, while only 2 (11.8%) of 17 patients with

Table 1. Preliminary Cervical Cytologic Findings Compared with Loop Excision Histologic Results for "See and Treat" Electrosurgical Loop Excision of the Cervical Transformation Zone (ELECTZ) (N=47)

| "See and Treat" ELECTZ Histologic Findings | Cytologic Findings | | |
|---|---|---|---|
| | Atypia, n | LGSIL, n | HGSIL, n |
| Normal | 4 | 11 | 1 |
| LGSIL | 0 | 11 | 1 |
| HGSIL | 2 | 5 | 12 |
| Total | 6 | 27 | 14 |

*LGSIL, which denotes low-grade squamous intraepithelial lesion, equates to cellular changes associated with mild dysplasia, cervical intraepithelial neoplasia 1 (CIN 1) or human papillomavirus (HPV); HGSIL, high-grade squamous intraepithelial lesion, equates to moderate dysplasia (CIN 2) or severe dysplasia (CIN 3 or carcinoma in situ).*

a colposcopic impression of a high-grade lesion had a normal loop excision histologic report ($P<.001$) (Table 2). When the colposcopic impression was reported as low-grade disease, 16.6% of women actually had high-grade disease, determined by loop histologic evaluation. Yet, when the colposcopic impression indicated high-grade disease, 82% of loop specimens were reported as high-grade disease. When the most severe findings from the Pap smear and the colposcopic impression were combined and then compared with the those of the loop excision histologic findings, 51.8% of the combined low-grade findings had normal loop specimens and 14% of high-grade findings had normal loop histology. In three of the four women with a preliminary low-grade Pap smear result but high-grade colposcopic impression, the loop histology result was reported as high-grade disease.

Of the 48 women who had "see and treat" ELECTZ, complete data were available for 29 women who returned for at least one follow-up examination. An abnormal cervical Pap smear was reported at follow-up for 3 of 29 women. Of those 29 women, no disease was identified in 27 (93.1%) by either colposcopy or Pap smear. Only two women were considered treatment failures by histologic examination, one with a low-grade lesion and one with a high-grade lesion.

Table 2. Colposcopic Impression Compared with Loop Excision Histologic Findings for "See and Treat" Electrosurgical Loop Excision of the Cervical Transformation Zone (ELECTZ) (N=46)

| "See and Treat" ELECTZ Histology | Colposcopic Impression | | |
|---|---|---|---|
| | LGSIL, n | HGSIL, n | Other, n |
| Negative* | 13 | 2 | 1 |
| LGSIL | 7 | 1 | 2 |
| HGSIL | 4 | 16 | 0 |
| Total | 24 | 19 | 3 |

**Negative equates to normal, inflammation, or atypia.*
*LGSIL, which denotes low-grade squamous intraepithelial lesion, equates to cellular changes associated with mild dysplasia, cervical intraepithelial neoplasia 1 (CIN 1) or human papillomavirus (HPV); HGSIL, high-grade squamous intraepithelial lesion, equates to moderate dysplasia (CIN 2) or severe dysplasia (CIN 3 or carcinoma in situ).*

Table 3. Prediction of "See and Treat" Electrosurgical Loop Excision of the Cervical Transformation Zone (ELECTZ) by Histologic Finding

| Histologic Finding | Sensitivity, % | Specificity, % | Positive Predictive Value, % |
|---|---|---|---|
| Low-grade disease* | | | |
| Cytology | 91.7 | 54.3 | 40.7 |
| Colposcopy | 70.0 | 50.0 | 29.2 |
| Cytology/colposcopy† | 91.7 | 55.6 | 40.7 |
| High-grade disease‡ | | | |
| Cytology | 63.2 | 92.9 | 85.7 |
| Colposcopy | 77.8 | 88.5 | 82.4 |
| Cytology/colposcopy† | 89.5 | 86.2 | 81.0 |

**Equates to cervical intraepithelial neoplasia 1 (CIN 1).*
*†Considers more severe cytologic result or colposcopic impression.*
*‡Equates to cervical intraepithelial neoplasia 2 or 3 (CIN 2 or 3).*

Cervical Pap smear and colposcopic impressions used to predict low-grade disease on "see and treat" ELECTZ demonstrated reasonable test sensitivity, but poor specificity and positive predictive values (Table 3). The specificity and positive predictive values of the same tests used to confirm high-grade disease on "see and treat" ELECTZ were twice the values of those for low-grade disease. The best test results were achieved when both Pap smear and the colposcopic impression were collectively considered.

## Discussion

Family physicians are able to perform "see and treat" ELECTZ. The frequency of treatment complications and cure rates reported do not differ from those encountered with other ELECTZ procedures,[8,9] and the technical skills are equivalent for ELECTZ, whether used traditionally or as "see and treat." The selection of candidates for the procedure in this study, however, resulted in varied and less than optimal outcomes. Universal application of "see and treat" ELECTZ appears unreasonable, since it results in unnecessary treatment for many women.

The rapid transferal of this technology from abroad and uncritical adaptation to the American health care system account for the unsubstantiated use of "see and treat" ELECTZ. "See and treat" ELECTZ is popular in England, where a different system of cervical cancer screening exists. A prolonged interval from identification of abnormal cytology results to colposcopic examination occurs abroad because of limited resources and an insufficient number of qualified practicing colposcopists. The expansion of colposcopy practice to many primary care providers in the United States has reduced our interval from detection to treatment. More important, "see and

Table 4. Normal Loop Histologic Specimens Resulting from "See and Treat" Electrosurgical Loop Excision of the Cervical Transformation Zone (ELECTZ) and Traditional ELECTZ Based on Preliminary Cervical Cytologic Findings and Colposcopic Impression

| Preliminary Criteria | "See and Treat" ELECTZ No. (%) | Traditional ELECTZ* No. (%) |
|---|---|---|
| Low-grade† cytologic findings | 11/27 (40.7) | 14/84 (17.6) |
| High-grade‡ cytologic findings | 1/14 (7.7) | 2/31 (6.6) |
| Low-grade† colposcopic impression | 13/24 (54.2) | 10/60 (16.7) |
| High-grade‡ colposcopic impression | 2/17 (11.8) | 5/59 (8.5) |

**Data based on ELECTZ obtained following cervical biopsy from Ferris DG, Hainer BL, Pfenninger JL, et al.[7]*
*†Equates to human papillomavirus (HPV) and cervical intraepithelial neoplasia 1 (CIN 1).*
*‡Equates to cervical intraepithelial neoplasia 2 or 3 (CIN 2 or 3).*

treat" ELECTZ functions well abroad because of a more conservative triage system for abnormal cervical cytology results. Women with low-grade premalignant Pap smear results are triaged based on cytologic findings alone and are not examined by colposcopy until a high-grade cytologic smear is obtained. The higher cytologic triage threshold profoundly prevents the disturbing finding of our study that many women (36.1%) likely received unnecessary treatment. As supportive evidence of the higher threshold rationale, only 5% of "see and treat" ELECTZ cases documented in the British literature have normal loop specimen interpretations.[1,4,5] This contrasts with the American approach, in which 32.5% of patients do not have evidence of dysplasia on loop specimens obtained by "see and treat" ELECTZ.[3]

Approximately one half (54.2%) of our patients with a colposcopic impression of a low-grade lesion had normal histologic findings compared with 12% of women who had a colposopic impression of high-grade disease (Table 4). When the preliminary cytologic findings were considered, 40.7% of women with low-grade cytologic results and 7.7% of women with high-grade Pap smear results had normal loop specimen interpretations. These figures did not appreciably change when both cytologic results and the colposcopic impression were jointly considered. In contrast, based on previously published data collected simultaneously by the same investigators,[7] when the ELECTZ procedure was performed following cervical biopsy, fewer women with preliminary low-grade cytologic findings (17.6%) and low-grade colposcopic impressions (16.6%) were found to have normal loop histologic specimens. Therefore, the traditional ELECTZ approach spared unwarranted surgery and potential complications for 20% to 30% of women with low-grade lesions. As demonstrated in this study, however, when Pap smear findings and the colposcopic impression jointly suggested high-grade disease, a high-grade histologic specimen was detected for approximately 80% of cases.

The excessively high rate of normal specimens obtained, particularly for those lesions clinically presumed to be low-grade disease, raises serious concern about underutilization of colposcopic evaluation and initial targeted direct biopsy, and overtreatment by use of the "see and treat" approach. The concern is appropriately amplified by the fact that more than 50% of histologically confirmed low-grade cervical disease will spontaneously regress eventually with absolutely no therapy. Low-grade cervical disease is also extremely difficult to distinguish colposcopically from immature squamous metaplasia. It is the authors' opinion that "see and treat" ELECTZ is analogous to reversion to the past patient management strategy of cold knife conization for women with an abnormal Pap smear. Aggressively excising large amounts of cervical tissue based on a low threshold for surgical intervention risks significant and needless morbidity for patients subjected to the universal "see and treat" approach. Further, there are potential personal ramifications and legal repercussions for infertile women who previously had "see and treat" ELECTZ but subsequently were found to have normal histologic findings.

The contemporary management of abnormal cervical cytologic findings by colposcopic examination, directed biopsy, and selective treatment interjects valuable clinician input and therapeutic guidance into an otherwise pathology-dependent system. The "see and treat" ELECTZ management scheme converts traditional colposcopy-based management to simply the rudimentary essentials of a cervical cytologic sampling instrument and wire loop to provide specimens for the laboratory. As such, the colposcope becomes relegated merely to an instrument used to identify a cervical lesion and to assist in selecting the proper size loop electrode for "see and treat" ELECTZ (Campion MJ. "See and treat" or "select and treat." Paper presented at conference entitled "A Comprehensive Colposcopy Course for Primary Care Providers," Philadelphia, Pa, April 1995).

The allure of "see and treat" ELECTZ efficiency is countered by increased patient morbidity, greater cost, and compromised quality when performed carelessly and when marginally indicated. Our findings concur with the current interim guidelines for management of low-grade disease, developed in conjunction with the National Cancer Institute: routine "see and treat" ELECTZ as a method of evaluating abnormal cervical cytologic reports is not recommended.[10] Selective use of "see and treat" ELECTZ may be appropriate only when performed by experienced colposcopists able to reliably differentiate low-grade from high-grade disease when both cytologic

and colposcopic findings unequivocally indicate high-grade cervical disease.[11]

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