Original article

LOOP ELECTROSURGICAL EXCISION FOR HIGH GRADE SQUAMOUS INTRAEPITHELIAL LESION ON CERVICAL CYTOLOGY AT NAKORNPING HOSPITAL

Watcharin Suntornlimsiri, M.D.

Department of Obstetrics and Gynecology, Nakornping Hospital, Chiang Mai

Abstract

Objective To examine the correlation between colposcopic impression and histologic findings in patients who underwent loop electrosurgical excision procedure (LEEP) for high-grade squamous intraepithelial lesion (HSIL) in a Papanicolaou (Pap) smear without an intervening colposcopically directed biopsy.

Methods A retrospective review was performed of patients with HSIL in cervical cytology, who underwent LEEP without a prior cervical biopsy at Nakornping Hospital from January 2003 to April 2004. The final histologic results of the LEEP summarized the correlation between colposcopic impression and histologic findings.

Results Of 178 patients, who had HSIL in cytology and underwent colposcopy and LEEP without prior cervical biopsy, 136 (76%) had high-grade intraepithelial lesion. Twenty patients (11%) had invasive squamous cell carcinoma, and 17 (63%) of 27 patients, with low-grade lesions in the colposcopic impression, had high-grade lesions in the final histology. One-hundred and four patients (80%) of 130 with high-grade impression in the colposcopy had high-grade lesions in the final histologic diagnosis.

Conclusion The correlation between colposcopic impression and LEEP histologic diagnosis was strong (80%) for HSIL in the cytology, when the colposcopic impression showed high-grade lesions. HSIL in the cytology and high-grade impression in satisfactory colposcopy is an appropriate indication for immediate LEEP. Chiang Mai Med Bull 2004;43(4):143-150.

Keywords: colposcopy, high-grade squamous intraepithelial lesion, loop electrosurgical excision procedure, papanicolaou smear (Pap smear)

Loop electrosurgical excision procedure (LEEP), also known as large loop excision of the transformation zone (LLETZ) is an effective and a widely
accepted treatment for preinvasive disease of the uterine cervix, especially high-grade lesions. In addition, the tissue specimen provides a definitive histologic diagnosis, thus reducing the possibility of failure to diagnose an early invasive carcinoma. Well established indications for LEEP include a positive endocervical curettage (ECC), an incompletely visualized cervical lesion, inadequate visualization of the transformation zone, a discrepancy between cytologic and histologic results, and microinvasive squamous cell carcinoma on the punch biopsy specimen. The standard approach for the treatment of cervical intraepithelial neoplasia (CIN) found in cytologic screening includes colposcopically directed biopsy specimens and ECC, with management based on final histologic diagnosis.\(^\text{(1)}\) 

However, early diagnosis and subsequent proper management of CIN in developing countries represent a real problem, due to the national screening programs, insufficient availability of well-equipped colposcopy and cytologic units, and a lack of experienced colposcopists and cytologists. The decrease in patient compliance to follow-up also has a significant impact.\(^\text{(2,3)}\)

An alternative treatment strategy of “see and treat” involves LEEP without obtaining cervical biopsy specimens at the time of initial colposcopy.\(^\text{(4-8)}\) Some clinicians recommend an immediate “see and treat” approach, in which women with HSIL in cytology and high-grade lesions in colposcopic impression undergo colposcopic evaluation and LEEP at the same time.\(^\text{(9,10)}\) Advocates of this approach claim that the practice results in decreased cost, greater patient convenience, a reduction in follow-up, fewer hospital visits, a larger histologic specimen compared with that obtained from a cervical biopsy and shorter time interval from the detection of cytologic abnormalities to treatment.\(^\text{(4,8,11)}\) This approach seems to be especially attractive for developing countries, but the concern of overtreatment in patients who underwent LEEP without CIN could not be overlooked. We conducted the current study to correlate colposcopic and histologic findings in patients who had HSIL in cervical cytology and underwent colposcopy followed by LEEP without an intervening colposcopically directed biopsy.

**Material and methods**

A total of 592 patients, who had abnormal cervical cytology, underwent colposcopy in the colposcopy clinic of the Department of Obstetrics and Gynecology at Nakornping Hospital from January 2003 to April 2004. Of 178 patients, who had HSIL on a Pap smear and underwent colposcopy and LEEP without a prior diagnostic cervical biopsy including satisfactory colposcopy in 167 patients and unsatisfactory colposcopy, with no colposcopic impressions in 11 patients. The cytology laboratory unit at the same institution interpreted 57 Pap smear results, whereas outside pathology laboratories interpreted others depending on the original sites at which the patients had the Pap smear. All patients were
counseled about the colposcopy and LEEP, and informed consent was obtained from each of them.

Two groups of gynecologists (each group comprising of 2 gynecologists) at the colposcopic clinic performed colposcopy in all the patients and diagnosed colposcopic impression depending on the decision of our group. Colposcopic impression on the severity of intraepithelial lesions is based on abnormal colposcopic findings: acetowhite epithelium, punctation, mosaic, border, iodine negativity, vascular patterns and atypical vessels. We performed LEEP regardless of the colposcopic finding and without intervening directed biopsy when grossly invasive cervical cancers were not seen. In every case, a loop excision of the entire visualized lesion was performed using a diathermy loop of variable dimensions, depending on the size of the cervix and the extent of the lesion after infiltration with local anesthesia. The diathermy power for the loop electrode was set to 60 W cut and 40 W coagulation by using a blend mode. Endocervical curettage was performed after the LEEP in the majority of cases. The hemostasis was usually achieved by ball electrode using the coagulation mode and subsequent application of Monsel’s solution. All patients were given a weekly follow-up appointment for reevaluation.

Tissue specimens were interpreted by the Department of Pathology, Faculty of Medicine, Chiang Mai University. During this study period, dermographic, clinical, cytologic and histologic data were prospectively stored on colposcopic data sheets. The data were then retrospectively analyzed.

Results

All 178 patients with HSIL underwent colposcopy and LEEP without a prior diagnostic cervical biopsy. The average age of the patients was 44.1±9.5 years and the age range was 28-71 years. The mean parity was 1.9 and most patients had 1 or 2 children. The most common contraceptives used were oral contraceptive pills (33%), tubal resection (26%) and depot medroxyprogesterone acetate (19%). The distribution of histologic results for all patients is presented in Table 1. The pathologists were able to make a diagnosis in all specimens without significant thermal artifacts that interfere with the microscopic evaluation of the excised cervical tissue. In the majority of 136 patients (76%) with HSIL, 13 (7%) had low grade squamous intraepithelial lesion (LSIL) and 20 (11%) invasive carcinoma. In addition, 9 patients (5%) had no pathologic abnormalities, inflammation or cervicitis.

All 20 patients with a final diagnosis of invasive carcinoma, had squamous

<table>
<thead>
<tr>
<th>Histologic diagnosis</th>
<th>Number of patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pathologic abnormalities</td>
<td>2 (1.1)</td>
</tr>
<tr>
<td>Inflammation or cervicitis</td>
<td>7 (3.9)</td>
</tr>
<tr>
<td>LSIL</td>
<td>13 (7.3)</td>
</tr>
<tr>
<td>HSIL</td>
<td>136 (76.4)</td>
</tr>
<tr>
<td>Invasive carcinoma</td>
<td>20 (11.3)</td>
</tr>
<tr>
<td>Total</td>
<td>178 (100.0)</td>
</tr>
</tbody>
</table>
cell carcinoma, of which 13 were in stage IA1, 2 in stage IA2 and 5 in stage IB1 in accordance to FIGO 1995 (the cervical cancer staging of the International Federation of Gynecology and Obstetrics).

Table 2 demonstrates the distribution of histologic results for patients who had a Pap smear performed and interpreted at Nakornping Hospital and an outside hospital. The proportion of patients with no pathologic abnormalities including inflammation or cervicitis diagnosis in the 2 groups appeared to be similar. From the patients with a Pap smear interpreted at Nakornping Hospital, 47 of 57 patients (82%) had HSIL or higher and 7 patients (12%) had LSIL. As for the other patients interpreted from an outside hospital, 109 of 121 patients (90%) had HSIL or higher and 6 patients (5%) had LSIL.

The correlation of colposcopic impression with histologic diagnosis is presented in Table 3. In 27 patients with a low-grade colposcopic impression, 17 (63%) and 6 (22%) had high-grade and low-grade lesions, respectively, in the final histology, and there were no patients with invasive lesions. In 130 patients with high-grade impression in the colposcopy, 120 (92%) had HSIL or invasive lesions in the final histology. In 10 patients with microinvasive carcinoma impression in the colposcopy, 5 and 4 had HSIL and invasive lesions, respectively, in the final histology and one patient had LSIL.

All histologic diagnoses showed complete excision or free margins in 118 patients (67%), incomplete excision at the endocervical margins in 33 patients (18.5%), incomplete excision at the ectocervical margins in 13 patients (7.3%) and incomplete excision at both margins.

### Table 2. Histologic diagnosis of LEEP specimens for patients who had a Pap smear at Nakornping Hospital and from an outside hospital

<table>
<thead>
<tr>
<th>Histologic diagnosis</th>
<th>Nakornping Hospital</th>
<th>Outside Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pathologic abnormalities</td>
<td>2 (3.5%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Inflammation or cervicitis</td>
<td>1 (1.8%)</td>
<td>6 (4.9%)</td>
</tr>
<tr>
<td>LSIL</td>
<td>7 (12.3%)</td>
<td>6 (4.9%)</td>
</tr>
<tr>
<td>HSIL</td>
<td>39 (68.4%)</td>
<td>97 (80.2%)</td>
</tr>
<tr>
<td>Invasive carcinoma</td>
<td>8 (14.0%)</td>
<td>12 (9.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>57 (100.0%)</td>
<td>121 (100.0%)</td>
</tr>
</tbody>
</table>

### Table 3. Correlation of colposcopic impression and LEEP histologic diagnosis in all patients

<table>
<thead>
<tr>
<th>Colposcopic Impression</th>
<th>LEEP histologic diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal*</td>
<td>LSIL</td>
</tr>
<tr>
<td>LSIL</td>
<td>4</td>
</tr>
<tr>
<td>HSIL</td>
<td>4</td>
</tr>
<tr>
<td>MIC***</td>
<td>0</td>
</tr>
<tr>
<td>Not recorded</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
</tr>
</tbody>
</table>

*Normal = no pathologic abnormalities, inflammation or cervicitis
**Invasive = invasive carcinoma of the cervix, *** MIC = microinvasive carcinoma of the cervix
in 14 patients (7.9%). The histological incomplete excision of HSIL and LSIL was related to the appearance of excision margins in 57 and 3 patients, respectively.

None of the patients developed early hemorrhage or heavy bleeding within the first 24 hours. Delayed bleeding occurred in five patients (2.8%) between the 2nd and 14th day after LEEP and all of them were treated with electrocautery, Monsel’s solution and roll-gauze packing in the vagina.

Discussion

We have shown from this study that the majority of patients (76%) with HSIL in a Pap smear, who underwent colposcopy followed by LEEP, had HSIL in the final histologic diagnosis, which is consistent with a high-grade cytology result. This confirms a good correlation between cytologic and histologic findings in the groups of patients with high-grade cytologic abnormalities in previous studies. (6,7,13)

In addition, eleven percent of patients (20) in this study had more severe lesions, such as invasive carcinoma, than normally be expected from cytology alone. This means that the inclusion histologic findings provides the benefit of a more accurate histologic diagnosis from a larger specimen, and reduces the risk of inadvertently missing invasive cancer of the cervix. In previous studies, the detection rate of unsuspected invasive carcinoma after LEEP was reported to approach 1%; (4,5,14,15) The results of previous studies had a lower detection rate of invasive carcinoma because the patient group, which include several abnormal Pap smear levels, was not similar to our study. An additional reason for the increase in detection of invasive cancer with this approach is because LEEP was also performed in the colposcopic impression of microinvasive carcinoma. Timely discovery and treatment of invasive carcinoma confer a substantial improvement in curative potential and cost savings.

On the other hand, five percent (9 patients) had no pathologic abnormalities, inflammation or cervicitis in the final histologic diagnosis, which means that the risk of overtreatment in this group of patients is quite low. Supportive studies reporting on “see-and-treat” for HSIL patients found that specimens from LEEP were negative for dysplasia in only 2-6% of cases. (4,6)

The correlation of colposcopic impression and LEEP histologic diagnosis was good (80%) when colposcopic impression showed high-grade lesions. This is compatible with the 71% and 82% correlation reported by Szurkus and Harrison, (15) and Ferris et al, (7) respectively. However, the colposcopic-histologic correlation was quite poor when low-grade colposcopic lesions were considered. (7,15) Therefore, the use of immediate LEEP for low-grade lesions remains controversial and awaits the results of further studies. (9) This supports the concept of performing immediate LEEP where there is inconsistency between cytologic results and colposcopic findings in patients who have HSIL in a Pap smear.
Although we recognize the limitations of our study, including the retrospective design with no control group, small sample size, lack of central cytology and concurrent pathology review, we still strongly believe that our data support the use of LEEP in patients with HSIL cytology, because 63% (17 of 27 patients) of those with a high-grade Pap smear and low-grade colposcopic impression had a final histology that proved HSIL. We conclude that high-grade cytology and satisfactory colposcopy is an appropriate indication for immediate LEEP, even if the colposcopic examination does not suggest high-grade dysplasia. In the management plan, colposcopy would be used to identify suspicious lesions for invasive carcinoma for which intervening colposcopically directed biopsy is still worthwhile, and assist in selecting the proper-sized loop electrode for LEEP.

Acknowledgement

The authors would like to thank all the gynecologists in the colposcopy clinic, cytologists at Nakornping Hospital and pathologists at the Faculty of Medicine, Chiang Mai University for contributing to the care of these patients.

References


การตัดปากมดลูกด้วยห่วงไฟฟ้าในผู้ป่วยที่มีผลการทดสอบแพปเป็น high-grade squamous intraepithelial lesion ที่โรงพยาบาลนครพิงค์

วัชรินทร์ อุณาลัมดี, พ.บ.
กลุ่มงานสุขิน-นิรักษกรรม โรงพยาบาลนครพิงค์ จังหวัดเชียงใหม่

บทคัดย่อ
วัตถุประสงค์ เพื่อศึกษาความสัมพันธ์ระหว่างผลการตรวจปากมดลูกด้วยคอลโปสโคปและผลตรวจทางพยาธิวิทยาจากการตัดปากมดลูกด้วยห่วงไฟฟ้าในผู้ป่วยที่มีผลการทดสอบแพปเป็น high-grade squamous intraepithelial lesion (HSIL)

วิธีการ รายงานนี้เป็นการศึกษาข้อมูลหลังในผู้ป่วยที่มีผลการทดสอบแพปเป็น HSIL ซึ่งตัดปากมดลูกด้วยห่วงไฟฟ้าขณะตรวจด้วยคอลโปสโคปและไม่มีการตัดชิ้นเนื้อปากมดลูก ผู้ป่วยได้รับการตัดชิ้นเนื้อปากมดลูกในโรงพยาบาลนครพิงค์ จังหวัดเชียงใหม่ ระหว่างเดือนมกราคม พ.ศ. 2546 ถึงเมษายน พ.ศ. 2547 โดยศึกษาความสัมพันธ์ระหว่างผลการตรวจปากมดลูกด้วยคอลโปสโคปและผลทางพยาธิวิทยาจากการตัดชิ้นเนื้อปากมดลูก

ผลการศึกษา ในการศึกษามีผู้ป่วยทั้งหมด 178 รายที่มีผลการทดสอบแพปเป็น HSIL และได้ตัดปากมดลูกด้วยห่วงไฟฟ้าขณะตรวจด้วยคอลโปสโคปพบว่า ผู้ป่วยมีผลการตรวจทางพยาธิวิทยาเป็น HSIL 136 ราย (ร้อยละ 76) และมีผู้ป่วย 20 ราย (ร้อยละ 11) เป็นมะเร็งปากมดลูกระยะล่าช้า.

ผลการศึกษา ในการศึกษาผู้ป่วยทั้งหมด 178 รายที่มีผลการทดสอบแพปเป็น HSIL และได้ตัดปากมดลูกด้วยห่วงไฟฟ้าขณะตรวจด้วยคอลโปสโคปพบว่า ผู้ป่วยมีผลการตรวจทางพยาธิวิทยาเป็น HSIL 136 ราย (ร้อยละ 76) และมีผู้ป่วย 20 ราย (ร้อยละ 11) เป็นมะเร็งปากมดลูกระยะล่าช้า.

สรุป ผู้ป่วยที่มีผลการทดสอบแพปเป็น HSIL ร่วมกับการตรวจพบลักษณะทางคอลโปสโคปที่สอดคล้องเป็นมะเร็งปากมดลูก พบว่ามีความสัมพันธ์ระหว่างผลการตรวจปากมดลูกด้วยห่วงไฟฟ้าและผลการตรวจทางพยาธิวิทยาจากการตัดปากมดลูกด้วยห่วงไฟฟ้าอยู่ในเกณฑ์ที่ดี (ร้อยละ 80) ผู้ป่วยที่มีผลการทดสอบแพปเป็น HSIL และผลการตรวจทางคอลโปสโคปเป็นที่พอใจร่วมกับสุนทรลิมศิริ, พ.บ., วิชารินทร์, พ.บ.

ค่าสำคัญ: การตรวจปากมดลูกด้วยห่วงไฟฟ้า, high-grade squamous intraepithelial lesion, การตัดปากมดลูกด้วยห่วงไฟฟ้า, การทดสอบแพป