Loop Electrosurgical Excision Procedure (LEEP) and cervical intraepithelial neoplasia: A preliminary report.

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Objective: To present our early experiences with the loop electrosurgical excision procedure in patients with cervical intraepithelial neoplasia (CIN).

Design: Prospective Study.

Methods: Thirty one patients who had pap smear class 3–5 and colposcopically confirmed cases of CIN lesions were subjected to LEEP. The procedures were undergone mainly under local anesthesia.

Results: The majority of the cases (83.9%), perioperative and postoperative hemorrhage was minimal. No patient needed blood transfusion or subsequent admission to the hospital due to late hemorrhage. Two cases experienced minimal late hemorrhage and responded to AgNO3 application. The operation time was less than 5 minutes in 22 cases (71.0%). In 28 of the 31 cases (90.3%), this procedure was sufficient for complete treatment.

Conclusion: Loop electrosurgical excision procedure tends to be a reliable, well–tolerated, economical and efficient technique for the management of cervical intraepithelial neoplasia with a low incidence of short-term morbidity.

Key words: Loop electrosurgical excision procedure, Cervical intraepithelial neoplasia.

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วัตถุประสงค์ เพื่อศึกษาผลการผ่าตัดปากประกาศอกด้วยห่วงวงไฟฟ้า (Loop electrosurgical excision procedure : LEEP) ในการรักษาภาวะปากประกาศอกเป็นบริเวณระยะสุดท้าย (cervical intraepithelial neoplasia : CIN) ซึ่งเป็นภาวะที่วิจัยที่ใหม่ในเบื้องต้น

รูปแบบการวิจัย การศึกษาเป็นกลุ่ม

วิธีการวิจัย ผู้ร่วมงานทั้ง 31 คน ซึ่งตรวจก่อน (Pap smear) เป็นช่วง 3-5 และได้รับการตรวจยืนยันโดยการตัดชิ้นเนื้อปากประกาศอกโดยอาศัยกล้อง colposcope เป็น CIN ได้รับการผ่าตัดปากประกาศอกด้วยห่วงวงไฟฟ้า โดยการนิเทศอาการเฉพาะที่

ผลการศึกษา ผู้ร่วมร้อยละ 83.9 มีการเสียเลือดระหว่างและหลังผ่าตัดไม่น้อย (น้อยกว่า 10 มล) ไม่มีผู้รับรายใดเลือดออกมาทั้งต้องไม่ได้เลือด พบผู้รับราย 2 รายใน 31 ราย มีการเลือดออกหลังผ่าตัด ซึ่งสามารถหยุดได้โดยการใช้ยาในเวลา 1-2 ชั่วโมง อย่างไร้เห็นเลือด ด้วยการผ่าตัดปากประกาศอกใช้เวลา 2-3 ชั่วโมง ระยะเวลาผ่าตัดใช้เวลา 1-2 ชั่วโมง ข้อเสีย ร้อยละ 90.3

สรุป การผ่าตัดปากประกาศอกด้วยห่วงวงไฟฟ้าเป็นวิธีที่มีประสิทธิภาพในการรักษาภาวะ cervical intraepithelial neoplasia โดยเป็นการรักษาผ่านแนวทางจากการผ่าตัดโดยในภาวะมีการติดตามเบื้องต้น
The prevalence of cervical intraepithelial neoplasia (CIN) has been increasing over the last 2 decades.\(^\text{1}\) Despite the advent of ablative methods of treatment, a large proportion of patients for colposcopic assessment are admitted to the hospital for cold knife conization of the cervix under general or regional anesthesia. Cold knife conization, however, is associated with considerable morbidity, such as hemorrhage, which occasionally requires resutching of the cervix or even hysterectomy and blood transfusion.\(^\text{2,3}\)

The development of invasive cervical cancer after ablative treatment for precancer\(^\text{4,5}\) has prompted the increased use of excisional methods of treatment. As an alternative to ablative treatment under local anesthesia, laser excision conization of the cervix has been advocated.\(^\text{6,7}\) Recently, several investigators have reported electro surgical excision of CIN lesions and typical transformation zones using thin wire loop electrodes of either large or small diameter as a safe and highly effective treatment method.\(^\text{8-12}\) Electro surgical excision of CIN using wire loop electrodes has been referred to by various terms. Cartier\(^\text{9}\) introduced the use of "the diathermy loop excision". Prendiville and Cullimore,\(^\text{10}\) who used loops of a larger diameter than did Cartier, referred to their modification of the basic technique as "large loop excision of the transformation zone" (LLETZ). Wright et al.\(^\text{11}\) used the term "loop electro surgical excision procedure (LEEP)" for these procedures, regardless of the size of the loop electrode used.

The loop electro surgical excision procedure represents an advanced ability to conservatively manage patients with CIN, as affected tissue is removed in its entirely rather than ablated. The excised tissues are available for histopathologic analysis, allowing both diagnosis and treatment of selected patients at a single setting and ensuring that colposcopically inapparent invasive or microinvasive cancers are not inadvertently treated by a conservative ablative procedure. In this study, we report our clinical experience using LEEP in the management of CIN.

Materials and Methods

From December 1993 to June 1994, the patients were referred because of Papanicolaou smear class 3-5, and they underwent a standard colposcopic evaluation with site-directed biopsies. All woman included in this study had histologically diagnosed CIN lesions. The entire endocervical limits could be visualized colposcopically.

The subjects were placed in the lithotomy position and a large speculum with suction tube attached was used to expose the cervix. A paracervical block was performed using 3-5 ml of 2% Xylocaine in each side and intracervically infiltrated 1-2 mm. beneath the cervical surface epithelium at the 12 and 6 o'clock positions. A return electrode was then placed on the patient's thigh (for grounding) and the cervix was painted with Schiller solution. The loop electrodes were made from tungsten wire and were fabricated in various sizes ranging from 1x1 to 2x2 cm. The electro surgical generator (Birtcher, Bovie) was operated in the cutting current mode at 35-50 W output. The loop was pushed into the cervical tissue perpendicular to the surface, then slowly drawn across the lesion parallel to the surface of the cervix to the opposite side. The entire transformation zone and CIN lesions were excised to a depth of 5-8 mm. in a single pass of the electrode when possible. We attempted to excise the epithelium 4-5 mm. beyond the point at which it became Schiller negative. To prevent post treatment bleeding from
the crater base we cauterized the base and edges of the crater. The specimen was sent for histologic examination.

Patients were advised about potential early and late complications and were advised to avoid sexual intercourse for one month. The subjects returned 1-3 months post-treatment for a Papanicolaou test and a complete colposcopic examination.

Results

Over a 7-month period in 1993-1994 we treated 31 subjects with biopsy-proven CIN using LEEP. The average age of the patients was 35.4 years, with a range of 22-61 years. The procedure was well tolerated by the patients and required only local anesthesia in 29 of the 31 cases. Two cases required general anesthesia due to discomfort and irritability during the procedure. The operation time was less than 5 minutes in 22 cases (71.0%).

In the majority of cases (83.9%) perioperative and postoperative hemorrhage was minimal. No patient needed blood transfusion or subsequent admission to the hospital due to late hemorrhage. Two cases experienced minimal late hemorrhage during the first week and responded to AgNo3 application.

A satisfactory specimen was obtained for histologic examination in the majority of cases. Only in a few cases did the amount of thermal damage in the excised tissue preclude complete histologic evaluation. Four cases showed no histologic evidence of CIN and one showed HPV infection (Table 1). In the patients with CIN, the excision margins were reported as complete in all but one case. The patients with microinvasive cancer were treated subsequently with hysterectomy and no residual disease was detected in the surgical specimens. In 28 of the 31 cases (90.3%), this procedure was sufficient for complete treatment.

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<th>Table 1. Histopathology of the cervix from LEEP (Total = 31)</th>
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<td>Chronic cervicitis</td>
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<td>HPV</td>
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<td>- Microinvasive cancer</td>
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The healing process after the procedure was also observed. AT 1 week post-treatment, the crater base was filled with soft, tan-yellow, necrotic material. The edges of the crater were well demarcated and had minimal reddening. Uncomplicated cases examined 1-3 months after the procedure were either totally healed or had only a small rim of granulation tissue remaining at the external os.

Discussion

In the treatment of CIN, excisional methods that provide tissue specimens for histopathologic diagnosis have distinct advantages over ablative methods that destroy the affected tissues. Unfortunately, most excisional methods have a number of disadvantages that tend to outweigh their advantages. Cold knife conization is usually performed in a hospital setting under general or spinal anesthesia and has a high rate of complications, even in expert hands. Major bleeding occurs in 13% of the cases, cervical stenosis develops in
17%, and infertility and cervical incompetence are infrequent but well-recognized complications.\(^\text{16}\) Because of these disadvantages, many clinicians are now advocating the technique of loop electrosurgical excision procedure.

We have described our early experience using LEEP in the management of CIN. LEEP is a combined diagnostic and therapeutic procedure in which the entire transformation zone is removed. The loop excision procedure was performed in less than 5 minutes in the majority of cases, can be performed on an outpatient basis using local anesthesia, and was well tolerated by the patients. The procedure was easy to perform and required only a relatively inexpensive electrosurgical generator. The complication rate of the procedure was low. Perioperative and postoperative hemorrhage was minimal in the majority of cases. The finding that 2 cases (6.4%) experienced secondary or late hemorrhage during the healing process is a rate similar to previous results reported by Keijser (5.8%).\(^\text{17}\) Although there were no immediate operative complications in this study, a larger study series will be required to confirm that operative morbidity with LEEP is decreased in comparison with cold knife conization.

The overall success rate of LEEP in this study was 90.3%. This success rate is similar to other published series using LEEP to treat CIN.\(^\text{16,17}\)

The results of this preliminary study conclude that LEEP tends to be a reliable, well tolerated, economical and efficient technique that offers a good alternative in the management of CIN with a low incidence of short-term morbidity.

References

of cervical intraepithelial neoplasia. Obstet Gynecol 1989 May; 73(5pt 1) 775-9


