

Editorial

Role of Loop Electrosurgical Excision Procedure (LEEP) in the Management of Cervical Intraepithelial Neoplasia (CIN)

Cervical intraepithelial neoplasia (CIN) is the preinvasive lesion of invasive cervical cancer. The natural history of development of CIN and its transformation to invasive cancer has been extensively studied and well understood. The appropriate management of women with CIN is a critical component and the basis of cervical cancer prevention program.

CIN is a relatively common problem, especially in women of reproductive age. Laboratory surveys from the mid 1990s from the college of American pathologists suggest that more than 1 million women are diagnosed each year with low grade cervical intraepithelial lesion or CIN I and that approximately 500,000 are diagnosed with high-grade cervical intraepithelial lesion or CIN II, CIN III in USA¹. According to the annual report of the Department of Pathology of Bangabandhu Sheikh Mujib Medical University, total 680 CIN were diagnosed in 2012. Among them CIN I was 75.6% , CIN II was 20.7% and CIN III was 3.7%².

CIN is most commonly detected in women in their 20s; the peak incidence of carcinoma in situ cervix is in women aged 25-35, while the incidence of cervical cancer arises after the age of 40³.

CIN is a histological diagnosis done by histopathological examination of a punch biopsy specimen obtained from aceto white area during colposcopic examination. Alternatively multiple punch biopsy taken from VILLI positive area can also diagnose various degrees of CIN.

The treatment for CIN (Cervical intraepithelial neoplasia) depends on whether it is grade 1,2 or 3. Various grades of CIN (CIN I, II and III) are graded according to the involvement of varying degrees of thickness of stratified squamous epithelium of ectocervix.

Women are separated into 3 groups on the basis of the biopsy report.

- a) Low grade squamous CIN (CIN I)
- b) High grade squamous CIN (CIN II and CIN III).
- c) Cervical glandular intraepithelial neoplasia (CGIN) including adenocarcinoma in situ (AIS).

Often cells showing CIN I return back to normal without any treatment at all. The aim of treatment for CIN II and III is to remove the abnormal area or destroy the abnormal cells while causing as little damage as possible to surrounding healthy tissues. There is no accepted nonsurgical therapy for CIN⁴.

The treatment modalities for preinvasive cervical disease or CIN are (A) Ablative procedures which include cryotherapy and CO₂ laser vapourization (B) Excisional procedures, including LEEP, cold knife conization, CO₂ laser excision and hysterectomy. A Cochrane Database of Systematic Review (2003) examined surgical treatment modalities for cervical intraepithelial neoplasia⁵. The evidence from 28 randomized controlled trials suggested that there is no overwhelmingly superior technique for eradicating CIN. Cryotherapy is an effective treatment for CIN I or LSIL but not for CIN II, III or HSIL⁵. Another author of India believes that ablation is not suitable for treating high grade squamous or glandular cervical intraepithelial lesion, as the depth of destruction would not be adequate⁶.

A Group of authors of a handbook for Gynecologic oncology in USA suggest that randomized controlled clinical trials comparing cryotherapy laser ablation and LEEP for treating biopsy confirmed CIN have reported no significant differences in either complication rates or success rates. Before treating any grade of CIN using an ablating modality such as cryotherapy, it is important to perform an endocervical sampling (ECC) in order to assure that an unsuspected lesion is not present in the endocervical canal⁷. On the other hand, such type of ECC is not required while treating CIN by excision method like LEEP. LEEP is the preferred method for treatment of CIN II and III. It is the most common method for removing abnormal cells from

cervix. It takes 5 to 10 minutes, done under local anesthesia as an outpatient procedure.

Cortier originally developed an electrosurgical method for management of CIN using 5 mm rectangular, thin wire loops to sample and treat the cervix by removing the epithelium and underlying stroma in multiple 5mm strips⁸. The process was time consuming and thermal injury at the edge of the strips frequently compromised the specimen.

Prendiville et al 1990 introduced larger loop electrodes, 1 to 2 cm in width and 0.7- 1.5 cm in depth, for excision of the entire transformation zone, usually in a single pass^{9,10}. The combination of very thin wire loops and modern electrosurgical generators capable of delivering high powers (35 to 55 w) has allowed electrosurgical cutting with little associated thermal injury¹¹.

Complications are minimal, comparing favorably with those associated with CO₂ laser procedures⁵. Postoperative bleeding occurs in 2% to 5% of patients. Postoperative infection rate is 5% to 10%. Clinically significant cervical stenosis and cervical incompetence are rare complications, but the patient must be made aware of the possibility of such adverse reproductive sequelae. Cure rates are comparable with those achieved CO₂ laser procedures and with "cold-knife" conization, often in excess of 95%⁵.

Electrosurgical loop excision offers several advantage over CO₂ laser ablation. The procedure is quicker and easier. However, ease of use carries an attendant risk of overuse. Patient acceptance is improved and intraoperative pain is decreased. The submission of the entire specimen for histologic study increases the probability that unsuspected cancer will be detected and not ablated. In many large studies of LEEP, the unsuspected invasive cancer and high-grade glandular disease rate has been as high as 1% to 2% (12-15).

The role of LEEP in the management of CIN can be summarized as follows –

1. There is a definite role of LEEP in biopsy confirmed CIN II and CIN III where a diagnostic and therapeutic excision procedure is recommended for all women⁷.
2. In case of unsatisfactory colposcopic examination report but the woman is symptomatic LEEP procedure is recommended.

3. In patient with recurrent CIN (CIN I, CIN II or CIN III), it is preferred that an excisional treatment modality be used.
4. When pathologic discrepancy arises between high-grade cytology on papanicolaou (Pap) smear and low-grade histology on cervical biopsy, LEEP is one of the management alternative. In nonadolescent patients, a LEEP procedure is a reasonable management option for discrepancy between pap's and colposcopically directed biopsy¹⁶.
5. Any glandular lesion diagnosed by cytology is also an indication for LEEP or cold knife cone biopsy.
6. It should be noted that the risk of having an undetected CIN II, CIN III or adenocarcinoma in situ lesion is expected to be greater in women with CIN I preceded by a HSIL or atypical glandular cells of undetermined significance (AGUS) cytology result than for women with CIN I preceded by an ASCUS or LSIL cytology result. CIN II and CIN III is identified in 84-97% of women with HSIL cytology evaluated using a loop electrosurgical excision procedure. Therefore, in the 2006 guidelines of American society for colposcopy and cervical pathology, separate recommendations are made for women with CIN I preceded by an HSIL or AGUS cytology result.

The advantages of LEEP over destructive methods of treatment have been detractive by several authors-

1. It allows for histologic audit of the colposcopic diagnosis.
2. It allows histopathology examination to rule out micro invasion.
3. It allows excision of the dysplastic lesion and the transformation zone, which may be confirmed histologically.
4. It may be performed at the first (assessment) colposcopic examination.
5. It may be adapted to treat all cases of CIN, irrespective of the size and site of the transformation zone.
6. It is an easily learned technique.
7. It uses inexpensive, readily available equipment and has low operating costs.

8. It is usually an office or outpatient procedure performed using local anesthesia. The last five of these eight advantages also potential disadvantages of the technique that may combine to increase the morbidity of the procedure.

Another potential advantage of LEEP is the ability to “see-and-treat” at one visit. However, histologic study of loop-excised specimens removed at “see-and-treat” approach revealed no disease in 5% to 40% of specimen, particularly in young women referred with minor cytologic abnormalities¹⁷. Economic burden, overtreatment and complication of “see-and-treat” is also a concern. So, it is not applicable for our women.

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