

# Complications of Loop Electrosurgical Excision Procedure Following Treatment of Cervical Intra-Epithelial Neoplasia 2 & 3

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## Abstract

**Background:** The loop electrosurgical excision procedure (LEEP) is currently one of the most commonly used approaches to treat high grade cervical squamous intraepithelial lesion confirmed on colposcopic guided biopsy examination. Complications of electrosurgical excision procedure (LEEP) are rare. But in Bangladesh, we have very limited research-based information regarding this issue. **Aim of the Study:** The aim of the study was to assess the complications of loop electrosurgical excision procedure following treatment of cervical intra-epithelial neoplasia (CIN) 2 and 3. **Methods:** This descriptive cross-sectional study was conducted in OPD, Gynaecology and Obstetrics Department, Rangpur Medical College Hospital, Rangpur, Bangladesh during the period of July 2011 to June 2012. In total, 75 patients with CIN 2 and/or 3 were enrolled in this study as study subjects. The study was approved by the ethical committee of the mentioned hospital. Proper informed written consents were taken from all the participants before data collection. The criteria for inclusion were colposcopic guided biopsy revealing CIN 2 or 3 whose lesion remains confined to ectocervix. The least amount of power that will effectively perform the electrosurgery should be used, so as to minimize the risk to the patient's normal tissues and ensure that the excised specimen is in acceptable condition for pathological assessment. Data analysis was done by using statistical package for social science (SPSS) 16 versions. **Results:** In analyzing the post procedure complications of the participants, we observed that, 64% participants were from vaginal discharge. Besides this 21%, 9%, 4% and 1% cases were found with pain, bleeding, fever and cervical stenosis consequently. Distributing persistence of vaginal discharge, 44% participants taken 5-10 days which was noticeable. Only 5.33% participants had vaginal discharge in between 21-25 days. In distributing persistence of pain, we observed that, 8% participants had taken 30 days to be cured which was the highest number of patients. Within one week, all the patients become free from fever. Cervical Stenosis occurred as a delayed complication during follow up at 9-12 months after LEEP in only 1(1.3%) case and occurred at 270th day. **Conclusion:** As per the findings of this study we can mention vaginal discharge as the most common complication for the cervical intra-epithelial neoplasia patients by treating loop electrosurgical excision procedure. Besides these, physicians should be aware about the sufferings of patients from pain and bleeding. Finally, we can conclude that, LEEP as an easy safe and acceptable treatment for high grade CIN with high cure rate.

**Keywords:** Complication, LEEP, CIN-3, CIN-2, Electrosurgical excision procedure.

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## 1. INTRODUCTION

The cervix is one of the most common site for female genital cancer [1]. Histologically 90-95% of invasive cervical cancers are squamous cell cancers; adenocarcinoma constitutes less than 5% of cervical cancers in most developing states. Cervical cancer constitutes 25% of total cancer cases in women. In resource limited countries where cervical cancer is typically the most common cause of premature death among middle aged women. An estimated 230,000 women dies every year from invasive cervical cancer

(ICC). In Bangladesh, annually 13000 new cases and 8000 deaths take place. More than 80% of patients cured with this eminently preventable cancer present in clinically advanced inoperable stages [2]. Invasive squamous cell cervical cancers are preceded by long phase of preinvasive disease, collectively referred to as cervical intraepithelial neoplasia known as CIN. CIN may be categorized into grades I, II and III depending on the proportion of the thickness of the epithelium showing mature and differentiated cells. High grade CIN carries a much higher possibility of progressing to

invasive cancer [3]. There are no specific symptoms and no characteristics clinical features that signify the presence of CIN. Various techniques have been used for treatment of CIN-2, 3 in women with satisfactory colposcopic examinations in whom invasion has been eliminated. These include ablative methods as well as excisional methods and hysterectomy [4]. The loop electrosurgical excision procedure is currently the most commonly used approaches to treat high grade cervical squamous intra-epithelial lesion verified on colposcopic guided biopsy examination [5]. LEEP is executed by using a wire loop through which an electric current is passed at variable power settings. Different shapes and sizes of loop can be used depending on the size and orientation of the lesion [6]. LEEP is acceptable, easy and safe treatment for high grade lesion of cervix. American Society for Colposcopy and Cervical Pathology (ASCCP) recommendations for follow up after treatment of CIN 2 or 3 are a single human papilloma virus (HPV) test 6-12 months after treatment, two consecutive cytology tests or cytology with colposcopy 6 months apart, followed by routine screening if tests are normal [7].

## 2. METHODOLOGY

This descriptive cross-sectional study was conducted in OPD, Gynaecology & Obstetrics department, Rangpur Medical College Hospital, Rangpur, Bangladesh during the period from July 2011 to June 2012. In total, 75 patients with CIN 2 and/or 3 were enrolled in this study as study subjects. The study was approved by the ethical committee of the mentioned hospital. Proper written consents were taken from all the participants before data collection. As per the inclusion criteria of this study, patients with Colposcopic guided biopsy revealing CIN 2, 3 and whose lesion remains confined to ectocervix were included. On the other hand, according to the exclusion criteria of this study, patients with pregnancy, lesion extending in to the endocervix, histopathologically proven case of cancer cervix were excluded. Local anaesthesia was achieved 30 seconds after multiple

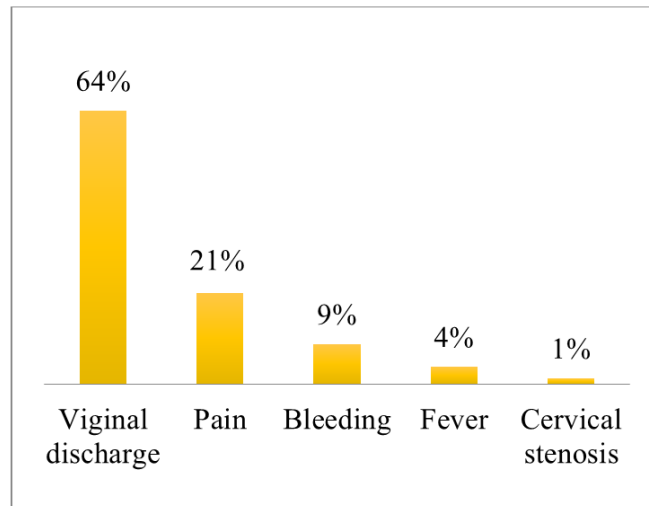
injections of a total of 5ml or less of 1% xylocaine into the stromal tissue of the ectocervix. The injections are given in a ring model 1-2 mm deep at the periphery of the lesion and transformation zone using a 5ml syringe and 25–27 gauge needles. If two-layer excision was planned, local anesthetic was injected into the anterior and posterior endocervical canal also. Along with the data regarding complications, all the demographic and clinical data of the participants were recorded. A predesigned questionnaire was used in data collection. Data analysis was done by using statistical package for social science (SPSS) 16 versions. This qualitative data was analyzed as proportion, rate and percentage.

## 3. RESULT

In this study, majority of the participants were from 30-39 years' age group which was 57%. In analyzing the distribution of the study population according to education level, we observed that 35%, 31%, 23% and 12% patients were SSC completed, illiterate, 'HSC and above level educated' and 'primary level educated' respectively. In assessing the family income of our participants, we found that, majority of the participant's family income was 5000-10000 (BDT/month) which status was found in 51% cases. Besides this 21%, 17% and 11% patients were from <5000, >15000 and 10000-15000 BDT earning families per month respectively. In analyzing the post procedure complications of the participants, we observed that, 64% participants were from vaginal discharge. Besides this 21%, 9%, 4% and 1% cases were found with pain, bleeding, fever and cervical stenosis consequently. Distributing persistence of vaginal discharge, 44% participants taken 5-10 days which was noticeable. Only 5.33% participants had vaginal discharge in between 21-25 days. In distributing persistence of pain, we observed that, 8% participants had taken 30 days to be cured which was the highest number of patients. Within one week, all the patients become free from fever. Cervical Stenosis occurred as a delayed complication during follow up at 9-12 months after LEEP in only 1(1.3%) case and occurred at 270<sup>th</sup> day.

**Table 1: Distribution of participants as per age, educational status and monthly family income (N=75)**

Variables	n	%
<b>Age distribution</b>		
<30	17	23%
30-39	43	57%
40-49	14	19%
>50	1	1%
<b>Education status</b>		
Illiterate	23	31%
Primary	9	12%
SSC	26	35%
>HSC	17	23%
<b>Monthly family income (BDT/month)</b>		
<5000	16	21%
5000-10000	38	51%
10000-15000	8	11%
>15000	13	17%



**Figure 1: Post procedure complications (N=75)**

**Table 2: Persistence of vaginal discharge (N=75)**

Onset (Days)	n	%
5-10	33	44
11-15	21	28
16-20	17	22.67
21-25	4	5.33
<b>Total</b>	<b>75</b>	<b>100</b>
Mean ±SD	13.40±4.53	
Range	(7-25)	

**Table 3: Persistence of pain (N=75)**

Onset (Days)	n	%
25	2	2.7
30	6	8
34	1	1.3
35	3	4
40	2	2.7
<b>Total</b>	<b>14</b>	<b>18.7</b>
Mean ±SD	32.07±4.64	
Range	(25-40)	

**Table 4: Vaginal bleeding (N=75)**

Onset (Days)	n	%	Valid %	Cumulative %
Valid	1	5	6.7	71.4
	4	1	1.3	85.7
	6	1	1.3	100
	<b>Total</b>	<b>7</b>	<b>9.3</b>	<b>100</b>
Missing	System	68	90.7	
<b>Total</b>		<b>75</b>	<b>100</b>	

**Table 5: Fever (N=75)**

Onset (Days)	n	%	Valid %	Cumulative %
Valid	4	1	1.3	33.3
	5	1	1.3	66.7
	6	1	1.3	100
	<b>Total</b>	<b>3</b>	<b>4</b>	<b>100</b>
Missing	System	72	96	
<b>Total</b>		<b>75</b>	<b>100</b>	

**Table-6: Cervical stenosis (N=75)**

Onset (Days)	n	%	Valid %	Cumulative %
Valid	270	1	1.3	100
Missing	System	74	98.7	
<b>Total</b>		<b>75</b>	<b>100</b>	

#### 4. DISCUSSION

The aim of the study was to assess the complications of loop electrosurgical excision procedure following treatment of cervical intra-epithelial neoplasia (CIN) 2 and 3. In this study, the mean age of the participants was 33.5 years with standard deviation of  $\pm 6.08$ , ranged between 22 and 50 years. This mean age was much higher than that of previously conducted study where it was 27.2 years with standard deviation of  $\pm 5.7$  [8]. This may be due to lack of awareness and scarce of screening facility and also poverty as well as illiteracy. The mean parity of the participants was 3.68 with standard deviation of  $\pm 1.31$  and ranged in between 1 and 7. But this may be due religious and cultural difference and might be illiteracy and less empowerment of women. Histopathology following LEEP showed that, CIN II 57 (76.0%) was more common than CIN III 18 (24.0%). A study in the department of Pathology, University of Washington, Seattle, USA also revealed same report [8]. In our study, the most common frequencies of persistence of vaginal discharge were found in 33 (44%) cases and the duration was 5-10 days. Another descriptive cross-sectional study on LEEP at Chiang Mai University Hospital revealed that, virtually all women (79% to 100%) who underwent LEEP noted some form of vaginal discharge and duration of discharge was on an average of  $14 \pm 4.6$  days [9]. Our observation was consistent with this study conducted in our neighbor country vaginal bleeding onset in total 7 (9.3%) cases within the first week of the procedure, but it stopped spontaneously. A previously conducted study showed that, application of Monsel's solution or electrocautery were needed to control hemorrhage in up to 3.3% of women during the first 24 hours post treatment and in 1.5% to 5.2% of women during the following days and weeks. Up to 0.8% of women need suture to control bleeding or transfusion [10]. In our study, no such complications were found. Post treatment bleeding was treated only by Monsel's solution or electrocautery. In this study, fever onset on 4, 5 and 6<sup>th</sup> day was observed in total 3 (4.0%) cases. Some studies conducted in low resource setting countries showed that, cervical tenderness, fever or wound infection requiring antibiotic therapy were documented in 0.0% to 10.0% (Median, 1.2%) of women treated with LEEP [10-12]. In LEEP outcome studies conducted in resource-rich countries, about 70% of women experienced vaginal discharge for a median of two weeks. Typically with light bleeding during the first few days and some 40% of women complained of menstrual-like pain during an average of three days [13]. Asymptomatic cervical stenosis was observed in 4% to 6% of women in other

studies [14, 15]. During follow up at 9–12-month, 74 (98.7%) cases had normal findings and only 1 (1.3%) case had high grade CIN on colposcopy and found CIN II on histopathology. Recurrence rate was only 1.3% and cure rate was 98.7%. As the outcome of LEEP, this study showed high cure rate. These findings also evidenced by previously conducted study. In a study it was reported that, LEEP had a significantly higher cure rate of 96.4% compared to cryotherapy 88.3% ( $p=0.026$ ) [16]. The efficacy of cryotherapy was found to be 88% and that of LEEP was 94% which was not significantly different. The overall cure rate of symptoms was 82 and 79% in cryosurgery and LEEP group, respectively [17]. The findings of this study may be helpful in the management of CIN 2 and 3.

#### Limitation of the Study

This was a single centered study with small sized samples. Moreover, the study was conducted at a very short period of time. So, the findings of this study may not reflect the exact scenario of the whole country.

#### 5. CONCLUSION & RECOMMENDATION

As per the findings of this study we can mention vaginal discharge as the most common complication for the cervical intra-epithelial neoplasia patients by treating loop electrosurgical excision procedure. Besides these, physicians should be aware about the sufferings of patients from pain and bleeding. Cervical cancer is the most common malignancy and a major cause of cancer-death in Bangladeshi women. The cost of colposcopic examination in our country was not as high as in western countries. At last, we can conclude that, LEEP as an easy safe and acceptable treatment for high grade CIN with high cure rate.

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**Conflict of Interest:** None declared.

**Ethical Approval:** The study was approved by the institutional ethics committee.

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