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Original Research Article

The outcome of loop electrosurgical excision procedure following treatment of cervical intra-epithelial neoplasia 2 and 3

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ABSTRACT

Background: In Bangladesh, loop electrosurgical excision procedure (LEEP) is an ongoing program of government health service for the management of cervical intra-epithelial neoplasia (CIN) 2 and 3. The aim of this study was to evaluate the outcome of loop electrosurgical excision procedure following treatment of cervical intra-epithelial neoplasia 2 and 3.
Methods: This descriptive cross-sectional study was conducted in outpatient department (OPD), gynaecology and obstetrics department, Rangpur Medical College Hospital, Rangpur, Bangladesh during the period from July 2011 to June 2012. In total 75 patients, underwent LEEP following treatment of CIN 2 and 3 were selected for this study as study subjects. Data analysis was done by using statistical package for social science (SPSS) 16 version.
Results: In this study, majority of the participants were from 30-39 years' age group which was 57%. Besides this 23%, 19% and 1% patients were from <30, 40-49 and ≥50 age groups respectively. The mean parity of the patients was 3.68 with standard deviation of ±1.31 and range was 1 to 7. In analyzing the parity of the participants, we observed that, in 47% and 24% patients the party were 2 and 3 respectively which were noticeable. Besides these in 11%, 8%, 7%, 1% and 3% cases the parity were found as 1, 4, 5, 6 and 7 respectively. In analyzing the histopathology among patients, we found, 76% cases were with CIN-1 whereas the rest 24% cases were with CIN-2.
Conclusions: Cervical cancer is the most common malignancy and a major cause of cancer death among Bangladeshi women. This may be due to lack of awareness, scarce of screening facility, poverty and illiteracy. The LEEP procedure has many advantages including high success rate, low cost and ease of use.

Keywords: Cervical cancer, LEEP, CIN-3, CIN-2, Electrosurgical excision procedure

INTRODUCTION

Cervix is the commonest site for female genital cancer. Preclinical invasive cancer refers to early cervical cancer, with minimal stromal invasion, often without any symptoms or clinical features. As the stromal invasion progresses, the disease becomes clinically evident, revealing several growth patterns visible on speculum examination. Histologically 90-95% of invasive cervical cancers are squamous cell cancers. Adenocarcinoma constitutes less than 5% of cervical cancers in most developing countries. Women with high-grade Papanicolaou smears have 43%-66% risk of having moderate to high grade intraepithelial neoplasia (CIN 2 or CIN 3) on subsequent biopsy and 2% risk of having invasive cancer.[1] Invasive squamus cell cervical cancers are preceded by long phase of preinvasive disease, collectively referred as cervical intraepithelial neoplasia

(CIN). More severe grades of CIN-2 and CIN-3 reveal a greater proportion of the thickness of the epithelium composed of undifferentiated cells. Persistent infection with one or more of the oncogenic subtypes of human papilloma viruses (HPV), is a necessary cause for cervical neoplasia. Multiple techniques have been used for the treatment of CIN 2 and 3 in women with satisfactory colposcopic examinations in whom invasion has been excluded. This includes ablative methods as well as excisional methods and hysterectomy.[2] The loop electrosurgical excision procedure (LEEP) is currently one of the most commonly used approaches to treat high grade cervical squamus intraepithelial lesion confirmed on colposcopic guided biopsy examination.[3] Many kinds of shapes and sizes loop can be used depending on the size and orientation of the lesion.[4] Electrosurgical current applied to tissues can have three effects on the tissue: desiccation, cutting, and fulguration. The objective of LEEP procedure is to remove the lesions and the transformation zone in their entirety and send the affected tissue to the histopathological laboratory for examination. LEEP does have the advantage of allowing the provider to remove the entire squamocolumnar junction. So that produces the specimen for histological evaluation and confirmation. For this reason, it is suitable to treat the larger lesions or extend into the endocervical canal. If possible, a screening and treatment program in a low-resource setting would be able to refer women with such lesions to a central location for treatment with LEEP.[5] LEEP had a significantly higher general cure rate of 96.4%.[6] The procedure has many advantages, high success rate, including low cost and ease of use. It is safe for evaluation and treatment of cervical neoplasia with an acceptable and manageable surgical morbidity.[7] There is general agreement that either ablation or excision of CIN-2 and 3 reduces the incidence and mortality caused by invasive cervical cancer in women with these lesions.[8]

METHODS

This descriptive cross-sectional study was conducted in OPD, gynaecology and obstetrics department, Rangpur Medical College Hospital, Rangpur, Bangladesh during the period from July 2011 to June 2012. The patients who underwent LEEP in OPD included as study subjects. In total, 75 patients were selected for this study. 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 5 ml or less of 1% xylocaine into the stromal tissue of the ectocervix. The injections were given in a ring model 1-2 mm deep at the periphery of the lesion and transformation zone using a 5 ml syringe and 25–27-gauge needles. If two-layer excision was planned, local anaesthetic was injected into the anterior and posterior endocervical canal also. All the demographic and clinical data of the participants were recorded. A predesigned questioner 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.

RESULTS

In this study, majority of the participants were from 30-39 years' age group which was 57%. Besides this 23%, 19% and 1% patients were from <30, 40-49 and ≥50 age groups respectively (Figure 1).

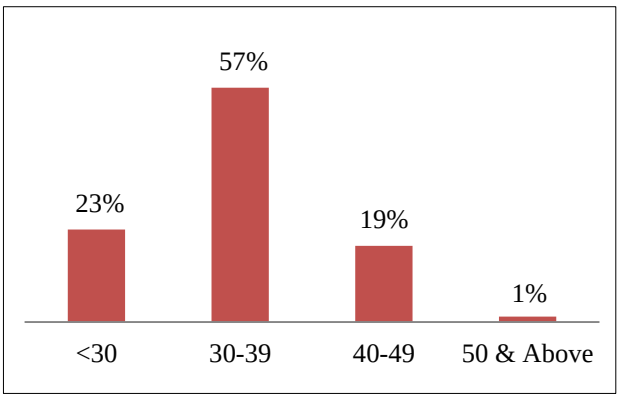

Figure 1: Age distribution of the study patients (N=75).

The mean parity of the patients was 3.68 with standard deviation of ±1.31 and range was 1 to 7 (Table 1).

Table 1: Distribution of the study population by parity (N=75).

Parity	n	%
1	8	11
2	35	47
3	18	24
4	6	8
5	5	7
6	1	1
7	2	3
Total	75	100
Mean±SD	3.68±1.31	
Range	(1-7)	

In analyzing the parity of the participants, we observed that, in 47% and 24% patients the party were 2 and 3 respectively which were noticeable. Besides these in 11%, 8%, 7%, 1% and 3% cases the parity were found as 1, 4, 5, 6 and 7 respectively. In analyzing the histopathology among patients, we found, 76% cases were with CIN-1 whereas the rest 24% cases were with CIN-2 (Figure 2).

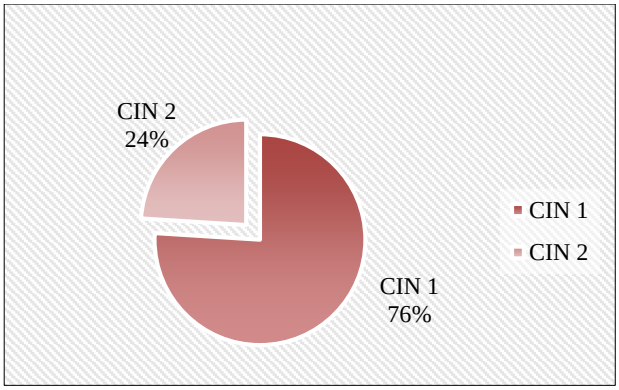

Figure 2: Histopathology following LEEP.

As the post procedure complications among participants, vaginal discharge was found in majority of the cases which was 64%. Moreover, 21% had pain, 9% had bleeding, 4% had fever and 1% had cervical stenosis (Figure 3).

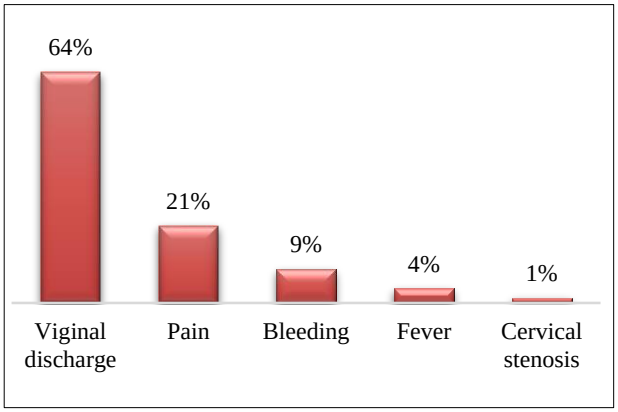

Figure 3: Post procedure complications among participants (N=75).

Persistence of vaginal discharge after LEEP was variable among study subjects. Among our patients 33 (44%) had vaginal discharge in between 5-10 days. Mean time of persistence was 13.40 days with standard deviation ±4.53 (Table 2).

Table 2: Persistence of vaginal discharge.

Days	n	%
5-10	33	44
11-15	21	28
16-20	17	23
21-25	4	5
Total	75	100
Days		
Mean±SD	13.40±4.53	
Range	(7-25)	

In analyzing the persistence of pain among the participants we observed that, it was for 25, 30, 34, 35 and 40 days in 3%, 8%, 1%, 4% and 3% cases respectively. The mean (±SD) persistence of pain among the participants was 32.07±4.64 days (Table 3).

Table 3: Persistence of pain.

Days	n	%
25	2	3
30	6	8
34	1	1
35	3	4
40	2	3
Total	14	19
Mean±SD	32.07±4.64	
Range	(25-40)	

In this study, 7 (9.3%) patients had vaginal bleeding within 1st week of the procedure, but it spontaneously stopped (Table 4).

Table 4: Vaginal bleeding.

Onset (day)	n	%	Valid %	Cumu. %
Valid				
1	5	7	71	71
4	1	1	14	86
6	1	1	14	100
Total	7	9	100	
Missing				
System	68	91		
Total	75	100		

Table 5: Fever.

Onset (day)	n	%	Valid %	Cumu. %
Valid				
4	1	1	33	33
5	1	1	33	67
6	1	1	33	100
Total	3	3	100	
Missing				
System	72	96		
Total	75	100		

On the other hand, cervical stenosis occurred as a delayed complication during follow up at 9-12 months (Table 6).

Table 6: Cervical stenosis onset (day).

Onset (day)		n	%	Valid %	Cumu. %
Valid	270	1	1	100	100
Missing	System	74	99		
Total		75	100		

After LEEP in only 1 (1.3%) case and occurred at 270th day (Table 7).

Table 7: Correlation between colposcopic findings during LEEP and histopathology following LEEP.

Colposcopic findings at LEEP	Histopathology following LEEP		Total	X^2	P value
	CIN 2	CIN 3	No. %		
	n (%)	n (%)			
LG CIN	1 (1.33)	0	1 (1.33)	0.32	0.57^{NS}
HG CIN	56 (74.67)	18 (24)	74 (98.67)		
Total	57 (76.0)	18 (24)	75 (100)		

Data were analyzed by using Chi-square test; NS=non-significant

DISCUSSION

The aim of this study was to evaluate the outcome of LEEP following treatment of CIN 2 and 3. In our study, in analyzing the histopathology among patients, we found, 76% cases were with CIN 1 whereas the rest 24% cases were with CIN 2. In the department of pathology, university of Washington, Seattle, USA also revealed same report.[9] It might be that, those patients who had CIN-3 might be treated earlier for unhealthy cervix or others. The prevalence of CIN-2 is more prevalent than CIN-3. Correlation between colposcopic findings at the time of LEEP and histopathology following LEEP reveals that, colposcopic diagnosis of low-grade CIN-2 in 1% case on histopathology but high grade. Correlation between histopathology following LEEP and post procedure complications revealed that, none of complication was statistically significant in either CIN-2 or CIN-3. All most all of the patients were suffering from some form of immediate complication but only one patient found during follow up has been suffering from cervical stenosis as delayed complication. Cervical stenosis was rarely encountered but more common in menopausal women and that is also evidenced by previously conducted study.[10] Another descriptive cross-sectional study on LEEP at Chiang Mai University Hospital reveals that, virtually all women (79-100%) who underwent LEEP noted some form of vaginal discharge and duration of discharge was on average 14±4.6 days.[7] Mild to moderate pain during or immediately after treatment was reported, less than 5% of women who underwent LEEP. Longer lasting pain or pain associated with the next menses was common and documented considerably more often after LEEP.[11] A study conducted at department of Epidemiology, school of public health, university of Alabama at Birmingham, Birmingham, AL, USA shows that, cervical stenosis as al long term complication typically occurs at 6-12 months post treatment.[12] Asymptomatic cervical stenosis was observed in up to 4%-6% of women.[13,14] 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-2 on histopathology. Recurrence rate was only 1% and cure rate was 99%. Outcome of LEEP in this study showed high cure rate. These findings also evidenced by previously conducted study. LEEP had a significantly higher cure rate of 96% compared to cryotherapy 88%.[15] The efficacy of cryotherapy was found to be 88% and that of LEEP was 94% which is not significantly different. The overall cure rate of symptoms was 82% and 79% in cryosurgery and LEEP group, respectively.[16]

Limitations

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.

CONCLUSION

Cervical cancer is the most common malignancy and a major cause of cancer death in Bangladeshi women. This may be due to, lack of awareness, scarce of screening facility, poverty and illiteracy. The LEEP procedure has many advantages including high success rate, low cost and ease of use. It is safe for evaluation and treatment of cervical neoplasia. For getting more specific results, we would like to recommend for conducting similar more studies in several places with larger sized samples.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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