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Original Research Article

Cryotherapy for cervical lesions: efficacy and patient satisfaction

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ABSTRACT

Background: Vaginal discharge is a distressing commonplace gynecological condition seen in all age groups albeit from different causes. This study evaluates the outcome of cryotherapy on benign cervical lesions over a period of 2 years in a tertiary care centre. Efficacy of cryotherapy in making patient symptom free. Efficacy of cryocauterization in healing the cervical lesion.

Methods: This is prospective observational study of 30 women of reproductive age group attending outpatient department for complaint of vaginal discharge. Cervical cytology was performed for all women and out of the women advised cryotherapy, those fitting inclusion criteria and consenting for study were enrolled. Their findings and investigations were noted. After they underwent cauterization, they were followed for period of 3 months. Findings, complications and level of satisfaction were noted down.

Results: Healing of cervical lesion was complete in 96% women at the end of 12 weeks. There was 1 failure of therapy among sample size of 30. Satisfaction rate was high.

Conclusions: Cervical cryocauterization is a cheap, effective and simple procedure for treatment of cervical lesions. There are few complications and patient satisfaction is high. It is an easily accessible and safe procedure and helps preserve fertility of women at the same time addressing the vaginal discharge.

Keywords: Benign cervical lesions, Cryocauterization, Cervical erosion

INTRODUCTION

Vaginal discharge is one of the most common yet distressing and awkward symptoms for women. It irritates physically, embarrasses sexually and, tires and scares mentally. Ectropion is a hormone dependent condition and is one of the prime causes of discharge besides cervicovaginal infection. Prevalence of ectropion varies between 14-15% outpatients.¹ With lower cell mediated immunity, glandular epithelium creates facilitatory environment for infections with fertility implications as well as carcinogenic implications and also potentially carcinogenic infections like human papilloma virus.^{2,3} Ectropion has been found to be associated with intraepithelial neoplasia in around 17% cases.⁴

Cauterization of tissues is an age-old method employed to stop bleeding and destroy growth of harmful cells. Cervical lesions have been cauterized chemically with silver nitrate and thermally by electrocautery and cold cautery.

Cryotherapy is the use of low temperatures locally or generally in medical therapy. Its goal when using extreme temperatures is to destroy cells by crystallizing the cytosol. Cryosurgery was introduced to gynaecology in the late 1960s to treat cervical intraepithelial neoplasia and it is proven to be a reliable treatment modality, with limited side effects and morbidity. The method is used to treat cervical, vaginal, endometrial and vulvar lesions. In cervical cryotherapy, cells destroyed by freezing are shed

afterwards in a watery discharge. Liquid nitrogen as well as carbon dioxide has been used in cervical cryocauterization. The technique has been acceptable to women and practitioners; it is a low-cost technique and can be easily adapted to local needs. Sankaranarayanan et al have shown that it can be used to see and treat by trained nurses in low resource settings.⁵

METHODS

This was a prospective observational study. Ethics committee clearance was taken. The cases were selected from the patients of an outpatient department of a tertiary care hospital.

The inclusion criteria were patient with age less than 40-year-old but more than 18 years old with cervical erosion or premalignant cervical lesion (CIN 1 and 2) those seeking conservative management. Consent was taken when the treating physicians advised cryotherapy for cervical lesions.

The exclusion criteria were as follows

- Active genital tract infection
- Adenocarcinoma
- CIN 3
- Large lesions
- Lesions extending into cervical canal
- Exophytic lesions
- Cytology not matching with colposcopy women unwilling for cryotherapy

Cases were from all socio-economic groups. Thirty cases were enrolled.

History

- Detailed history of abnormal vaginal bleeding and discharge was noted.
- Sexual history and history of being treatment for sexually transmitted diseases and reproductive tract infections was noted. Note was made of the treatment taken in the past for the same. Age of first sexual intercourse was noted.
- Menstrual history, obstetric history and history of relevant past medical and surgical illness was noted. History of contraceptive use was noted.

Physical examination and investigations

Speculum examination was done to note site of cervical lesion, size of lesion and any other associated cervical pathology. Vaginal examination was done to assess the size, shape, mobility of uterus and to rule out adnexal pathology. Preoperatively exfoliative cytology, HIV, VDRL tests were done in all cases. Consent for cryocauterization was taken. Patients with signs of pelvic

or vaginal infections underwent treatment with syndromic approach.

The cryogenic device consisted of a gas tank containing a refrigerant and non-explosive, non-toxic gas. Nitrous Oxide gas was used in this study. The gas is delivered using flexible tubing through a gun-type attachment to the cryoprobe.



Figure 1: Apparatus.

Procedure

- The procedure was performed during post menstrual period.
- Depending upon size, appropriate cryoprobe was selected. A cryoprobe was placed in contact with the cervix and the system was activated.
- An iceball was allowed to develop upto a 5mm lateral spread beyond the lesion. The Freeze time of the cryocauterization is 3 minutes and the thaw time was 5 minutes. If the lesion was too large, multiple applications were made. The system was deactivated and the probe was allowed to separate from the frozen cervical tissue.
- The patients were explained that they may experience a heavy watery discharge for the first month after cryotherapy resulting from the sloughing of dead tissue and exudate from the treatment site. They were explained about possibility of mild cramplike pain and were told to report if fever, heavy bleeding or severe pain occurred. Patients were discharged the same day.
- The patients were asked to refrain from sexual intercourse and tampon use for 6 weeks after cryotherapy to avoid infection and bleeding and to allow re-epithelisation of the cryolesion. Prophylactic antibiotics were given for 5 days to all women.

RESULTS

The largest number of patients belonged to age group between 26-30 years followed by 31- 35 years

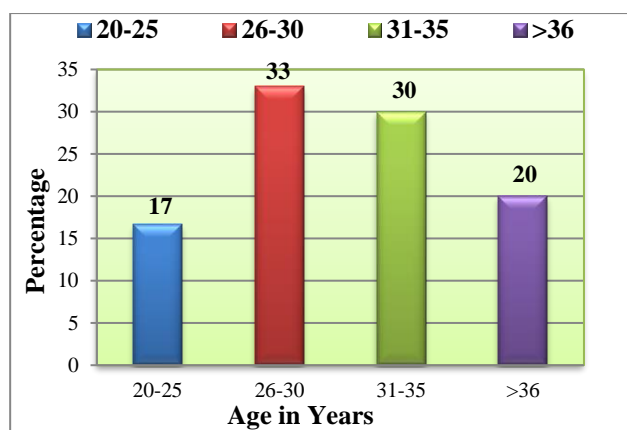


Figure 2: Age distribution of patients.

The largest number of patients were multiparous (87%). There were no nulliparous patients.

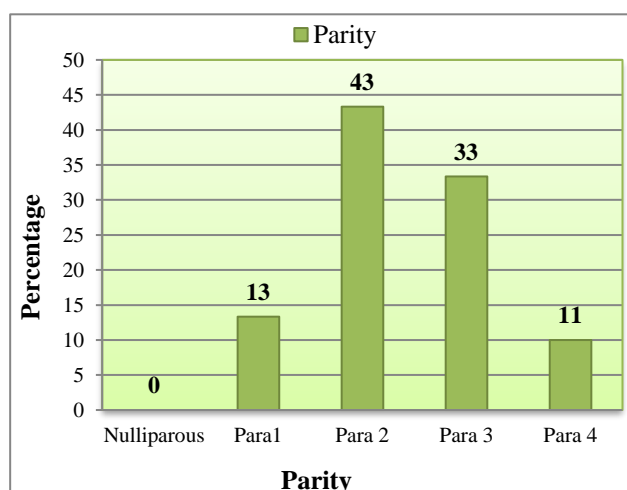


Figure 3: Parity distribution.

All patients were HIV and VDRL negative.

Table 1: Chief complaints.

Chief complaints	No. of cases	%
Abnormal vaginal discharge	30	100
Abnormal vaginal bleeding	4	13
Menstrual irregularity	2	7
Pelvic and/or abdominal pain	10	33
Backache	5	17

Table 2: Cytological findings.

cytological findings	No. of cases	%
Mild inflammatory	20	67
Severe inflammatory	07	23
Inflammatory with infection	02	07
LSIL	1	03

Abnormal vaginal discharge was the commonest complaint. Followed by pelvic or abdominal discomfort.

Two thirds of the patients had sought treatment for complaint of discharge without success.

One case showed low grade squamous intraepithelial lesion. Two cases showed presence of the organism such as bacterial vaginosis along with inflammatory changes which were treated before procedure.

Table 3: Immediate complication.

Immediate Complication	No. of cases	%
No Complication	24	80
Pain / discomfort	5	17
Bleeding	0	00
weakness	01	03

Immediate Complication

Five cases (17%) had mild discomfort or mild pain in abdomen (uterine cramp). One case (3%) experienced weakness.

Table 4: Complaints in post cauterisation follow up.

After effect (2 week)	No. of cases	%
Watery discharge	25	83
Pain	3	10
Bleeding	1	3
weakness	1	3

Watery discharge hydorrhoea

(Hydorrhoea) was most common complaint of the patients. Pain: occasional and mild pain was present in 3 cases relieved by analgesic.

Bleeding

Bleeding was present in one case, after examination it was found to be due to incomplete treatment, as the cervical lesion was large. One patient who had pain complained of weakness.

Table 5: Follow up duration.

Follow up at weeks	No. of cases	%
2 weeks	28	93
2 and 6 weeks	24	80
2,6 and 12 weeks	24	80

In present study, follow up was 93 % at 2 weeks but at the end of 12 weeks, 5 patients were lost to follow up and one patient had failure of the procedure.

Failure

In present study, one patient had bleeding per vaginum was found to have a large cervical lesion which was not

cauterised properly. She was termed as a failure of procedure.

Satisfaction

On questioning, directly about satisfaction with procedure all patients except the two; the one with postcauterization bleeding and the other with weakness reported satisfaction at symptom relief.

DISCUSSION

Cervical ectropion (or cervical erosion) is a condition in which the central (endocervical) columnar epithelium protrudes out through the external os of the cervix and onto the vaginal portion of cervix. The everted epithelium has a reddish appearance similar to the granulation tissue, and may be covered by a yellow turbid discharge. Though benign it is a distressing condition for women and with low cellular immune response the tissue can facilitate harmful viral infections like HIV and HPV.

Cervical cryotherapy is a procedure, which involves freezing an area of abnormal tissue on the cervix. This tissue gradually disappears and the cervix heals.

Mechanism of action of cryotherapy

The physical effect of cryotherapy is known as “direct cell injury”. At freezing temperature, water crystallizes in the extracellular spaces and in turn leads to cellular dehydration called as “solution-effect injury”. Cells shrink and membranes and cellular components are damaged.

During thawing, ice melts, the extracellular environment rapidly becomes hypotonic allowing water to enter within the damaged cells, causing cell membrane disruption. Lowering the temperature weakens cell scaffolding and causes mechanical damage, pH decrease, consequently lead to metabolism failure.

Vascular stasis and cellular anoxia followed by hyperperfusion and oxidative damage occurs due to vasoconstriction and vasodilatation due to freezing and thawing. And eventually results in cell sloughing.

Factors affecting success of therapy

- The number of freeze/thaw cycles
- Holding (duration of freezing)
- The mass of frozen tissue
- The nature of tissue: Cancer cells are very cryosensitive
- The distance from the probe.

In this study, the failed case probably could have benefitted with multiple applications.

Advantages

- Serious injuries or complications are rare
- It is quick and easy, short time
- No hospitalization needed
- No anaesthesia is required
- Simple and inexpensive equipment
- There is minimal blood loss due to a sealing off effect on the frozen tissue
- It is the less expensive than Laser
- There is no need of electricity
- Cervical stenosis or rate of pregnancy is not altered
- It can be used in cases of blood dyscrasias.

Disadvantages

- Discharge which is usually profuse, watery and may last for 2-3 weeks.
- Uterine cramping i.e. pain, often occurs during the cryotherapy but rapidly subsides after treatment, may last for 36 hours.
- Vasomotor reaction in form of flushing, dizziness, headache, can occur during procedure.
- Due to friability of treated area, contact bleeding may occur so intercourse should be avoided for 3-4 weeks.
- Vaginal and vulval burns.

Liquid nitrogen is by far the most popular cryogen due to the low temperatures achievable (-197°C), which make it suitable for both benign and malignant lesions. Carbon dioxide still enjoys some popularity. Szemesi I, Matányi S, Scömör S Jr found 95% healing in 8 weeks by cryocoagulation in cervicitis resistant to conservative therapy.⁶ Hurt WG successfully used cryotherapy in treatment of mild and moderate dysplasia of the ectocervix and chronic cervicitis.⁷ Konnegen and colleagues found cure rate was 92% that after a single cryosurgery, and 98% after a second application.⁸ Baram et al recommended that infertile patients with hostile cervical mucus and ectropion will be treated by cryosurgery.⁹ Present study did not have any infertile patients. Wojtys A, Zdebski Z reported complete recovery in the form of typical stratified squamous epithelium in 95.3% of cases.¹⁰ Matanyi S observed in 1248 cervical cryosurgeries that side effects (hypogastric discomfort, vascular reactions) were negligible; profuse vaginal discharge was present following the treatment.¹¹

In our series 24 patients had no complaints in the immediate post procedure period, 5 had mild pelvic discomfort treated with antispasmodic medication. No one had bleeding in the immediate post procedure period.

One patient complained of weakness that resolved on rest and was probably unrelated to the procedure. R Sankaranarayanan and colleagues from India, concluded that ‘see and treat’ with cryotherapy by nurses under medical supervision is acceptable, safe and effective method for cervical cancer prevention in low-resource

settings.⁵ Mariategui J and co-workers have stated that CO₂-cryotherapy may be less effective than N₂O-cryotherapy for complete destruction of cervical precancerous lesions.¹²

In present study, the age of the patients varied between twenty to forty years. Cervical erosion was found maximum in women with age group twenty-six to thirty. Four studies presented results stratified by age group.

One randomized trial and two follow-up studies compared cure rates for women divided into categories younger or older than 30 years of age.¹³⁻¹⁵ Results from Guijon suggest that older women were less likely to fail therapy, although the difference was not statistically significant.¹⁶

In present study, most of the patients were multiparous. Guijon found that neither the number of pregnancies ($p=0.07$) nor the number of live births ($p=0.49$) were significantly associated with treatment failures for cryotherapy or laser ablation combined.¹⁶ Kwikkel reported a slightly higher cure rate for nulliparous women (91 percent) versus that for multiparous women (85 percent).¹³

In present study, majority of cases were from lower socioeconomic status contributing to 70 percent. But this may be due to the fact that the institute predominantly caters to urban lower income groups. There was no selection bias and patients were enrolled serially as they were offered the therapy.

Our findings are comparable to those of Kulkarni and Durge Lower literacy, early sexual activity and high parity are contributory for the occurrence of cervical erosion.¹⁷

Table 6: Location of cervical lesion.

Lesion	Cases	%
Circumoral	18	60
Anterior	5	17
Posterior	5	17
Mucosal Polyp and anterior erosion	2	6

Table 7: Age of first sexual intercourse.

Age of first sexual intercourse (Years)	Cases	%
15-16	04	13
17-18	11	37
19-20	06	20
21-22	04	13
23-25	02	07
>26	03	10

In present study, 50% of cases had their first sexual intercourse at age less than 18 years, which explain one of the causes for cervical erosion.

Table 8: Complaints and finding among patients.

Study	Vaginal discharge	Infection	Pain	Bleeding
KC Mohanty	90%	22%	32%	16%
Gay C, Riehl C	92.30%	6.20%	4.60%	21.50%
Present study	100%	7%	33%	13%

Vaginal discharge was the main complaint in this study. Incidence of pain and irregular bleeding in present study is comparable with study by Mohanty.¹⁸ In present study, 7% of cases had local infection; 67% cases were treated as syndromic approach with antibiotic therapy by the treating clinicians. 17 patients received secnidazole 1 gm with fluconazole 150 mg in a single dose for vaginal discharge syndrome. 3 patients received cefixime 400 mg single dose with metronidazole 400 mg and doxycycline 100 mg twice daily for 14 days for lower abdominal pain, as syndromic treatment before cryosurgery.¹⁹⁻²¹

Table 9 compares the healing rates in various studies. In present study 96% cases, healed by cryotherapy and is comparable with most studies.

Table 9: Efficacy according to healing of cervical lesion.

Study	Healing
Peck	91%
Szemesi	97%
Mohanty	98%
Wojtys	95.30%
Alvarez	92%
Guijon	94.60%
Gay	95.20%
Present study	96 %

Limitations of the study was small sample size. Paucity of diverse indications like CIN1 which can study the treatment effectiveness of procedure.

CONCLUSION

The study concludes that socio-economic factors such as low literacy status, early age at marriage and high parity are contributory factor for the occurrence of cervical erosion. Cervical erosion is associated with reproductive tract infection. 67 % of cases were advised syndromic treatment by clinicians for reproductive tract infections. The rate of symptomatic relief was high. All these patients were treated without local anesthesia and they found the procedure acceptable and satisfaction with symptomatic relief was high. Cryotherapy is one of the best methods to treat symptomatic cervical ectropion. It is a technique, which is easy to acquire and practice. It is completely painless for women. Cryosurgery is a cheap, easy, and safe treatment suitable for both hospital and office based practice. Cryotherapy can be performed in an

ambulatory set up and is regarded as method of choice to treat benign cervical lesions.

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