

# Is Cryotherapy Friend or Foe for Symptomatic Cervical Ectopy?

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## Key Words

Cervical ectopy · Cryotherapy · Recurrent cervicitis

## Abstract

**Objective:** To evaluate the success rates and clinical outcomes of cervical cryotherapy applied to cervical ectopy for symptomatic relief. **Subjects and Methods:** A total of 124 women who underwent cryotherapy for symptomatic treatment of cervical ectopy were included in this study. Indications for treatment were: abundant leucorrhoea (n = 114), post-coital bleeding (n = 22), recurrent cervicitis (n = 30) and pelvic pain (n = 12). Cryotherapy consisted of the use of carbon dioxide at  $-89^{\circ}\text{C}$  to destroy the ectopic columnar epithelium by freezing, and it was transmitted to the ectopy through a flat cryoprobe. No routine anaesthesia or analgesia was administered. All patients were questioned about the status of their symptoms after 6 weeks of treatment. **Results:** The highest success rate was obtained in patients with abundant leucorrhoea (n = 102; 89.5%), while the lowest success rate was achieved in subjects with pelvic pain (n = 7; 58%). After treatment, no severe complications were observed, except for hydrorrhoea for a few days. Success rates were 9 times lower in patients who had 3 or more cervicitis episodes per 6 months. **Conclusion:** In this study, the success rate of cryotherapy was highest in patients with abundant

leucorrhoea and lowest in patients with pelvic pain and recurrent cervicitis. Hence, we recommend that clinicians perform the procedure in such patients without much delay.

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## Introduction

Cervical ectopy is a common physiological process in women of reproductive age. It occurs when eversion of the endocervix exposes columnar epithelium to the vaginal milieu [1]. The area of ectopy is fragile and blood vessels are in close contact with the vaginal environment because of its thin, vascularized epithelium [2]. This creates easy access to blood and lymphatic systems, possibly diminishing mucosal barriers to sexually transmitted infections. Ectopy would also be important in secondary transmission [3].

Cervical ectopy can cause abundant leucorrhoea, post-coital bleeding, recurrent cervicitis and pelvic pain, which are very bothersome to women. In such cases, cryotherapy is a widely used treatment option for symptomatic relief because it is inexpensive and easy to perform [4]. Hence, the aim of this study was to determine the success rates and clinical outcomes of cervical cryotherapy applied to cervical ectopy in terms of symptomatic relief.

## Subjects and Methods

This is a cross-sectional study in patients presenting with symptomatic cervical ectopy between January 2012 and January 2014 at the Gynaecology Clinic of Umraniye Medical and Research Hospital (Istanbul, Turkey). A total of 243 women who were admitted to hospital for 4 main symptomatic reasons (i.e. abundant leucorrhoea, post-coital bleeding, recurrent cervicitis and pelvic pain due to cervical ectopy) were initially selected for this study.

Before the procedure, all subjects were screened using thin-layer cytology to exclude cervical pre-cancerous lesions. Twenty-six patients with a history of cervical pre-cancerous lesions, cervical loop electrosurgical excision procedures, human papilloma virus (HPV) positivity, adenocarcinoma in situ of the cervix, cervical cancer and genital warts were excluded from this study. Also, 29 women were considered not eligible for treatment with cryotherapy due to having ectopic areas larger than the cryoprobe, the presence of severe anatomical changes (distorted) in the cervix, the presence of cervical infections, and patient incompetency for speculum application. Further, we could not access the records of 64 patients and excluded them from this study. Hence, cryotherapy was performed in the litotomy position in 124 patients. Indications for treatment were: abundant leucorrhoea (n = 114), post-coital bleeding (n = 22), recurrent cervicitis (n = 30) and pelvic pain (n = 12). All patients had columnar epithelium extending to the ectocervix a distance of at least 0.5 cm from the external cervical opening. The cervix was stained with Lugol's iodine (a solution of elemental iodine and potassium iodide in water) to delineate the ectopy to be ablated and examined in bright light with the naked eye. Appropriate cervical cryoprobes (Keymed, England) were used according to the size of the ectopion, and carbon dioxide gas was used as a refrigerant. Low temperatures of -80 to -90°C were achieved with the Joule-Thomson effect in the cervical cryoprobes to destroy the ectopic columnar epithelium by freezing for 90 s. The patients were followed up 6 and 12 weeks after the procedure for the status of their symptoms.

Abundant leucorrhoea was defined as a non-infected vaginal discharge that continued for at least 6 months. Post-coital bleeding was defined as bleeding that occurred during or after coitus without any other reason. Recurrent cervicitis was defined as cervicitis that despite appropriate medical treatment (more than 3 episodes per 6 months).

Statistical analyses were performed using SPSS software (Statistical Package for the Social Sciences, version 15.0; SPSS Inc., Chicago, Ill., USA). Continuous variables with a normal distribution are presented as means  $\pm$  SD. Categorical variables are presented as numbers and percentages. The data collected for this study was statistically analysed using the  $\chi^2$  test.

## Results

The mean age of the patients was  $34.4 \pm 4.3$  years. The mean parity was  $2.6 \pm 1.03$ . Different success rates were achieved among the 124 patients with cervical ectopy who underwent cryotherapy. Ectopy completely disappeared in 119 (95.9%) patients after 6 weeks. The success rates regarding symptomatic relief varied from 58 to 89.5%; the

**Table 1.** Effect of type of birth on the success of cryotherapy

Symptoms	Success rate with a history of vaginal birth (n = 102)	Success rate without a history of vaginal birth (n = 22)
Abundant leucorrhoea	88.5 (85/96)	88.8 (17/18)
Pelvic pain	50.7 (4/7)	60 (3/5)
Recurrent cervicitis	77.7 (14/18)	83.3 (10/12)
Contact bleeding	81.2 (13/16)	83.3 (5/6)

Values are presented as percents (n/total).

**Table 2.** Effect of IUD usage on cryotherapy success

Symptoms	Success rate with an IUD (n = 29)	Success rate without an IUD (n = 22)
Abundant leucorrhoea	84 (21/25)	96.6 (86/89)
Pelvic pain	50 (2/4)	62.5 (5/8)
Recurrent cervicitis	60 (6/10)	90 (18/20)
Contact bleeding	75 (3/4)	88.8 (16/18)

Values are presented as percents (n/total).

highest success rate achieved was for abundant leucorrhoea (n = 102; 89.5%), while the lowest was for pelvic pain (n = 7; 58%). Success followed by recurrent cervicitis occurred in 24 patients (80%), while success followed by post-coital bleeding occurred in 18 (81.8%) patients. Success rates were 9 times lower in patients who had 3 or more cervicitis episodes per 6 months ( $p < 0.005$ ).

The percentage of patients who had had at least one vaginal birth was 72.6% (102/124). Success rates were lower in patients who had a history of vaginal birth than in patients who had had no vaginal birth (table 1).

Of the 124 patients, 29 (23.3%) had used an intrauterine device (IUD). Treatment success rates were lower and rates of cryotherapy repetition were higher among patients with IUD (table 2). Among the 124 patients, 2 cryosurgery procedures were necessary in 6 (6.4%) cases and, of these, 3 (50%) were patients who had used an IUD.

Among all subjects, 2 (1.8%) had abnormal smear results (ASCUS) after 1 year of follow-up. After treatment, no severe complications were observed, except for hydrorrhoea for a few days. No serious side effects were noticed. In particular no appreciable haemorrhage occurred, although 5 patients in this group had mild abdominal pain and dizziness that lasted 10 min after the treatment.

## Discussion

The results of this study revealed that cryotherapy was more effective against post-coital bleeding and abundant leucorrhoea than against pelvic pain and recurrent cervicitis when comparing these four main symptoms of cervical ectopy. Our results also indicated that the presence of cervical ectopy is associated with recurrent cervicitis, and the success rate of treatment decreased with an increase in the number of episodes of cervicitis per 6 months. Apparently, cryotherapy would be more successful if performed without much delay.

The treatments currently available are electrocoagulation [5], cryocauterization [5], laser cauterization and drug treatment [5]. Although most of the treatment modalities address the efficacy of ectopy regression, some symptoms may not totally end with treatment, including medical treatment, cauterization and cryotherapy [6, 7].

Although some clinicians claim that ectopy is a spontaneous process of metaplasia and does not need treatment, there are several arguments that support treatment for ectopy. The most popular argument supporting the treatment is cervical cancer protection. It is well known that there is a relationship between squamous metaplasia and induction of squamous cell carcinoma of the cervix and that the cells undergoing metaplasia are more susceptible to carcinogens [8, 9]. Thus, theoretically, the risk of squamous cell carcinoma of the cervix may be lower if treatment of the ectopy begins without delay. As proof of this theory, among all of the subjects we included in our study, there were 2 (1.8%) abnormal smear results (ASCUS) after 1 year of follow-up. This high abnormality rate may be due to the inadequate mucosal barriers against sexually transmitted infections such as HPV on cervical ectopy areas [10]. Monroy et al. [11] also reported that the prevalence of HPV was higher in cervical ectopy and that HPV infection in cervical ectopy patients was accompanied by a mucosal IgA antibody response. Their results emphasized that cervical ectopy is a risk factor for infection with high-risk HPV genotypes, in particular HPV18 [11].

Ectopy consists of secretion of epithelium and may increase mucus production, which may cause discomfort to women [3]. In our trial, 91.9% of the subjects had abundant leucorrhoea. The success rate regarding this symptom was satisfactory (89.5%).

Ectopy also makes the epithelium more sensitive to sexually transmitted infections such as *Chlamydia trachomatis* and *Neisseria gonorrhoeae* [12, 13], and this condition may explain the higher rates of recurrent cer-

vicitis in these patients. According to our results, success rates were 9 times lower in patients who had 3 or more cervicitis episodes per 6 months. Our results revealed that clinicians should not delay the planning of cryotherapy for patients whose cervicitis problem persists despite medical treatment.

Recurrent cervicitis may also be a reason for pelvic inflammatory disease, which causes pelvic pain. Moreover, according to our results, the success rates of cryotherapy were lowest for pelvic pain. This is another reason for early cryotherapy planning in patients with recurrent cervicitis.

Among our subjects, the number of women with cervical ectopy who had given birth vaginally was greater (n = 102) compared to the number of patients with a history of caesarean section (n = 22). This higher incidence may be due to the cervical trauma caused by a vaginal birth. Also, the treatment success rates for all 4 symptoms were lower in patients who had an IUD device before cryotherapy application. This may be due to chronic irritation of the cervix.

Several new treatment modalities for cervical ectopy have been reported. Li et al. [14] investigated the therapeutic effect of focused ultrasound therapy in patients with symptomatic cervical ectopy. They reported that the rate of effectiveness of focused ultrasound was 99.8%, and the cure rate was 72.52% in patients with symptomatic cervical ectopy [14]. Hua et al. [5] reported the effectiveness of autologous platelet-rich plasma applications for the treatment of benign cervical ectopy, with complete cure rates of 93.7% [5].

## Conclusion

In this study, the success rate of cryotherapy was highest in patients with abundant leucorrhoea but lowest in patients with pelvic pain and recurrent cervicitis. Hence, we recommend that clinicians perform the procedure in such patients without much delay.

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