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Review of management of Cervical Ectropion using Traditional *Ayurvedic* Interventions

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ABSTRACT

Cervical ectropion or cervical erosion is a highly prevalent condition among females of reproductive age. Although self-limiting and benign this disease can progress to chronic condition and or cause unpleasant and distressing symptoms that significantly impacting women's quality of life. Modern therapies are limited to local ablative therapies and can temporarily relieve mild symptoms. However, there is a need to have a tailored approach to this condition based on the range of symptoms and stages of the disease. Also, this approach should depend on the understanding of the body temperament, daily dietary habits, routine occupational hazards, and the climacteric changes where the patient is residing. *Ayurveda's* holistic healing approach holds an answer to the issue of chronicity and recurrent occurrence of cervical ectropion. *Ayurveda's* disease management focuses on assessment of the history, signs and symptoms and its correlation with *Prakriti* and the vitiated *Doshas.* The treatment modality and the drug of choice are selected according to these assessments. Therefore, our study aims to review the current literature and clinical procedures mentioned in *Ayurveda* and synthesize the evidence associated with the medicinal drugs and combinations used to treat cervical ectropion.

Key words: *Cervical ectropion, cervical erosion, Ayurveda*

INTRODUCTION

Cervical ectropion (also known as cervical erosion) is a common, but benign condition in women of reproductive age. Usually diagnosed during routine pelvic examination or pap screening, the prevalence of cervical ectropion is estimated to be between 17 to 50 percent globally.[1] In adolescents, the prevalence of cervical ectropion can be as high as 80%.[1] Swaminathan *et al.* in a multi-centric cross-sectional study in southern India, indicated a prevalence of 33%.[2] It occurs when cervical epithelium is exposed to increased levels of oestrogen causing eversion of squamous, columnar junction, as well as the columnar epithelium of the endocervix onto the ectocervix.[1] The eversion of squamocolumnar junction exposes the immunologically weaker cells to the acidic pH of the vagina.[1,3] Although benign, cervical ectropion can cause a range of symptoms including excessive vaginal discharge, intermenstrual and post-coital bleeding, pelvic pain, dyspareunia, and severe symptoms such as recurrent cervicitis and susceptibility to sexually transmitted infections, especially Human Papilloma Virus (HPV), Neisseria gonorrheae, and Chlamydia trachomatis.[1,3-7] Both, HPV and Chlamydia trachomatis are known to cause cervical cancers,[8] while chronic cervicitis is attributed to pelvic inflammatory diseases and infertility.[6] Therefore, it is

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crucial to treat symptomatic cervical ectropion earlier to prevent future complications.

Current treatment approach

Current treatment approaches to symptomatic cervical ectropion include ablative treatments such as cryotherapy, electrocautery, laser therapy, focused ultrasonography, and local application of boric acid and other drugs.[1,4] Although these treatments are effective, there is a high rate of recurrence due to various causes such as change in vaginal micro-biota, pregnancy or hormonal imbalances in women.[9] Godha *et al*. have highlighted that the vaginal pH and microbiota has significant relation to women's reproductive health.[10] In a review, Garcia-Velasco explained that disturbed vaginal microbiota is associated with risk of infertility, spontaneous abortions and preterm births.[11] Therefore, treatment of cervical ectropion should be holistically approached to alleviate symptoms, as well as protect the patients from future adverse reproductive health outcomes. However, the current treatment approach to cervical ectropion is restrictedly focused on local ablative therapies, rather than enhancing efforts to improve vaginal pH and micro-biota for a sustainable relief of symptoms. Alternate therapies exist but have not been studied in detail. Therefore, there is a need to review the current literature to identify alternate therapies, especially the Indian system of medicine, i.e., approach of *Ayurveda* towards management of cervical ectropion.

Ayurveda's approach

Ayurveda's approach is to holistically eliminate the root causes of diseases, rather than treating the symptoms. *Ayurveda's* exclusive concept of '*Prakriti*' believes that the human body is made up of five elements known as the *Panchtatva*, which include Sky (*Aakash*), Wind (*Vayu*), Fire (*Agni*), Water (*Jal*), and Earth (*Prithvi*). These components further form the three principal energies (*Doshas*) of our body, known as the *Vata*, *Pitta*, and the *Kapha*. The variation in the levels of *Vata, Pitta*, and *Kapha*, results in a variety of body types. There are seven combinations of these *Doshas* that result in seven principal temperaments, known as the seven *Prakriti*. Due to these variations the same diseases are presented with different signs and symptoms and severity. Hence understanding the temperament and understanding the dominant vitiated *Dosha* depending on the clinical presentation is of prime importance and treating the subject accordingly becomes the necessity. The seven *Prakritis* are: *Vata, Pitta, Kapha, Vata-Pitta, Vata-Kapha, Pitta-Kapha, and Vata-Pitta-Kapha (Samdoshaj).* Each of these *Prakritis* results in different psychosomatic characteristics in a person. Hence, for an *Ayurvedic* practitioner, the clinical assessment has a different approach. It begins as soon as a patient walks through the door. For example, if two people of the same age, sex, from the same place, and with the same disease, have a high possibility of being prescribed different medications.

An *Ayurvedic* practitioner shall ask them both, a series of questions related to their lifestyle habits, food and digestion, temperament, assessment of psychological state to understand their *Prakriti*, and then the management is decided. This approach of history taking ensures that medications are tailored according to the person's *Prakriti* and not according to the clinical diagnosis. Chatterjee *et al.* have reiterated that *Prakriti*-based medicine provides personalised treatment to chronic diseases and has potential to offer solutions to challenges in modern medicine such as adverse drug reactions, drug withdrawals, and economic disparities.[57]

Localised treatment in *Ayurveda*

In Ayurveda, local treatment is known as *Sthanik Chikitsa*. It is derived from various references of *Bruhatrayis* or the three 3 main books of *Ayurveda*; namely *Charak Samhita*, *Sushrut Samhita* and *Vagbhatt Samhita*. The local treatment depends on the signs and symptoms given and presented by the patients. The various permutations and combinations are practically applied depending upon the *Prakruti* of the patient, the dietetics and the seasonal changes. In this rapid review, we aim to identify *Ayurvedic* procedures, therapies and medications that are currently used to treat cervical ectropion.

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Following are the common *Sthanik Chikitsa* used to treat cervical ectropion and their descriptions:

1) *Yoni Pichu*

Yoni means vagina and *Pichu* means a tampon made up of sterile cotton and gauze as per the size of the vaginal opening and parity of the patient. This tampon is soaked in any one of the following depending upon the symptoms and the involvement of the *Doshas* example medicated oil (*Jatyadi Tail*), decoction (*Kashaya*), *Churna* mixed with oil (*Gairik Churna* mixed with *Jatyadi* oil). The drug administered through *Pichu* stays for a longer time on the affected area facilitating better absorption. It moistens and softens dry vagina. The medications restore the pH of vaginal flora thereby reducing vaginal infections. *Taila* or *Sneha* alleviates *Vata Dosha. Pichu* can be round shaped or elongated for shallow and deep insertion inside vagina respectively.[43]

2) *Yoni Dhavana*

Yoni means vagina and *Dhavana* or *Prakshalana* means cleansing of vagina.[44] It includes the douching of the vaginal canal. It is one among sixty types of *Vrana Chikitsa*. It is used in various conditions where the discharge is sticky, mucoid, unctuous, curdy, watery and offensive. Decoctions *(Kwatha)* of various plants can be used in different patients depending on the *Lakshana* (signs) *Poorvaroop* and *Roop* (symptoms) example: *Triphala Kwatha, Panchavalkala Kwath*.[45]

Various *Kashaya* used for this purpose in accordance to *Doshas* or characteristics of discharge are as follows: in *Vata Dosha* involvement - *Triphala, Guduchi Kashaya* or *Mudgaparni Kashaya* can be used; in *Pitta Dosha i*nvolvement - *Panchvalkala* or *Panchtikta Kashaya* can be used; in *Kapha Dosha* involvement - *Aragwadhadi* or *Nimbadi Kashaya* can be used; in thin, slimy discharge - *Triphala Kashaya* In thick, unctuous white discharge - *Dashmula* or *Triphala Kashaya*, and in offensive, mucopurulent discharge - *Chandana* or *Lodhradi Kashaya.*

3) *Yoni Dhoopan*

Yoni Dhoopan means vaginal fumigation.[46] It is done by strewing *Dravyas* in *Dhoopana Yantra* on *Nirdhuma Agni* after *Yoni Dhavana*. *Dhoopan* causes medicinal smoke which might act minutely on the mucosal lining of the introitus causing *Srotoshodhana. Dhoom* causes *Swedana* of *Yoni* which opens up minute or tiny pores thereby cleansing the *yoni*. *Dhoopana Karma* reduces the sticky discharge from the vagina and keeps the vulva and introitus dry. *Dhoopana* is also considered as *Rakshoghna* (bacterial and antiseptic). Commonly used drugs in *Dhoopana karma* are *Guggulu, Dhatura Patra, Kushta, Agaru, Haridra, Shatapushpa.* Care has to be taken about the temperature and the distance of the patient from the *Dhoopana Patra* (container). Allergies to smoke if any is also to be considered.

4) *Yoni Varti*

Varti means vaginal suppository. A medicated suppository which can be kept in the vagina depending on the intensity of vaginitis.[47] A vaginal suppository is a drug delivery system where it dissolves and gets absorbed in deeper tissues.[48] It is made using *Shodhana Dravyas* like *Triphala,Ashoka Twak, Udumbar Lodhra, Jiraka, Kanjika, Kshara, Saindhava, Lavana*. These drugs are astringent, hygroscopic, and possess wound healing properties. The size or thickness of this *Varti s*hould be like that of the thumb or forefinger. Just like selection of drugs in *Prakshalana* (douche) various types of *Varti's* can be prepared and used. If the cervical erosion is along with the involvement of vaginitis and its congestion then this *Varti* can be used.

5) *Yoni Purana*

Yoni Purana means filling the *Yoni* or retaining *Dravyas* in the vaginal canal.[49] The *Dravyas* may be in the form of oil, *Churna, Kalka, Veshvara, Pinda*, bolus etc. made into compact mass and inserted into the *Yoni*. The active principles are absorbed through vaginal or cervical epithelium thereby producing the necessary action. Oils and poured in vagina and sealed with tampon. Symptomatic relief in dyspareunia and dryness of vagina due to oestrogen deficiency is obtained by this procedure.

6) *Yoni Lepana*

Fresh paste or dry powder mixed with various oils are used as an ointment or *lepa* in *yoni*, and is termed *Yoni*

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Lepana. *Acharya Sushruta* mentions that just as water extinguishes fire instantly likewise *Lepana* cures *Vrana Shula*, cleanses wound or infection, reduces swelling or inflammation and quickens suppuration.[50] The drug gets absorbed through glands and capillaries and vessels. *Pralepa*-thin paste is applied.[51,52]

7) *Kshara Karma*

Ksharana means destruction of vitiated unhealthy tissues hence it is termed as *Kshara* the diseased tissue is scrapped out or removed by this *Kshara.*[53] It is both *Soumya* (action) and *Tikshna (Prabhava)* and can be used even on *Marma Sthana*. *Kshara* is made from several drugs depending on its potency. The potency here refers to the Ph value hence it alleviates *Tridoshas*. It is white in colour and though *Soumya* in nature it performs *Dahana, Pachana, Darana* due to its *Agneya Guna*. *Kshara* is *Katurasa*, *Ushna Virya, Tikshna Guna, Vrana Sthotha Pachaka*, cures *Dushta Vrana*, suppurated *Shuddha Vrana*, dries up an oozing *Vrana*, arrests *Rakta Srava*, *Lekhana* of firm muscular growth.[54] *Kshara* when used externally works on the concept of coagulative necrosis causes coagulation of proteins, disintegration of blackish brown discharge, sloughing and re-epithelization. The selection of *Kshara* depends on the site where it has to be used hence on the cervical tissue the *Kshara* of lower Ph is required. *Kshara* can be prepared in 5-10 days depending on the climacteric changes. *Kshara* must be applied for 60-90 seconds on the cervix and later washed off carefully with diluted lemon juice or *Kanji*. After which a medicated tampon is kept which helps in the healing process. *Kshara Karma* can be done once in three days.

8) *Agnikarma*

The literal meaning of *Dahana* is to burn or cauterize.[55] According to *Ayurveda, Agnikarma* is *Anushastra Karma*. The diseased tissue is treated by inflicting burns on the tissue surface directly by using different materials called *Dahana Upkarana*. Various *Dravyas* used in *Agnikarma* are *Jamboshtha*, *Needle*, *Ghee*, *Guda, Madhu Taila, Shalaka* prepared by gold, copper, iron, silver can be used.[56] Nowadays electric thermal cautery machine has taken the place of *Shalaka*. The heat transferred acts by removing the obstruction in the *Srotas* and increases the blood circulation to the affected site thereby increasing the cellular activity and metabolism. However, it is postulated by some authors that afferent nerves stimulated by heat has an analgesic effect.

Ayurvedic medications

The success of each procedure depends on patient selection according to their *Prakruti,* and the extent of the symptoms. Chronic or recurrent cervical ectropion needs multiple procedures that can usually include combination of local and vaginal applications along with oral medications over a period to improve clinical outcomes. The various combinations of procedures and medications have a cumulative effect on treating cervical ectropion, especially if it is associated with severe symptoms. The medications mentioned in the above procedures contain medicinal herbs and minerals described in the *Ayurvedic* texts.

Table 1 is a summary of the medications used in different procedures and their evidence.

Table 1: Medications used in *Ayurvedic* procedures and their evidence-based effects specific to cervical ectropion

SN	Latin Name/Mineral name	Sanskrit Name	Procedure/s where drug is used	Drug formulation mentioned in Ayurvedic texts	Effects
1.	*Azadirachta indica*	*Neemb*	*Prakshalan Dhoopan*	*Nimbadichurna*	Anti-inflammatory, inhibitor of abnormal cell growth[12]
2.	*Jasminum officinale*	*Jatipushpam*	*Prakshalan*	*Jatyadi Tail*	Anti-inflammatory[13]

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3.	*Trichosanthes dioca*	*Patol*	*Prakshalan, Pichu, Lepa*	*Patoladi Kwatha*	Anti-inflammatory, Antinociceptive, immunomodulatory, wound healing[14]
4.	*Pongamia pinnata*	*Karanj*	*Dhoopana*	*Karanjadi Tail*	Anti-inflammatory, anti-ulcerative, antisecretary[15]
5.	*Glycerrhiza glabra*	*Yashtimadhu*	*Lepa, Prakshalan, Dhoopan*	*Mulethi Churna*	Antibacterial, anti-ulcerative, antiviral, anticarcinogenic, antimutagenic, estrogenic, neuroprotective, immunomodulatory[16,17]
6.	*Saussurea lappa*	*Kushta*	*Lepa, Prakshalan, Pichu*	*Chyawanprash*	Anti-inflammatory, anticarcinogenic, anti-ulcerative, antimicrobial, antiviral[18]
7.	*Curcuma longa*	*Haridra*	*Lepa, Prakshalan Pichu,*	*Haridra Khand*	Anti-inflammatory, antimicrobial[19-21]
8.	*Berberis aristata*	*Daruharidra*	*Lepa, Prakshalan Pichu,*	*Chyawanprash*	Antimicrobial, antioxidant, anticarcinogenic[22-24]
9.	*Picrorhiza kurroa*	*Kutki*	*Pichu, Prakshalan, Dhoopan*	*Arogyavardhini Vati*	Anticarcinogenic, antioxidant, antimicrobial[25-27]
10.	*Rubia cordifolia*	*Manjistha*	*Prakshalan, Lepan, Pichu*	*Mahamanjishtadi Kwatha*	Analgesic, anti-inflammatory, antimicrobial, antithrombitic[27,28]
11.	*Symplocos racemosa*	*Lodhra*	Post *Angnikarma*	*Lodhrasav*	Anti-inflammatory, antimicrobial, antiproliferative[29-31]
12.	*Terminalia chebula*	*Haritaki*	*Lepan, Prakshalan, Pichu,* Post *Ksharakarma*	*Triphala Churna,Shiva Gutika*	Antioxidant, antimicrobial, antiviral, anti-inflammatory, cytoprotective, immunomodulatory, inhibits bacterial triggers,[32-34]
13.	*Nymphoea stellata*	*Neel Kamal*	*Pichu,Lepa*	*Arvindasav*	Antimicrobial, antioxidant,[35,36]
14.	*Copper sulphate*	*Tutha*	*Agnikarma, Pichu*	*Jatyadi Tail*	Wound-healing (local effect), chelating effect (locally)[37,38]
15.	*Hemedesmus indicus*	*Sariva*	*Prakshalan, Lepa,* Post *Agnikarma*	*Sarivadyasav*	Antimicrobial, anti-inflammatory, antioxidant, anti-boifilm[39,40]

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16.	*Prunus cerasoides*	*Padhmakhya*	*Lepa, Pichu*	*Kalyanak Ghrita*	Estrogenic, antibacterial, antioxidant[41,42]

Discussion

Table 1 highlights the different groups of medications and the current published literature on their effects. Although the exact mode of action of various formulations mentioned in *Ayurvedic* texts needs to be analysed in a separate study, the mode of action of different herbs and minerals mentioned in Table 1 can give a brief idea of their effect on cervical ectropion. As shown in the Table 1, Most of the drugs are anti-inflammatory, antimicrobial, and antioxidant, while *Hemedesmus indicus* has anti-biofilm effect. These properties together can reduce inflammation and infection associated with cervicitis, an important symptom of cervical ectropion. *Rubia cordifolia* has shown antithrombin effect and is mainly used to reduce symptoms such as post-coital bleeding in patients suffering from cervical ectropion. Several of the herbs described in Table 1 that have shown anticarcinogenic effect or inhibit abnormal cell growth, making them potentially useful to prevent further progression of disease and future dysplasia.

Vaginal wall being a mucosal layer has fast absorption. The vaginal wall is very well suited for the absorption of drugs since it contains a vast network of blood vessels. Moreover, the anatomically backward position of the vagina may help itself retain the drug thereby holding it in situ for a longer duration. The drugs used for *Sthanika Chikitsa* acts by exerting its antiseptic, antimicrobial, antifungal, anti-inflammatory and analgesic actions. Hence proper *Sthanika Chikitsa* with proper drugs gives potentially good results in gynecological disorders.

Conclusion

The review highlights that there are several different treatment options available in *Ayurveda* and further clinical trials should be conducted to better understand their effects on different types of patients. Alternative therapies can address chronic ectropion and reduce associated symptoms. *Ayurvedic* is focused on a holistic approach to treatment by alleviating the root causes, rather than the disease. *Praktiti* and *Dosha* assessment is an ancient holistic approach that should be an important step towards personalised and tailored medicine that has potential to treat the root causes of chronic conditions.

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