

## AN OVERVIEW OF CERVICAL CANCER

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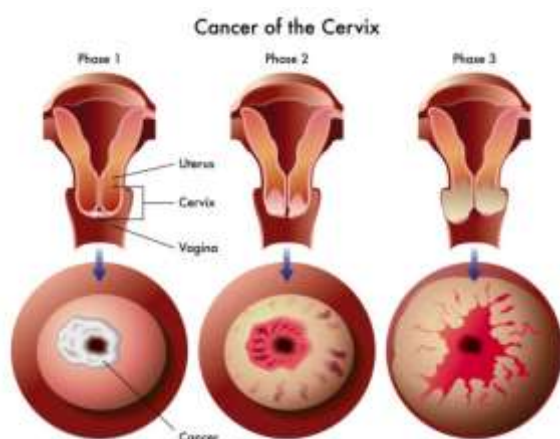
## ABSTRACT

Cervical cancer is defined as the abnormal and uncontrolled proliferation of cells on the cervix (the narrow entry into the uterus from the vagina). The majority of cervical cancer cases are caused by HPV. Watery or bloody vaginal discharge, pelvic pain, and fatigue are all symptoms of cervical cancer. It is diagnosed by Pap smears, HPV tests, and cone biopsy, among other methods. Common treatments for cervical cancer include surgery, radiotherapy, and chemotherapy. If cervical cancer is not treated, there is a risk of developing acute and chronic complications. The primary way of preventing cervical cancer is through HPV vaccination.

**KEYWORDS:** HPV Vaccination, Human Papilloma Virus, Cervix, Chemotherapy.

## Cervical cancer

Cervical cancer is one of the most common cancers in women around the world. The Abnormal, uncontrolled proliferation of cells on the cervix (narrow opening into the uterus from the vagina) is known as cervical cancer.<sup>[1]</sup> The cervix is divided into two parts: the **ectocervix** (exocervix), which is visible during a gynaecological exam and it is made up of squamous cells, while the **endocervix** connects the vagina to the uterus and it is lined with columnar glandular cells that produce mucus.<sup>[2]</sup>



## Types of cervical cancer

There are two types of cervical cancer.

**Squamous cell carcinoma**, The majority of cervical malignancies, up to 90%, are squamous cell carcinomas.

These malignancies arise from cells found in the ectocervix.

**Adenocarcinoma**, Cervical adenocarcinomas occur in the glandular cells of the endocervix. (Clear cell adenocarcinoma, also known as clear cell carcinoma or mesonephroma, is an uncommon kind of cervical cancer) Cervical cancer can have characteristics of both squamous cell carcinoma and adenocarcinoma. Mixed carcinoma, also known as adenosquamous cancer. Cancer arises in other cervix cells only in rare cases.<sup>[4]</sup>

## Etiology

Human papillomavirus (HPV) is a common sexually transmitted infection that can affect the skin, genitals, and throat.<sup>[5]</sup>

The majority of women infected with HPV do not get cervical cancer. Most women's HPV infections do not stay long; 90% of HPV infections clear on their own within two years. A tiny minority of women do not eliminate the HPV virus and are classified as having "persistent infection."

There are more than 100 varieties of HPV, the majority of which are low-risk and do not cause cervical cancer. High-risk HPV varieties can cause abnormal cervical cells or cancer. More than 70% of cervical cancer cases are caused by two serotypes of the virus: HPV-16 and HPV-18, sometimes known as high-risk HPV variants.<sup>[6]</sup>

### Epidemiology

India accounts for about one-third of all cervical cancer deaths worldwide, with 132,000 newly diagnosed cases and 74,000 fatalities each year. It is estimated that 6.6% of women in the general population have cervical HPV infection.<sup>[7]</sup>

### Symptoms of Cervical cancer

Cervical cancer may not cause any symptoms at first. As it grows Cervical cancer may produce signs and symptoms like:<sup>[8]</sup>

#### Early stage

Watery or bloody vaginal discharge that can be heavy and have an unpleasant odour.

Vaginal bleeding occurs after intercourse, between menstrual periods, or during menopause.

Menstrual periods may be heavier and longer than usual.

**Advanced stage** (if cancer has spread to nearby tissues or organs)

- Difficult or painful urination, sometimes with blood in urine.
- Diarrhea, or pain or bleeding from your rectum when pooping.
- Fatigue, loss of weight and appetite.
- A general feeling of illness.
- Dull backache or swelling in your legs.
- Pelvic/abdominal pain.<sup>[9]</sup>



### Risk factors

A risk factor is anything that increases a person's chance of developing cancer.

- Human papillomavirus (HPV) infection.
- Immune system deficiency.
- Herpes.
- Smoking.
- Age.
- Socioeconomic factors.
- Oral contraceptives.
- Exposure to diethylstilbestrol (DES).<sup>[11]</sup>

### Diagnosis

- ❖ Pap Test (Pap Smear)
- ❖ HPV Test
- ❖ Colposcopy
- ❖ Biopsy (Cervical)
- ❖ Endocervical Curettage (ECC)
- ❖ Cone Biopsy (Conization)

- ❖ Loop Electrosurgical Excision Procedure (LEEP)

#### 1) Pap Test

The Pap Test (Pap Smear) is a quick, non-invasive, and commonly available test used to detect cervical abnormalities and early symptoms of malignancy. For women aged 21 to 65, it is advised that they should be screened every three years.

#### 2) HPV Test

HPV Test detects high-risk HPV strains associated with cervical cancer. Regular screening is essential for early detection.

#### 3) Colposcopy

Visually examine the cervix, vagina, and vulva for abnormalities.

Detects precancerous cells, genital warts, and other cervical disorders and provides specific biopsies for further assessment.

#### 4) Biopsy

Extracts tissue samples from the cervix for microscopic examination.

Detects cervical cancer, precancerous tumours, and other abnormalities.

#### 5) Endocervical Curettage

Obtains cells from the endocervical canal for evaluation. Helps identify problems in the deeper layers of the cervix. Improves cervical cancer test accuracy for a full examination.

#### 6) Cone Biopsy

Extracts a cone-shaped tissue sample from the cervix for analysis.

Helps in the detection and treatment of precancerous or cancerous diseases, including cervical cancer.

Provides detailed insights for management.

#### 7) Loop Electrosurgical Excision Procedure(LEEP)

The procedure involves removing abnormal cervical tissue using a fine wire loop. This allows for the detection and treatment of precancerous or cancerous tumours.

Provides a precise cervical cancer test and effective intervention for improved results.



#### Treatment

The treatment of cervical cancer is determined by various criteria, including the type and stage of the

cancer, potential side effects, and the patient's preferences and overall health.

Common therapies for cervical cancer include

- Surgery
- Radiotherapy
- Chemotherapy
- Targeted Therapy
- Immunotherapy<sup>[13]</sup>

#### Surgery

Surgery is typically recommended if the tumour is limited to the cervix. The type of surgery will depend on how far within the cervix the cancer has spread.

##### 1. Cone Biopsy

Removes a cone-shaped section of tissue surrounding the cancer, as well as a healthy tissue margin. A cone biopsy is used to treat very early stage cervical malignancies.

##### 2. Trachelectomy

Removes a portion or all of the cervix as well as the upper section of the vagina. The uterus, fallopian tubes, and ovaries are kept in place. This is an uncommon surgery, but it may be done in early-stage cancer.

##### 3. Total hysterectomy

Removes the uterus and cervix. This surgery can be used to treat early cervical cancer. The fallopian tubes are also frequently removed. Premenopausal women may be able to preserve their ovaries.

##### 4. Radical hysterectomy

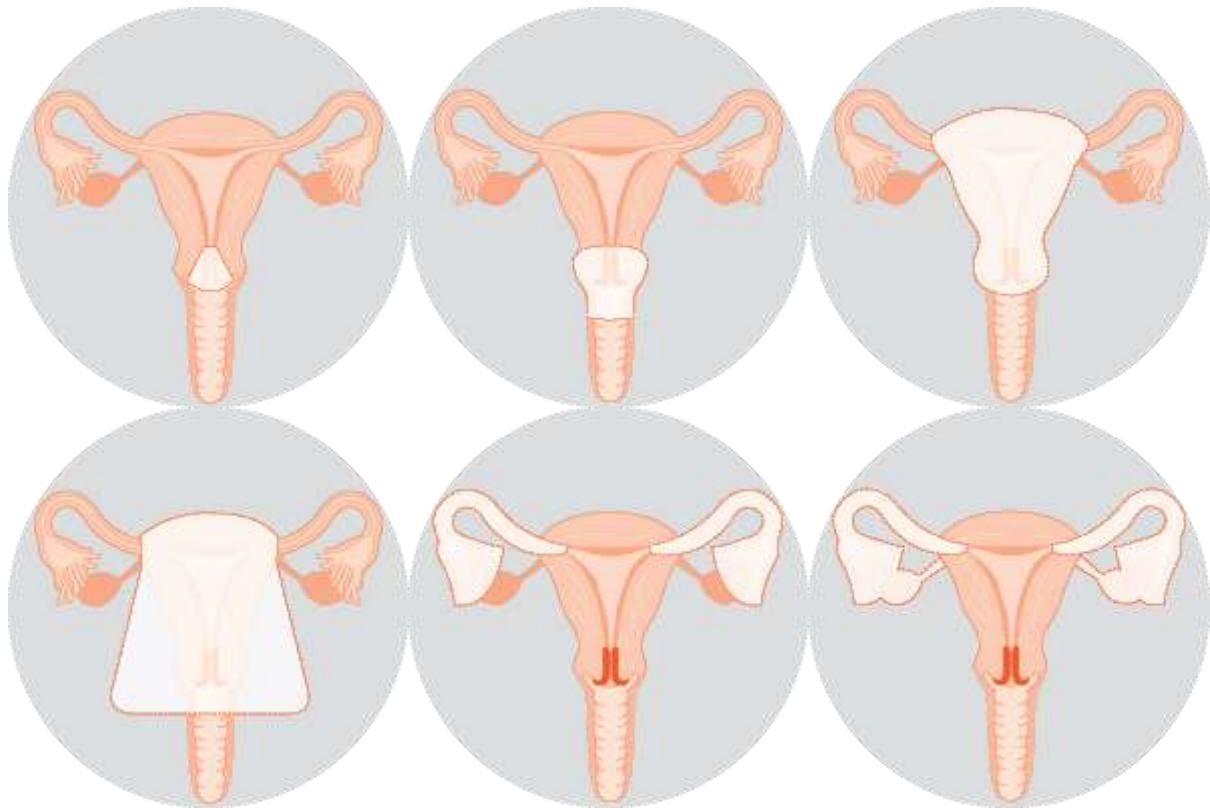
A radical hysterectomy involves removing the uterus, cervix, and surrounding soft tissue from the top of the vagina. This is the typical operation for most surgically treated cervical malignancies. The fallopian tubes are also frequently removed.

##### 5. Bilateral salpingectomy

Both fallopian tubes are removed. A bilateral salpingectomy may be advised when patient having a complete or radical hysterectomy.

##### 6. Bilateral salpingo-oophorectomy

Removes both the fallopian tubes and ovaries. This may be explored for patients who are having a hysterectomy when there is a possibility that the cancer has spread to the ovaries, as may occur with adenocarcinoma. This surgery may be recommended prior to or following menopause.



### Side effects of Surgery

Bladder changes, Constipation, Lymphoedema, Menopause, Internal scar tissue, and Impact on sexuality may occur.<sup>[14]</sup>

### Radiotherapy

High energy x-rays are used in radiotherapy to kill cervical cancer cells. Chemoradiotherapy, or external radiotherapy combined with chemotherapy, is the standard treatment for cervical cancer, whether it is locally progressed or in its early stages. This is usually followed by Internal radiotherapy, or brachytherapy.

Tiredness, weakness, Bladder inflammation, Bleeding from the vagina are the short term side effects and the longterm side effects include Skin changes, Swelling, Infertility, Haemorrhoids, infertility may occur due to radiation therapy.<sup>[15]</sup>

### Chemotherapy

Chemotherapy uses medications administered intravenously (by vein) or orally to destroy cancer cells or prevent them from multiplying. IV chemotherapy is often used in combination with radiotherapy to reduce the chances of the disease returning elsewhere in the body. When chemotherapy is combined with radiation for cervical cancer, it is administered at a reduced dose. Patients are frequently given chemotherapy over a set period of time, with intervals in between to alleviate any potential side effects. These side effects may include low blood cell counts, tiredness, diarrhoea, mouth sores, and a weakened immune system.<sup>[16]</sup>

According to the American Cancer Society, the chemotherapy medicines most typically used for treating advanced or recurring cervical cancer are

- Cisplatin (Platinol)
- Carboplatin (Paraplatin)
- Paclitaxel (Taxol)
- Topotecan (Hycamtin)<sup>[17]</sup>

### Targeted Therapy

Targeted therapy is a drug treatment that targets certain features of cancer cells in order to prevent the disease from growing and spreading.

It is used to treat cervical cancer that has spread or recurred and cannot be cured with surgery or radiation therapy.

Bevacizumab is a drug used in the treatment that can help treat advanced cervical cancer. It is administered alongside chemotherapy every three weeks by a drip into a vein (infusion).

High blood pressure, fatigue, and loss of appetite are common side effects of taking bevacizumab. Less common adverse effects include bleeding, blood clots, and difficulties with wound healing.

### Immunotherapy

Immunotherapy is a medication treatment that stimulates the body's immune system to fight cancer.

Pembrolizumab may be recommended to some patients with cervical cancer who have not responded to

treatment, have spread, or have returned. It is administered with chemotherapeutic medications and occasionally bevacizumab.

Itching, joint pain, Fatigue and diarrhoea are typical adverse effects. Pembrolizumab may infrequently have an adverse effect on the thyroid gland, heart, lungs, or colon.<sup>[18]</sup>

### Complications

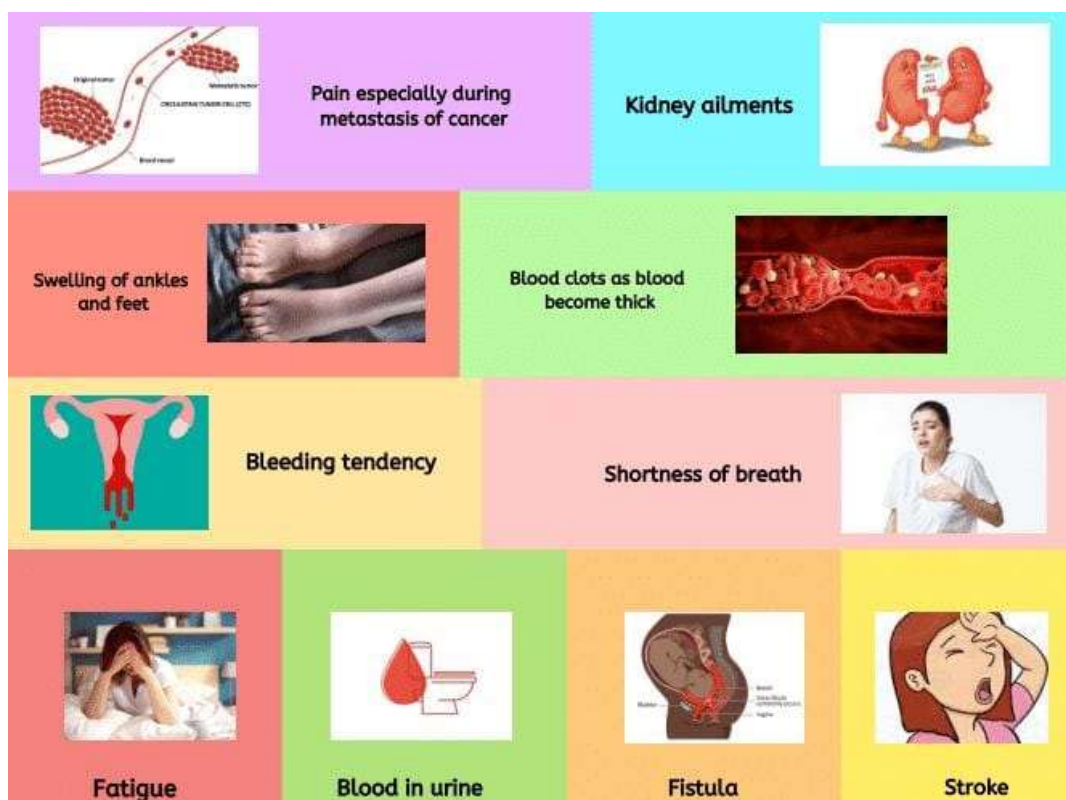
#### Acute complications

- Blood loss

- Fistula formation (uterovaginal/vesicovaginal fistulas)
- Pulmonary embolus
- Small bowel obstruction
- Febrile morbidity (due to pelvic infection, urinary tract infection, wound infection, pelvic abscess, phlebitis)

#### Chronic complications

- ❖ Bladder dysfunction
- ❖ Lymphocyst formation
- ❖ Lmphedema
- ❖ Premature menopause<sup>[19]</sup>



### Prevention and Vaccination

The goal of any comprehensive cervical cancer prevention and control programme is to reduce the cervical cancer burden. This can be accomplished by minimising HPV infections, diagnosing and treating cervical, pre-cancer lesions, and providing timely treatment and palliative care for invasive cancer.

Primary prevention of cervical cancer can be achieved by behavioural modification strategies and the use of biological mechanisms, such as HPV vaccine. The interventions include immunising females aged 9-14 years before beginning sexual intercourse, offering health education on healthy sexuality to both boys and girls, and encouraging condom usage. HPV vaccines are not intended to treat women who have previously or currently had HPV infection.

There are three different vaccines, each of which contains and targets a different number of HPV strains. However, not everything is available everywhere.

- Quadrivalent HPV vaccine (Gardasil®) targets HPV types 6, 11, 16 and 18.
- 9-valent vaccine (Gardasil 9®) targets the same HPV types as the quadrivalent vaccine as well as types 31, 33, 45, 52 and 58.
- Bivalent vaccine (Cervarix ®) targets HPV types 16 and 18.<sup>[21]</sup>

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