

# Uterine Cancer: Causes, Symptoms, Diagnosis, and Treatment

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# Introduction

Uterine cancer is one of the most common gynecologic cancers affecting women worldwide. It originates in the uterus, the pear-shaped organ in a woman's pelvis where fetal development occurs during pregnancy. The most prevalent type of uterine cancer is endometrial cancer, which arises from the lining of the uterus (endometrium). Another less common but more aggressive type is uterine sarcoma, which originates in the muscles or connective tissues of the uterus [1]. Uterine cancer primarily affects postmenopausal women, though it can occur at any age. With advancements in early detection and treatment, survival rates have improved significantly [2]. However, rising cases and risk factors, such as obesity and hormonal imbalances, make it essential to understand the disease's causes, symptoms, diagnosis, and treatment options. Uterine cancer is one of the most prevalent gynecologic malignancies affecting women worldwide [3]. Accounting for a significant proportion of cancer-related morbidity and mortality, it remains a pressing concern for both medical professionals and patients alike [4]. Uterine cancer originates in the uterus, the hollow, pear-shaped organ in a woman's pelvis where fetal development occurs. The disease is commonly categorized into two primary types: endometrial cancer, which arises from the inner lining of the uterus (endometrium), and uterine sarcoma, which is far less common and develops in the uterine muscle or connective tissues [5].

The precise etiology of uterine cancer remains a subject of ongoing research, but multiple risk factors have been identified, including hormonal imbalances, obesity, genetic predisposition, and exposure to estrogen without progesterone opposition [6]. Recognizing the early signs and symptoms, such as abnormal vaginal bleeding, pelvic pain, and unexplained weight loss, is crucial for timely intervention and improved prognosis. As advancements in diagnostic imaging, histopathology, and molecular profiling continue to emerge, the ability to detect and treat uterine cancer has significantly evolved over the past decade [7].

This paper aims to provide a comprehensive overview of uterine cancer, detailing its causes, clinical manifestations, diagnostic methodologies, and treatment options [8]. By increasing awareness and understanding of this malignancy, both healthcare professionals and the general population can play a pivotal role in early detection and effective management, ultimately improving patient outcomes and quality of life.

## Types of uterine cancer

Uterine cancer is broadly classified into two main types:

Endometrial cancer accounts for about 90% of all uterine cancers. It begins in the endometrium, the inner lining of the uterus, and is often detected in its early stages due to abnormal vaginal bleeding. It is further classified into:

(Estrogen-dependent), the most common and slow-growing type, often associated with obesity and excessive estrogen exposure.

(Non-estrogen dependent), a more aggressive and rare form that

grows and spreads quickly.

This is a rarer and more aggressive form of uterine cancer that develops in the muscles (myometrium) or connective tissues of the uterus. Uterine sarcomas include:

Leiomyosarcoma – Arises from the smooth muscle layer of the uterus.

Endometrial Stromal Sarcoma – Develops in the connective tissue of the endometrium.

Undifferentiated Uterine Sarcoma – A highly aggressive and rare form of the disease.

#### **Causes and risk factors**

The exact cause of uterine cancer is not fully understood, but several risk factors have been identified:

An imbalance between estrogen and progesterone increases the risk of uterine cancer. Excess estrogen can cause abnormal endometrial growth, leading to cancer.

Fat cells produce estrogen, leading to an increased risk of endometrial hyperplasia and cancer. Women with obesity are two to three times more likely to develop uterine cancer.

#### Age and menopause

The risk of uterine cancer increases with age, particularly after menopause. The majority of cases occur in women over 50 years old.

Women with PCOS experience prolonged estrogen exposure without progesterone, increasing the risk of endometrial cancer.

Women with a family history of uterine or colon cancer have a higher risk. Lynch Syndrome, an inherited condition, is associated with an increased risk of uterine cancer.

Tamoxifen, a drug used for breast cancer treatment, has been linked to a slightly higher risk of uterine cancer due to its estrogen-like effects on the uterus.

Women with diabetes and hypertension are more likely to develop uterine cancer, likely due to associated metabolic imbalances.

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Women who have never been pregnant (nulliparity) have a higher risk of uterine cancer. Pregnancy increases progesterone levels, which helps protect the uterus from abnormal cell growth.

## Symptoms of uterine cancer

The symptoms of uterine cancer can vary, but the most common signs include:

• Abnormal vaginal bleeding (postmenopausal bleeding, irregular periods, or heavy bleeding)

- Pelvic pain or discomfort
- Pain during intercourse
- Unusual vaginal discharge (watery, bloody, or foul-smelling)

Early detection of these symptoms increases the likelihood of successful treatment.

#### Diagnosis of uterine cancer

A combination of clinical examination, imaging tests, and biopsy procedures is used to diagnose uterine cancer.

A gynecologist examines the uterus, cervix, and ovaries for abnormalities.

A transvaginal ultrasound helps detect abnormal thickening of the endometrial lining and tumors.

A small sample of the endometrial tissue is taken for laboratory analysis to confirm cancerous cells.

A thin, flexible tube with a camera is inserted into the uterus to examine abnormal growths.

These imaging tests help determine the stage and spread of cancer.

In some cases, a CA-125 blood test is used to detect tumor markers in advanced stages.

Uterine cancer is classified into four stages:

Cancer is confined to the uterus.

Cancer has spread to the cervix but not beyond the uterus.

Cancer extends outside the uterus to the pelvic tissues or lymph nodes.

Cancer has spread to distant organs such as the bladder, rectum, or lungs.

#### **Treatment options**

Treatment for uterine cancer depends on the stage, type, and overall health of the patient.

The primary treatment for uterine cancer is hysterectomy (removal of the uterus). In some cases, additional removal of fallopian tubes and ovaries (salpingo-oophorectomy) is performed.

Radiation therapy is used for:

Women who cannot undergo surgery.

Destroying remaining cancer cells after surgery.

Reducing tumor size before surgery.

Hormonal treatments, such as progesterone therapy, are used for early-stage, hormone-sensitive endometrial cancers.

Chemotherapy is used for advanced or recurrent uterine cancer. Common drugs include:

Carboplatin and Paclitaxel (first-line therapy)

Doxorubicin (for aggressive cases)

Newer treatments, such as immune checkpoint inhibitors (Pembrolizumab, Dostarlimab), are being used for certain genetic mutations in uterine cancer.

Targeted drugs such as Lenvatinib and Bevacizumab are used for cases that do not respond to chemotherapy.

## Prevention and lifestyle modifications

Obesity increases estrogen levels, a major risk factor.

Controlling metabolic disorders reduces risk.

Physical activity helps maintain hormonal balance.

A fiber-rich, low-fat diet with plenty of fruits and vegetables supports overall health.

Long-term estrogen therapy without progesterone should be avoided.

Regular screenings and pelvic exams aid early detection.

## Conclusion

Uterine cancer is a significant health concern, but early detection and treatment greatly improve survival rates. Women should be aware of risk factors and symptoms, undergo regular gynecological checkups, and adopt a healthy lifestyle to lower their risk. Advances in surgical techniques, targeted therapies, and immunotherapy offer promising outcomes for patients. Through continued awareness and research, we can enhance early detection and improve treatment options for uterine cancer. Uterine cancer remains a formidable challenge in the field of gynecologic oncology, with its incidence steadily rising due to factors such as increasing life expectancy, obesity rates, and changes in reproductive health patterns. While significant strides have been made in understanding the disease, early diagnosis remains the cornerstone of successful treatment. Symptoms such as abnormal vaginal bleeding should never be ignored, as early intervention can dramatically enhance survival rates and quality of life. Through continued research, advancements in personalized medicine, and the implementation of effective screening and awareness programs, the outlook for uterine cancer patients continues to improve. Treatment modalities such as surgery, radiation therapy, chemotherapy, and targeted therapies have revolutionized patient care, offering more precise and less invasive options. Moreover, holistic approaches encompassing lifestyle modifications, hormonal management, and psychological support have become integral to comprehensive cancer care.

Moving forward, collaboration between researchers, clinicians, and public health organizations will be essential in mitigating the impact of uterine cancer on women's health. By fostering early detection strategies, improving treatment accessibility, and enhancing patient education, we can collectively work toward reducing the burden of uterine cancer and ensuring a healthier future for women globally.

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