Thanks to the early detection program, the incidence of cervical cancer is declining. Every woman from the age of 20 is admitted once a year and includes various examinations. If a malignant disease is suspected, further diagnostic steps should be taken and a treatment plan adapted to the patient should be developed. The following article will help you to diagnose cervical cancer reliably and to initiate the right steps in the therapy.

**Diagnosis of Cervical Cancer**

**Clinical evaluation of cervical cancer**

Because pre-malignant and early stages of cervical cancer are usually asymptomatic, they usually represent a random finding. In 90% of the cases, however, advanced cancers show symptoms, such as contact bleeding, lymphedema of the legs, ureteral stenosis, ileus symptoms, or back pain.
**Gynecologic examination in cervical carcinoma**

The recommended age at first screening suggested by the World Health Organization (WHO) is 30 years. However, the age at first screening varies between countries. It is 20 years in Germany, and 21 years in the USA. Screening includes **direct visualization** of the cervix by adjusting the speculum and using acetic acid or Lugol’s iodine to highlight precancerous lesions, assess **epithelial atypia** on the **portio vaginalis cervicis**, and **cytologic evaluation of the cervical smear**.

In this case, smears are obtained from the **endocervix** and the **ectocervix** for microscopic evaluation via **Papanicolaou** staining (‘Pap smear’).

In addition, a **colposcopy** can be used to view the portio under a 6- to 40-fold magnification. For an extended investigation, the portio is dabbed with **acetic acid** or **Lugol’s iodine**. In the case of the latter, the normal epithelium turns brown, while the atypical, altered epithelium remains bright.

![Illustration demonstrating a colposcopy. By BruceBlaus, Licence: CC BY-SA 4.0](Image)

The various diagnostic steps in the gynecological examination are found here: [Diagnostics of female genitalia](#).

Abnormal findings indicate **atypia**: 

<table>
<thead>
<tr>
<th>Diagnostics</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td><strong>Cytological smear</strong></td>
<td>Changes in the nucleus (e.g., polymorphic, multiple nuclei), changes in the plasma, a shift in the nuclear-to-plasma ratio in favor of the nucleus</td>
</tr>
<tr>
<td><strong>Colposcopy</strong></td>
<td>Vesicular epithelium, mosaic, puncture, bleeding nodular surface, ulcer, exophytic or endophytic tumor</td>
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</table>
Further Studies in Cervical Cancer

HPV diagnostics

HPV infection can be detected using a PCR. Because papillomaviruses are found in 98% of invasive carcinomas, a negative test result almost excludes oncologic risk. However, a positive finding only indicates potential disease risk. Thus, HPV diagnostics are indicated for supplementary examination in suspicious findings, but not as a screening method.

Histology

Any significant findings associated with suspicious cases must be confirmed histologically via selective biopsy under colposcopy or cervical curettage.

Conization is a more invasive method entailing the removal of pathological tissue containing both the endocervix and the ectocervix, using a scalpel (knife conization) or electric loop (loop conization, LEEP). Because of the typical tumor localization (sexually mature women: portio surface; older women: cervical canal), the cones are flat in premenopausal women and high and narrow in postmenopausal cases. However, this method is associated with the risk of bleeding and late complications, such as cervical stenosis and insufficiency.

Pre-therapeutic staging

In addition to direct visualization of the cervix via a speculum and palpation, the evaluation of tumor spread is also mandatory in histologically-confirmed cancer. Therefore, transvaginal and renal ultrasound is performed.
Vaginal Ultrasound

Image: Transvaginal ultrasonography procedure. By BruceBlaus, Licence: CC BY-SA 4.0

Image: Stage 1A. By Cancer Research UK, License: CC BY-SA 4.0

Image: Stage 1B. By Cancer Research UK, License: CC BY-SA 4.0
Cervical cancer is staged by the International Federation of Gynecology and Obstetrics
(FIGO) staging system, which is based on a clinical examination, rather than surgical findings. The diagnosis is based on staging using the following tests: palpation (feeling with the fingers); inspection; colposcopy; endocervical curettage; hysteroscopy; cystoscopy; proctoscopy; intravenous urography; X-ray examination of the lungs and skeleton; and cervical conization.

**Indications for MRI**

Patients with histologically confirmed cervical cancer FIGO stage from 1B2 up to and including III should receive a baseline MRI for the assessment of locoregional tumor spread.

If necessary, rectoscopy and cystoscopy can be performed. In FIGO IB2, a CT of the thorax and abdomen can be used to assess extrapelvic tumor spread.

**Therapy of Cervical Cancer**

Therapy of cervical cancer is tailored to individual cases and entails complex individual treatment planning. In addition to the stage classification, factors such as family planning, patient age, and risk factors are considered.

*Note:* The therapy of cervical cancer must be adapted to each patient individually!

**Treatment of cervical intraepithelial neoplasia (CIN)**

The spontaneous recovery rate of CIN I and II is high, and therefore, follow-up cytology is needed after 3 months.

Changes persisting beyond 12 months or the presence of CIN III warrant operative therapy.

Conization is the most frequently performed treatment. The cut margins are assessed histologically, and in the absence of atypia, the probability of CIN recurrence is 1-2% however, cut margins with atypia increase the risk of CIN by 15-20%.

Laser surgery is another option, in which the pathologic tissue is destroyed by a laser beam at a depth of 5-7 mm. This method is only slightly invasive, but a histologic assessment is not possible.

A hysterectomy is considered in cases of postmenopausal women, and women who have undesired fertility or are diagnosed with other diseases of the uterus.

**Treatment of early stages of cervical cancer**

Cancer with early stromal invasion can be cured by hysterectomy (see below). In the case of a microcarcinoma (FIGO 1A2), the removal of the pelvic lymph nodes is another option; however, women contemplating pregnancy and childbirth may undergo conization alone.

**Surgical Treatment of Invasive Cervical**
Operative therapy is the therapy of choice in FIGO stages IB-IIB. Radical hysterectomy (abdominal radical surgery) is the standard.

Image: Diagram showing the area removed with a posterior surgery. By Cancer Research UK, Licence: CC BY-SA 4.0