Introduction
The vagina is a fibromuscular tubular tract, a sex organ, and has two main functions - sexual intercourse and childbirth. In humans, this passage leads from the opening of the vulva to the uterus (womb), but the vaginal tract ends at the cervix. Unlike men, who have only one genital orifice, women have two, the urethra and the vagina.

The vaginal opening is much larger than the urethral opening, and both openings are protected by the labia.

[Kombathula, S.H., Rapole, P.S., Prem, S.S. & Badhe, B. 2019. “Small cell carcinoma (SmCC) of the vagina is a rare and aggressive tumour. It comprises only 1%-2% of all gynaecological malignancies 85% of the patients with SmCC vagina die within a year of diagnosis.”]

[Staples, J.N. & Duska, L.R. 2019. “The Pap smear is the only proven screening intervention in the field of gynecologic oncology. Women should receive treatment for precancerous conditions of the cervix, vulva, vagina, and endometrial lining. Women with inherited conditions should consider having a risk-reducing surgery once they have finished childbearing. The human papilloma virus vaccination should be offered to all girls and boys aged 11 to 12 years, and can also be given as early as age 9 and through 26 years of age.”]
Incidence of Cancer of the Vagina in South Africa

According to the outdated National Cancer Registry (2014), known for under reporting, the following number of cancer of the vagina cases was histologically diagnosed in South Africa during 2014. ‘Histologically diagnosed’ refers to cases where a biopsy (small sample of tissue) was submitted to a pathological laboratory where a pathologist confirmed a cancer diagnosis:

<table>
<thead>
<tr>
<th>Group - Females 2014</th>
<th>Actual No of Cases</th>
<th>Estimated Lifetime Risk</th>
<th>Percentage of All Cancers</th>
</tr>
</thead>
<tbody>
<tr>
<td>All females</td>
<td>164</td>
<td>1:1 520</td>
<td>0,43%</td>
</tr>
<tr>
<td>Asian females</td>
<td>5</td>
<td>1:1 876</td>
<td>0,43%</td>
</tr>
<tr>
<td>Black females</td>
<td>127</td>
<td>1:1 481</td>
<td>0,79%</td>
</tr>
<tr>
<td>Coloured females</td>
<td>12</td>
<td>1:1 705</td>
<td>0,30%</td>
</tr>
<tr>
<td>White females</td>
<td>20</td>
<td>1:1 774</td>
<td>0,12%</td>
</tr>
</tbody>
</table>

The frequency of histologically diagnosed cases of cancer of the vagina in South Africa for 2014 was as follows (National Cancer Registry, 2014):

<table>
<thead>
<tr>
<th>Group - Females 2014</th>
<th>0 – 19 Years</th>
<th>20 – 29 Years</th>
<th>30 – 39 Years</th>
<th>40 – 49 Years</th>
<th>50 – 59 Years</th>
<th>60 – 69 Years</th>
<th>70 – 79 Years</th>
<th>80+ Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>All females</td>
<td>1</td>
<td>5</td>
<td>22</td>
<td>35</td>
<td>38</td>
<td>32</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Asian females</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Black females</td>
<td>1</td>
<td>4</td>
<td>21</td>
<td>32</td>
<td>26</td>
<td>20</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Coloured females</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>White females</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

N.B. In the event that the totals in any of the above tables do not tally, this may be the result of uncertainties as to the age, race or sex of the individual. The totals for ‘all males’ and ‘all females’, however, always reflect the correct totals.

According to Bruni, et al., (2019), the burden of cervical cancer for South Africa for 2018 is estimated as:

- Annual number of vaginal cancer cases 108
- Annual number of vaginal cancer deaths 33

Cancer of the Vagina

Secondary cancers in the vagina are more common than primary vaginal cancer, and usually come from the neck of the womb (cervix), the lining of the womb (endometrium) or from nearby organs such as the bladder or bowel.

There are several types of vaginal cancer:

**Squamous cell carcinoma**

About 70 of every 100 cases of vaginal cancer are squamous cell carcinomas. These cancers begin in the squamous cells that make up the epithelial lining of the vagina. These cancers are more common in the upper area of the vagina near the cervix.

**Adenocarcinoma**

Cancer that begins in gland cells is called adenocarcinoma. About 15 of every 100 cases of vaginal cancer are adenocarcinomas. The usual type of vaginal adenocarcinoma typically develops in women older than 50. One certain type, called clear cell adenocarcinoma, occurs more often in young
women who were exposed to diethylstilbestrol (DES) in utero (when they were in their mother’s womb).

**Melanoma**
Melanomas develop from pigment-producing cells that give skin its colour. These cancers usually are found on sun-exposed areas of the skin but can form on the vagina or other internal organs. About 9 of every 100 cases of vaginal cancer are melanomas.

**Sarcoma**
A sarcoma is a cancer that begins in the cells of bones, muscles or connective tissue. Up to 4 of every 100 cases of vaginal cancer are sarcomas. These cancers form deep in the wall of the vagina - not on its surface. There are several types of vaginal sarcomas. *Rhabdomyosarcoma* is the most common type of vaginal sarcoma. It is most often found in children and is rare in adults. A sarcoma called *leiomyosarcoma* is seen more often in adults. It tends to occur in women older than 50.

**Other cancers**
Cancers of the vagina are much less common than cancers that start in other organs (such as the cervix, uterus, rectum or bladder) and then spread to the vagina. These cancers are named after the place where they started.

“Diagnosis of a primary vaginal cancer is rare because most of these lesions will be metastatic from another primary site. Although cancer of the vagina is more common in postmenopausal women, an increase in young women being diagnosed with primary vaginal cancer has been reported, especially in countries with a high HIV prevalence. This will be associated with persistence of high-risk HPV infection. The emphasis should be on primary prevention with prophylactic HPV vaccination. Once there is a suspicion of a primary vaginal cancer, this should be confirmed histologically with biopsy. Staging has been done clinically, similar to cervical cancer; however, there is a role for imaging in assisting with staging as this is often a difficult assessment. Treatment should be individualized and depends on stage as well as histologic subtype. It is prudent to refer cases to centers of excellence with experience in dealing with this rare gynecological cancer.”

**Causes and Risk Factors for Cancer of the Vagina**
Scientists have found that certain risk factors make a woman more likely to develop vaginal cancer. But many women with vaginal cancer do not have any apparent risk factors. And even if a woman with vaginal cancer has one or more risk factors, it is impossible to know for sure how much that risk factor contributed to causing the cancer.

**Age** - Squamous cell cancer of the vagina occurs mainly in older women. Only 15% of cases are found in women younger than 40. Almost half of cases occur in women who are 70 years old or older.

**Diethylstilbestrol (DES)** - DES is a hormonal drug that was given to some women to prevent miscarriage between 1940 and 1971. Women whose mothers took DES (when pregnant with them) develop clear-cell adenocarcinoma of the vagina or cervix more often than would normally be expected.
Vaginal adenosis - Normally, the vagina is lined by flat cells called squamous cells. In about 40% of women who have already started having periods, the vagina may have one or more areas where it is lined instead by glandular cells. These areas of gland cells are called adenosis. It occurs in nearly all women who were exposed to DES during their mothers' pregnancy. Having adenosis increases the risk of developing clear cell carcinoma, but this cancer is still very rare.

Human Papilloma Virus - Human papilloma virus (HPV) is a group of more than 100 related viruses. They are called papilloma viruses because some of them cause a type of growth called a papilloma. Papillomas - more commonly known as warts - are not cancers.

Smoking - Smoking tobacco more than doubles a woman's risk of getting vaginal cancer.

Alcohol - Drinking alcohol might affect the risk of vaginal cancer.

Human immunodeficiency virus - Infection with HIV (human immunodeficiency virus), the virus that causes AIDS, also increases the risk of vaginal cancer.

Vaginal irritation - In some women, stretching of the pelvic ligaments may cause the uterus to sag into the vagina or even extend outside the vagina. This condition is called uterine prolapase and can be treated by surgery or by wearing a pessary, a device to keep the uterus in place. Some studies suggest that long-term (chronic) irritation of the vagina in women using a pessary may slightly increase the risk of squamous cell vaginal cancer. But this association is extremely rare, and no studies have conclusively proven that pessaries actually cause vaginal cancer.

Auto immune condition – a condition called systemic lupus erythematosus increases the risk for vaginal cancer.

Women who have had radiotherapy to the pelvic area - may also have a very slightly increased risk.

Other factors - Other factor that may increase the risk of vaginal cancer include:

- Organ transplants.
- Having a history of abnormal cells in the uterus or cancer of the uterus.
- Having had a hysterectomy for health problems that affect the uterus.

Signs and Symptoms of Cancer of the Vagina
Possible signs of vaginal cancer include pain or abnormal vaginal bleeding.

Vaginal cancer often does not cause early symptoms and may be found during a routine pelvic examination and Pap test. When symptoms occur, they may be caused by vaginal cancer or by other conditions. Women are advised to check with a health professional if they have any of the following problems:

- bleeding or discharge not related to menstrual periods
- pain during sexual intercourse
- pain in the pelvic area
- a lump in the vagina
• pain when urinating
• constipation

**Diagnosis of Cancer of the Vagina**
Screening healthy women for vaginal cancer - Vaginal cancer is sometimes found during a routine pelvic examination before signs and symptoms become evident.

The doctor may also do a Pap test. Pap tests are usually used to screen for cervical cancer, but sometimes vaginal cancer cells can be detected on a Pap test.

**Staples, J.N. & Duska, L.R. 2019.**
“The Pap smear is the only proven screening intervention in the field of gynecologic oncology. Women should receive treatment for precancerous conditions of the cervix, vulva, vagina, and endometrial lining. Women with inherited conditions should consider having a risk-reducing surgery once they have finished childbearing. The human papilloma virus vaccination should be offered to all girls and boys aged 11 to 12 years, and can also be given as early as age 9 and through 26 years of age.”

Other examinations may include:

- **Colposcopy** is an examination of the vagina with a special lighted magnifying instrument called a colposcope. Colposcopy allows the doctor to magnify the surface of the vagina to see any areas of abnormal cells.
- **Biopsy** - removing a sample of vaginal tissue for testing. Biopsy is a procedure to remove a sample of suspicious tissue to test for cancer cells. The doctor may take a biopsy of tissue during a colposcopy exam. The doctor sends the tissue sample to a laboratory for testing.

Patient may also have one or more of the following additional tests:

- Chest x-ray and blood tests
- CT (computerised tomography) scan
- MRI (magnetic resonance imaging) scan
- PET scan (positron emission tomography scan)
- Cystoscopy: A procedure to look inside the bladder and urethra to check for abnormal areas.
- Ureteroscopy: A procedure to look inside the ureters to check for abnormal areas.
- Ureteroscopy. A ureteroscope (a thin, tube-like instrument with a light and a lens for viewing) is inserted through the urethra into the ureter. The doctor looks at an image of the inside of the ureter on a computer monitor.
- Proctoscopy: A procedure to look inside the rectum to check for abnormal areas.

**Treatment of Cancer of the Vagina**
Treatment options for vaginal cancer depend on several factors, including the type of vaginal cancer and its stage. Treatment for vaginal cancer typically may include:
Surgery
Types of surgery that may be used in women with vaginal cancer include:

• Removal of small tumours or lesions.
• Removal of the majority of the pelvic organs (pelvic exenteration).

Radiation therapy
Radiation therapy uses high-powered energy beams, such as X-rays, to kill cancer cells. Radiation can be delivered two ways:

• External radiation. External beam radiation is directed at the entire abdomen or just the pelvis, depending on the extent of your cancer.
• Internal radiation. During internal radiation (brachytherapy), radioactive devices — seeds, wires, cylinders or other materials — are placed in your vagina or the surrounding tissue.

Other Options
If surgery and radiation cannot control the cancer, the patient may be offered other treatments, including:

• Chemotherapy. Chemotherapy uses chemicals to kill cancer cells
• Clinical trials

About Clinical Trials
Clinical trials are research studies that involve people. They are conducted under controlled conditions. Only about 10% of all drugs started in human clinical trials become an approved drug.

Clinical trials include:
• Trials to test effectiveness of new treatments
• Trials to test new ways of using current treatments
• Tests new interventions that may lower the risk of developing certain types of cancers
• Tests to find new ways of screening for cancer

The South African National Clinical Trials Register provides the public with updated information on clinical trials on human participants being conducted in South Africa. The Register provides information on the purpose of the clinical trial; who can participate, where the trial is located, and contact details.

For additional information, please visit: www.sanctr.gov.za/

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Resources and References Consulted or Utilised


American Cancer Society


Cancer.Net
http://www.cancer.net/cancer-types/vaginal-cancer/staging

Cancer Research UK

eMedTV
http://hpv.emedtv.com/hpv/types-of-hpv.html

Female Reproductive System
http://www.webmd.com/women/vagina


MacMillan Cancer Support

Mayo Clinic
http://www.mayoclinic.com/health/vaginal-cancer/DS00812/DSECTION=treatments-and-drugs

National Cancer Institute
http://www.cancer.gov/cancertopics/pdq/treatment/vaginal/Patient/page1
http://www.cancer.gov/cancertopics/pdq/treatment/vaginal/Patient/page2
http://www.cancer.gov/clinicaltrials/learningabout/what-are-clinical-trials

ObGyn Knowledge Bank


Wikipedia
https://en.wikipedia.org/wiki/Vagina