

How CT Imaging Aids in the Diagnosis of Ovarian Cancer

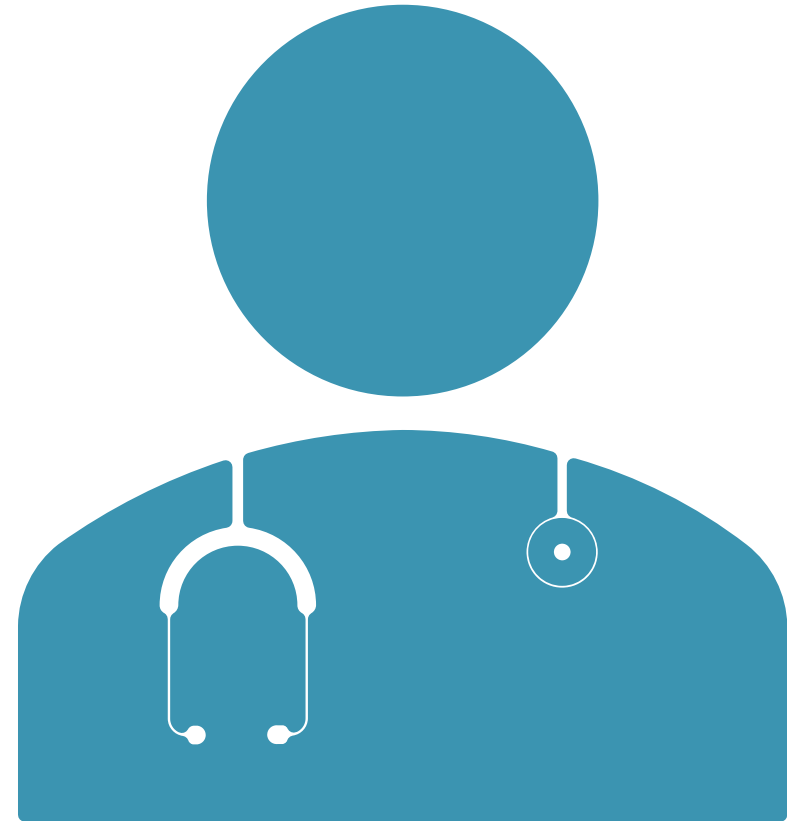
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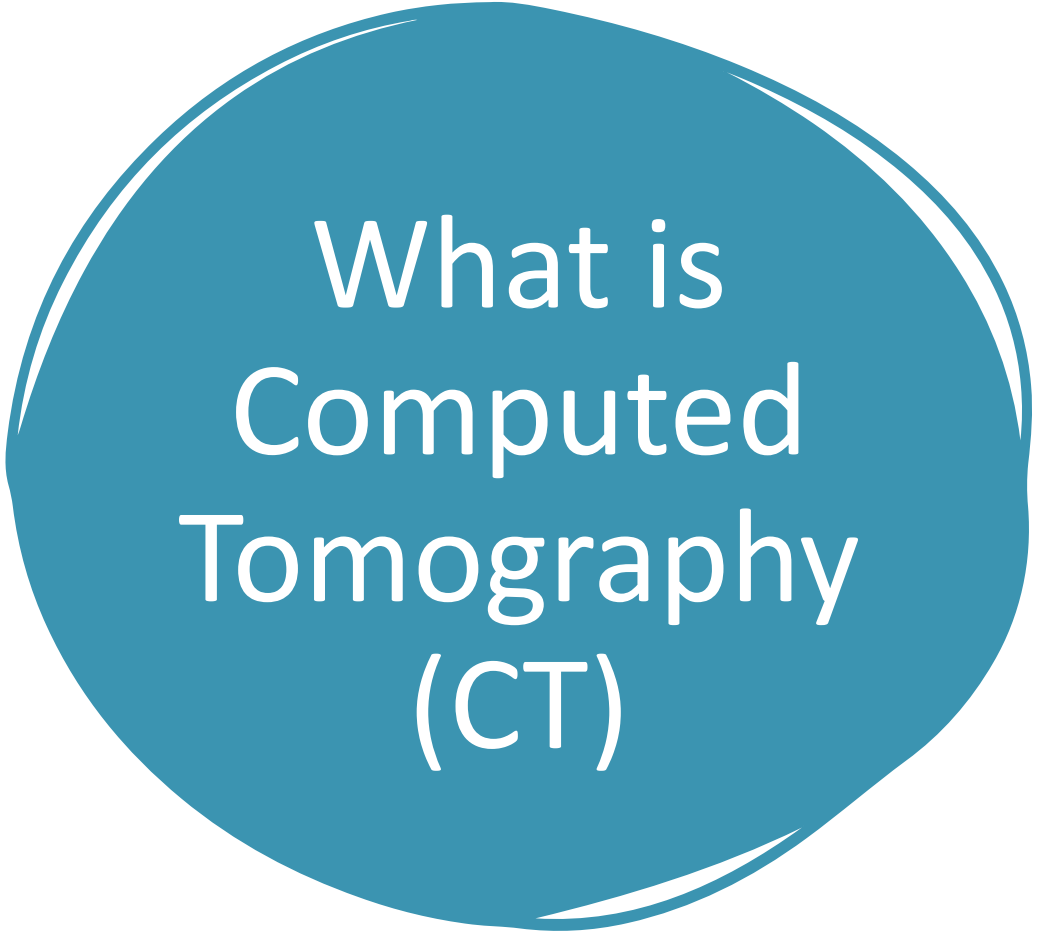
Objectives

- Explain what computed tomography is and its components
- Are CT scans safe?
- The capabilities of a CT scanner
- What ovarian cancer is and how it can be diagnosed using computed tomography
- Why CT is the preferred modality for diagnosing ovarian cancer

Thesis:

- This presentation will cover the basics of CT and its many reasons for use
- It will focus on the topic of ovarian cancer along with causes, ways of diagnosis, and why CT is the preferred modality for treatment



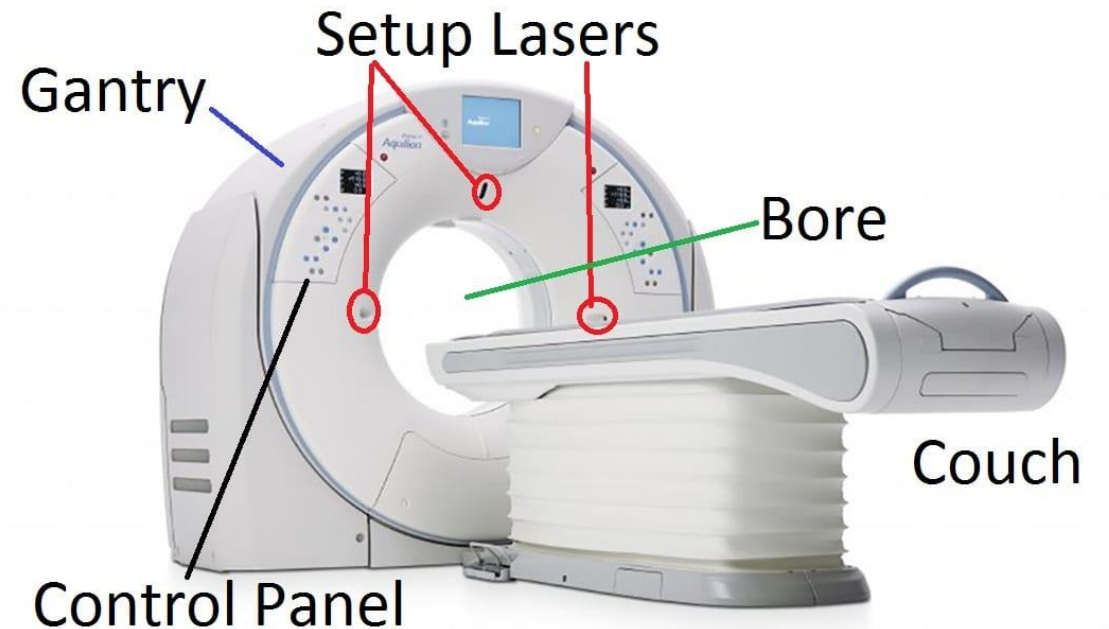


What is Computed Tomography (CT)

[Computed tomography is] “a computerized x-ray imaging procedure in which a narrow beam of x-rays is aimed at a patient and quickly rotated around the body... to generate cross-sectional images, or ‘slices’” (NIH, 2022).

Components of the CT Scanner:

- **Gantry:** "' doughnut' shaped part of the CT scanner that houses the components necessary to produce and detect x-rays to create a CT image" (NIH, 2022).
- **Lasers:** used to position a patient during an exam
- **Control Panel:** "the part of the X-ray system where the switches, knobs, pushbuttons, and other hardware necessary to operate the X-ray system are located" (WSL, N.D.).
- **Bore:** size of the circular hole within the CT scanner, measured in centimeters
- **Couch:** Also known as the table that moves through the CT gantry aperture during a CT examination. The couch can move



Are CT Scans Safe?

- CT scans will increase your risk of getting diagnosed with cancer later in life, but not by an alarming amount
- For comparison, every person in the US receives about 3 mSv of radiation each year from natural radon and radiation in space. The average CT scan of the chest gives a dose of about 1.5 mSv of



iation could save your life if a
and during

Benefits >

Risks

Capabilities of a CT Scanner

~~CT scanners can scan any part of the body, all the way from the top of the head to the tips of the toes~~

Some examples a CT can diagnose is:

- Heart disease
- Head injuries
- Tumors/masses
- Clots/hemorrhage
- Diseases
- Trauma
- Plan/guide for interventional/therapeutic procedures
- Monitor the effectiveness of therapies such as cancer

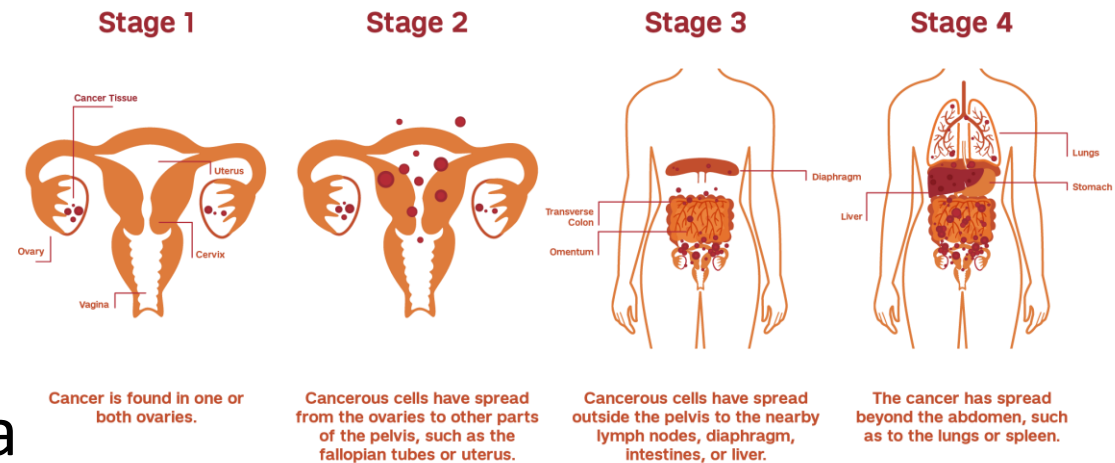
What is Ovarian Cancer

“A growth of cells that form in the ovaries. The cells multiply quickly and can invade and destroy healthy body tissue” (Mayo Clinic, N.D).

- Symptoms of Ovarian Cancer:

- Quickly feeling full when eating
- Weight loss
- Discomfort in the pelvic area
- Back pain
- Fatigue

Ovarian Cancer



Causes of Ovarian Cancer



- Although there is no clear path to what causes ovarian cancer, physicians have narrowed it down to be able to identify what factors increase the risk of the disease

Older
Age

Inherited
Gene
Changes

Obesity

Endometriosis

Age
when
menstruation
started

Family
history

Postmenopausal
hormone
replacement
therapy

Never
being
pregnant

How Can Ovarian Cancer be Diagnosed

With ovarian cancer being the second most common malignant cancer and one of the leading causes to women's death, physicians are taking important steps in protecting women across the world to research and help in the diagnosis of these cancers.

Pelvic

Blood Tests

Medical
Imaging

CT / Biopsy

Ultrasound

MRI



Here is an example of a normal female adult pelvis

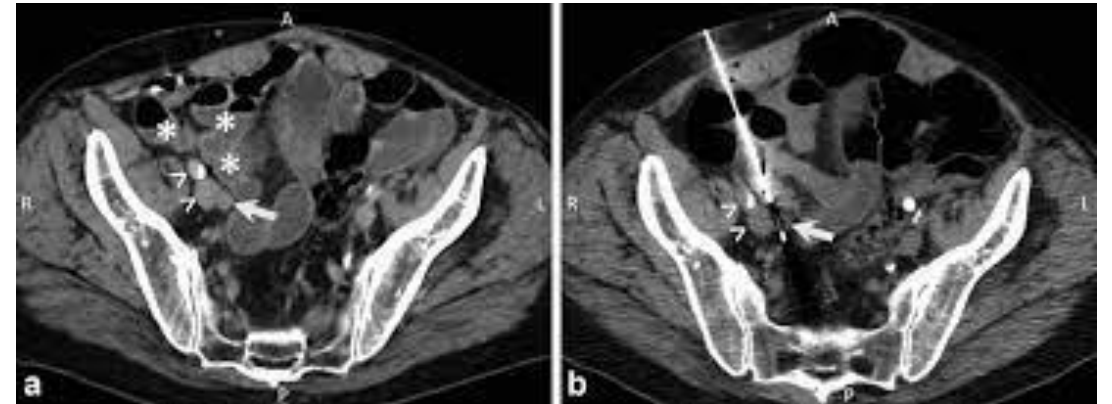


Here is showing an example of an ovarian tumor that was found using the CT modality

Why is CT the Preferred Modality?

CT is best for diagnosing ovarian cancer for its ability to show enlarged lymph nodes, signs of cancer, and if it spreads to other organs

Many physicians rely on CT as their imaging modality of choice for how precise it is in showing the location and size of the malignancy



This is an example of a needle biopsy in the pelvic region, and how precise the physicians are when advancing the needle into the malignancy

Why CT is the preferred Modality (Continued)

CT scanners offer comprehensive, non-invasive imaging of the body's internal components, they have completely changed the diagnosis and staging of cancer" (Healthline, 2019)

They help with:

- Cancer staging
- Tumor characterization
- Early diagnosis

Which ultimately leads to:

- Fewer complications/ recovery time
- Avoidance of general anesthesia
- Lower cost

In Conclusion

- This presentation covered the basics behind CT including its components, reasons for use, and whether or not this method can be labeled as safe
- We dove into a detailed overview of the topic of ovarian cancer and what it looks like, as well as ways it can be diagnosed, main causes, and why CT is the preferred modality of use

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