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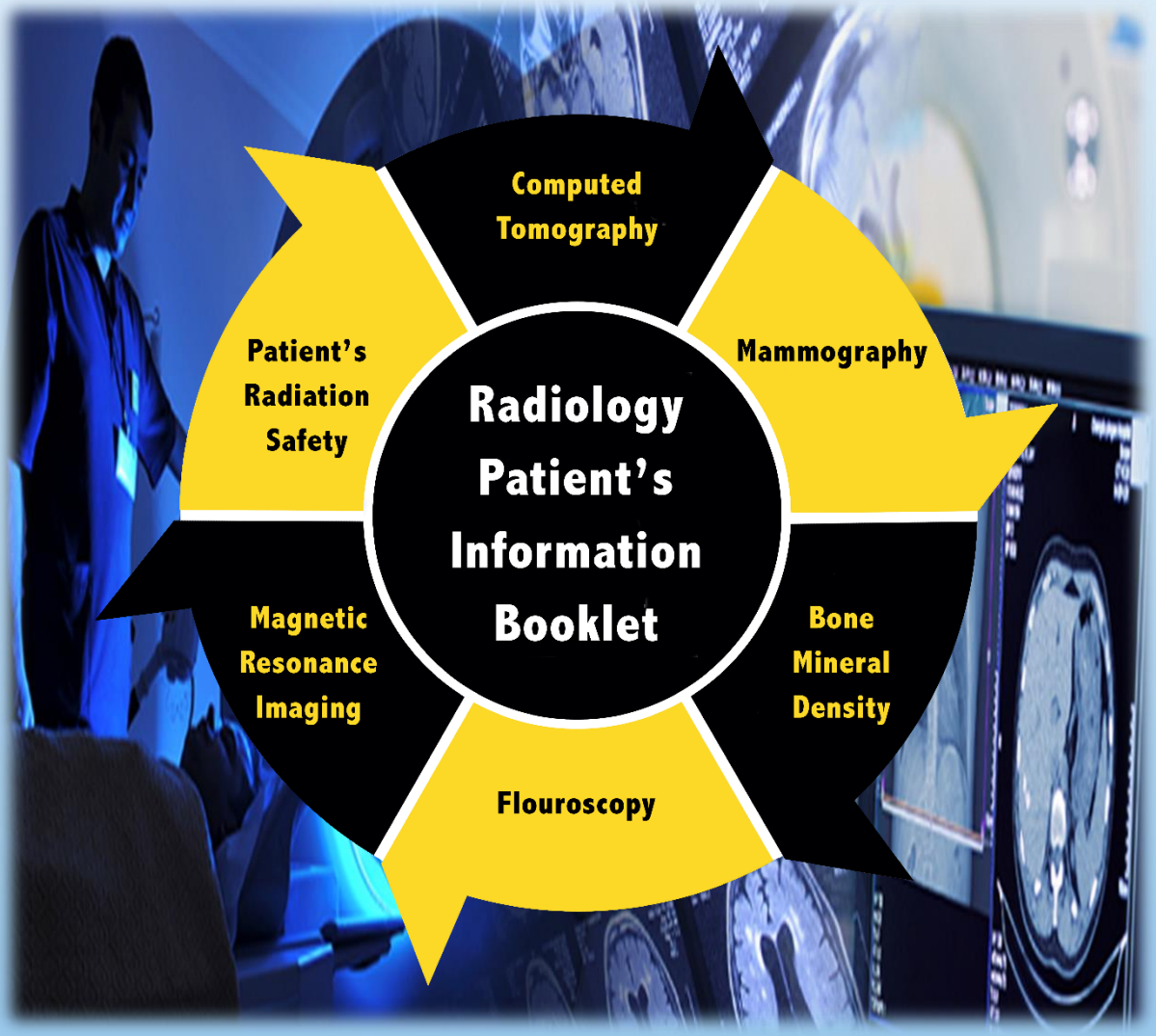


Radiology Team –Medical Group
Ahmadi Hospital
Moving forward

Table of Content (Please click on the title)

POINTS TO KNOW BEFORE YOUR X-RAY EXAM

Please do not force the technologist to reveal the diagnosis as it should be told only by the doctor.

DIAGNOSIS INSIDE X-RAY ROOM

HAVING REPEATED X-RAYS

If you had x-rays recently, please inform your Doctor, to avoid repetition.

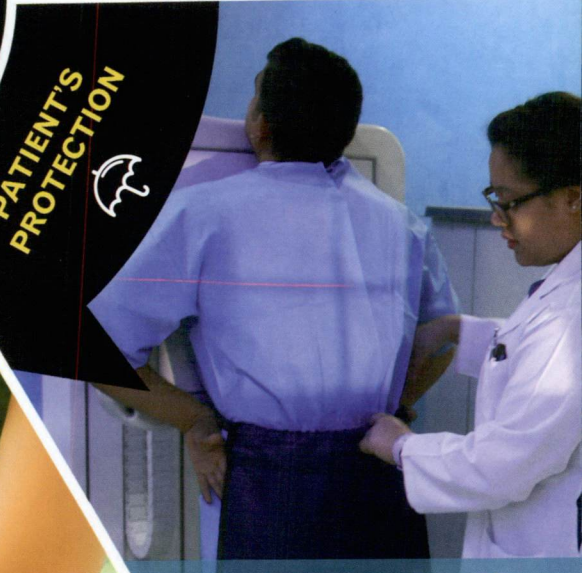
PATIENT'S BYSTANDER

The patient's relatives should be given the appropriate lead shield before having the x-rays done, to protect themselves from its risks.

REFUSE X-RAYS

It is the patient's right to know why an x-ray has been ordered. It is your right to question the need for an x-ray if you think it unnecessary.

PATIENT'S PROTECTION



Ensure you have the appropriate lead shield before having your x-rays done, to protect yourself from its risks. It is your right to ask for it.

PREGNANCY

If there is any chance that you might be pregnant, please inform the Radiology Receptionist and the Imaging Technologist before having your x-ray done.

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RADIOLOGY SERVICES
AHMADI HOSPITAL - MEDICAL GROUP

Be Safe

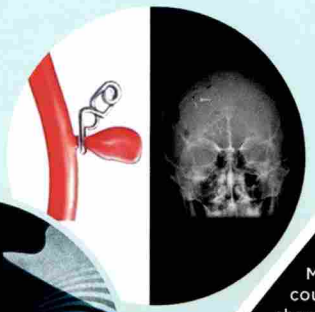
Before Your MRI Exam

If you have any of the below kindly inform the Imaging Technologist

- Artificial Heart Valves
- Pacemakers
- Aneurysm Clips
- Cochlear Implants
- Vascular Stent or Stent Graft

MRI can be harmful to any implanted device electrically or mechanically activated. Always have the certification of your implants to help us know if it is MR compatible.

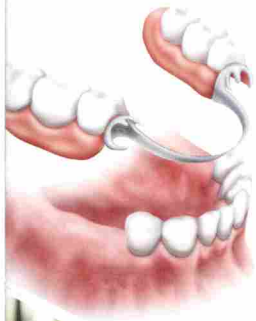
Patients with pacemakers should stay away from MRI Magnetic Field as it might cause the pacemakers to malfunction or cause patient injury.

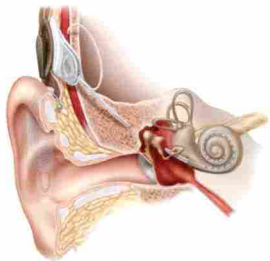


MRI could change position of metals and possibly cause an injury.

If you have any of the below kindly inform the Imaging Technologist

- Exposure of metal fragments to your eye.
- History as a metal worker Shrapnel or bullet wounds





These might heat substantially during the MRI examination and may cause mild discomfort. Please notify Imaging Technologist.

ORTHOPEDIC IMPLANTS/ DENTURES/HEARING AIDS/PROSTHESIS

NEURO AND CARDIOVASCULAR IMPLANTS

METAL INJURIES

SKIN TATTOOS & MAKEUP

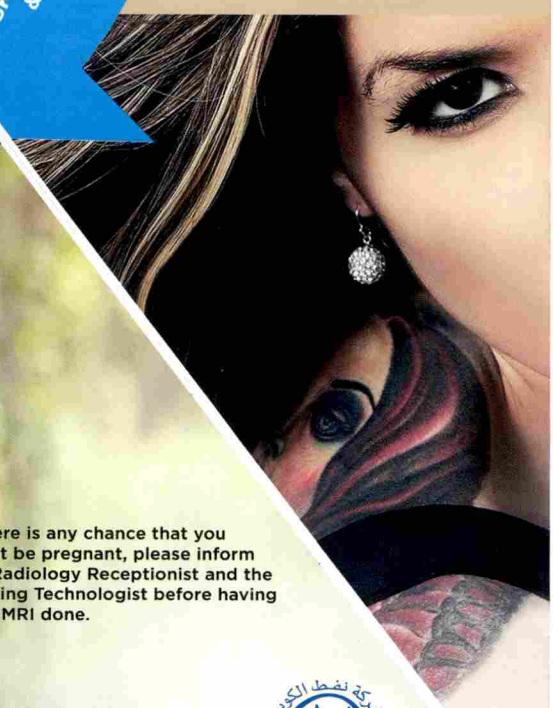
PREGNANCY

ITEMS NOT ALLOWED IN THE MAGNET ROOM

MRI EXAMINATION CHECKLIST (PRE-PROCEDURE)

Always read the examination checklist before your appointment and notify us if there are any confirmations on the checklist.

Skin Tattoos and Makeup might heat during the MRI exam, so please do not wear any makeup and inform the Imaging Technologist if you have any skin tattoos. Please remove eye makeup (Mascara) as it can affect the examination.

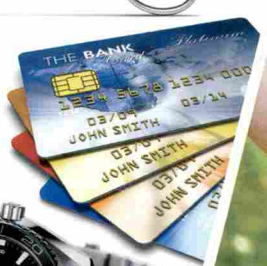


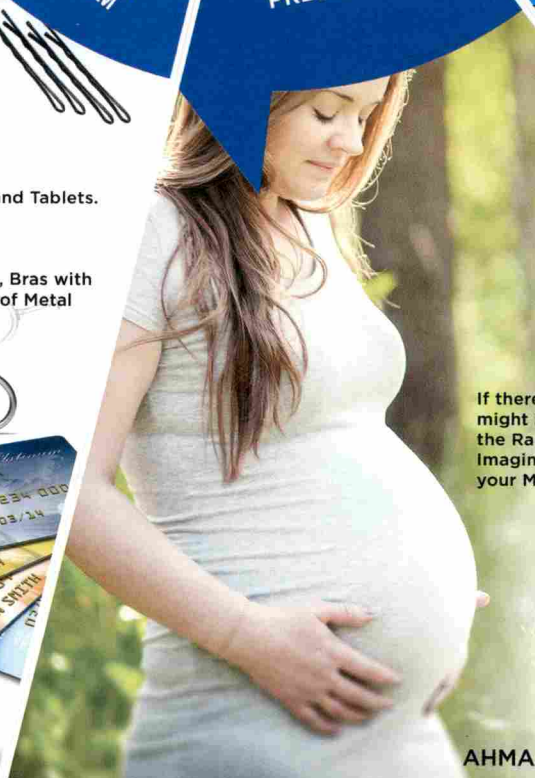
Cash, Debit Cards, Coins and Wallets.

Electronics such as Mobile Phones, iPads, iPhones and Tablets.

Headphones and Earpieces.

Clothings with Metallic Zippers, Glasses or Hairpins, Bras with Metal Support, Metallic Buckled Belts and any kind of Metal Chips.





If there is any chance that you might be pregnant, please inform the Radiology Receptionist and the Imaging Technologist before having your MRI done.

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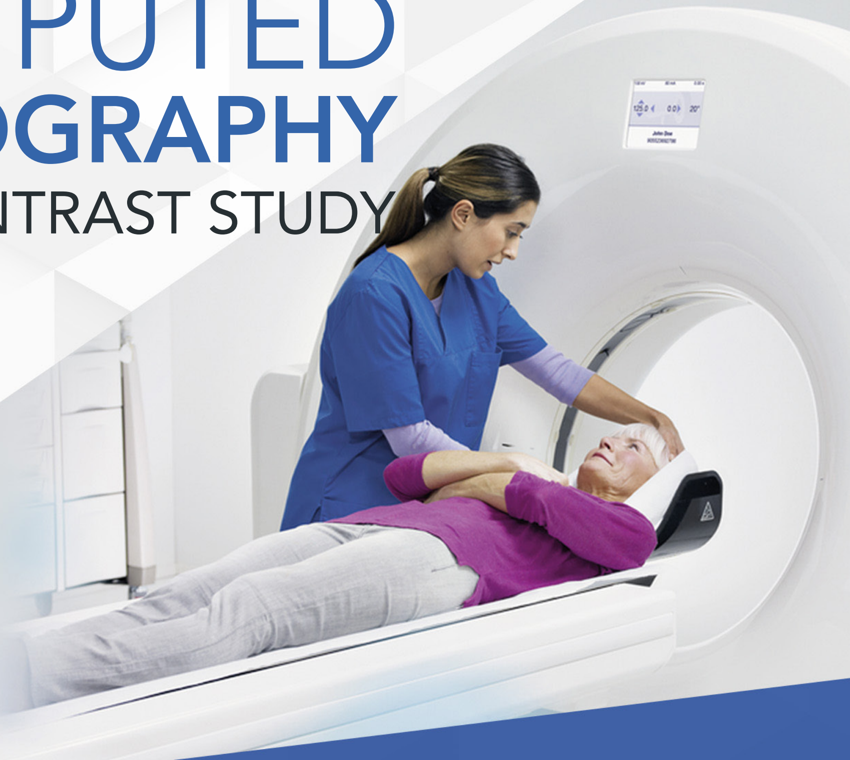
RADIOLOGY SERVICES
AHMADI HOSPITAL - MEDICAL GROUP

COMPUTED TOMOGRAPHY
NON CONTRAST STUDY



What is Computed Tomography?

Computerized tomography, also called (CT), combines a series of X-ray views taken from many different angles and computer processing to create cross-sectional images of the bones and soft tissues inside your body. A Radiologist will be able to look at each of these slices individually or perform additional visualization to view your body from different angles. In some cases, CT images can be combined to create 3-D images. CT scan images can provide much more information than do plain X-rays. A CT scan has many uses, and can be used to visualize nearly all parts of the body.

Radiology Services
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What kinds of examination are done?

Skull, Brain, Paranasal Sinuses, Orbits, IAM's, Upper & Lower Extremities, Spinal Column, Chest, Kidneys & bladder (CT KUB)

How you prepare?

Generally, you can have your scan done as soon as possible, based on appointment available scheduled.

CT Preparations for children:

Anesthesia: for unco-operative children, the CT study will be done under general/ sedation anesthesia after arranging with ward and anesthesiologist. The children are not allowed to have anything by mouth 6 hours prior to CT scan. Parents should sign the consent form. The appointment will be given based on availability of anesthetist

CT Procedure:

1. You may be asked to take off some of your clothing and wear a hospital gown and remove any metal objects, such as a belt or jewelry, which might interfere with image results.
2. You will be asked to lie on a scan table that slides slowly into the center of the CT scanner to cover the interested area.
3. You must be still during the exam, because movement causes blurred images.
4. It should take only about 15-30 minutes to complete your scan.
5. At times, for completion an intravenous contrast media injection may be required.

Warning:

Female patient should notify the Imaging technologist if she is or suspecting to be pregnant. Please inform about the date of your last menstrual cycle.

Note:

1. Relatives are not allowed during the examination.
2. The result will be available in your file on the computer for your ordering doctor to view within a week.

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COMPUTED TOMOGRAPHY CONTRAST STUDY

What is Computed Tomography?

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Radiology Services
Ahmadi Hospital - Medical Group,
Kuwait Oil Company.

What kinds of examination are done?

Brain, Orbits, Neck, Upper & Lower Extremities, Spinal Column, Chest, Abdomen& Pelvis.

Why its done?

Your physician may recommend a CT scan with intravenous contrast to help: diagnose bone disorders, such as bone tumors and fractures, pinpoint the location of a tumor, infection or blood clot, detect and monitor diseases and conditions such as cancer, lung nodules and liver masses, and detect internal injuries and internal bleeding.

Pre requisite before your scan:

1. Scheduling your CT Scan:

The Radiology receptionist will need to know:

a. If you have allergies to iodine, any medications, any particular food, or if you have a history of bronchial asthma. Also, please inform us if you have had previous reactions to contrast media injection. Radiology department will arrange for pre-medication before the scan to prevent an allergic reaction.

b. If you have kidney problem and/or a history of cancer.

c. If you are a female of childbearing age – Inform the Radiology receptionist of the date of your last menstrual cycle and whether there is any possibility that you might be pregnant.

2. Kidney Function Test:

During the CT scan, you will be given contrast media intravenously to enhance visualization of some organs. Before you can be given the contrast media, you will need to have a blood test to determine your kidney function (creatinine level).

Your treating doctor will write the order for this test. Be sure you have a kidney function test within 1 month prior to the CT scan. Once the creatinine test is normal, we will proceed with IV contrast injection. In some patients, the creatinine will be significantly high, but still we need to inject contrast media. In such cases, we will take a high-risk consent and a special protocol to protect your kidneys during contrast injection will be followed.

3. Instruction for Diabetics

Metformin (Glucophage): Do not take metformin on the day of your CT scan. You must have another blood test after 48 hours of your examination with contrast media injection to check your kidney function before you can start taking metformin again. Check with your doctor for the results of the blood test and instructions about resuming metformin.

On the Day of the CT Scan

1. You have to be fasting for 5 hours prior to your CT scan.

2. CT preparations for children:

Anesthesia: for unco-operative children, the CT study will be done under general/sedation anesthesia after arranging with ward and anesthesiologist. The children are not allowed to have anything by mouth 6 hours prior to CT scan. Parents should sign the consent form. The appointment will be given based on availability of anesthetist

3. During the CT procedure:

a. You will be asked to take off some of your clothing and wear a hospital gown and remove any metal objects, such as a belt or jewelry, which might interfere with image.

b. Then you will lie on a scan table that slides slowly into the center of the CT scanner to cover the interested area.

c. Intravenous line will be inserted in your hand/arm for the I.V. contrast injection. During the injection of the contrast media, you will feel a warmth in your hand which is a normal phenomenon and you need not to worry. The radiology nurse will be by your side during the injection.

d. You must be still during the exam, because movement causes blurred images.

e. You will be asked to follow simple breathing instructions.

f. It should take only about 15-30 minutes to complete your scan.

After The CT scan

a. You should be able to resume your normal diet and activities.

b. Drink at least 5 to 6 glasses of water a day for 2 days after the scan to help flush the contrast media from your system.

c. Keep the plaster on the injection site for another 4-6 hours, after which it can be removed.

Warning:

Female patient should notify the Imaging technologist/ Radiology nurse if she is or suspecting to be pregnant. Please inform about the date of your last menstrual cycle.

Note:

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2. The result will be available in your electronic file on the computer for your referral doctor to view within a week.

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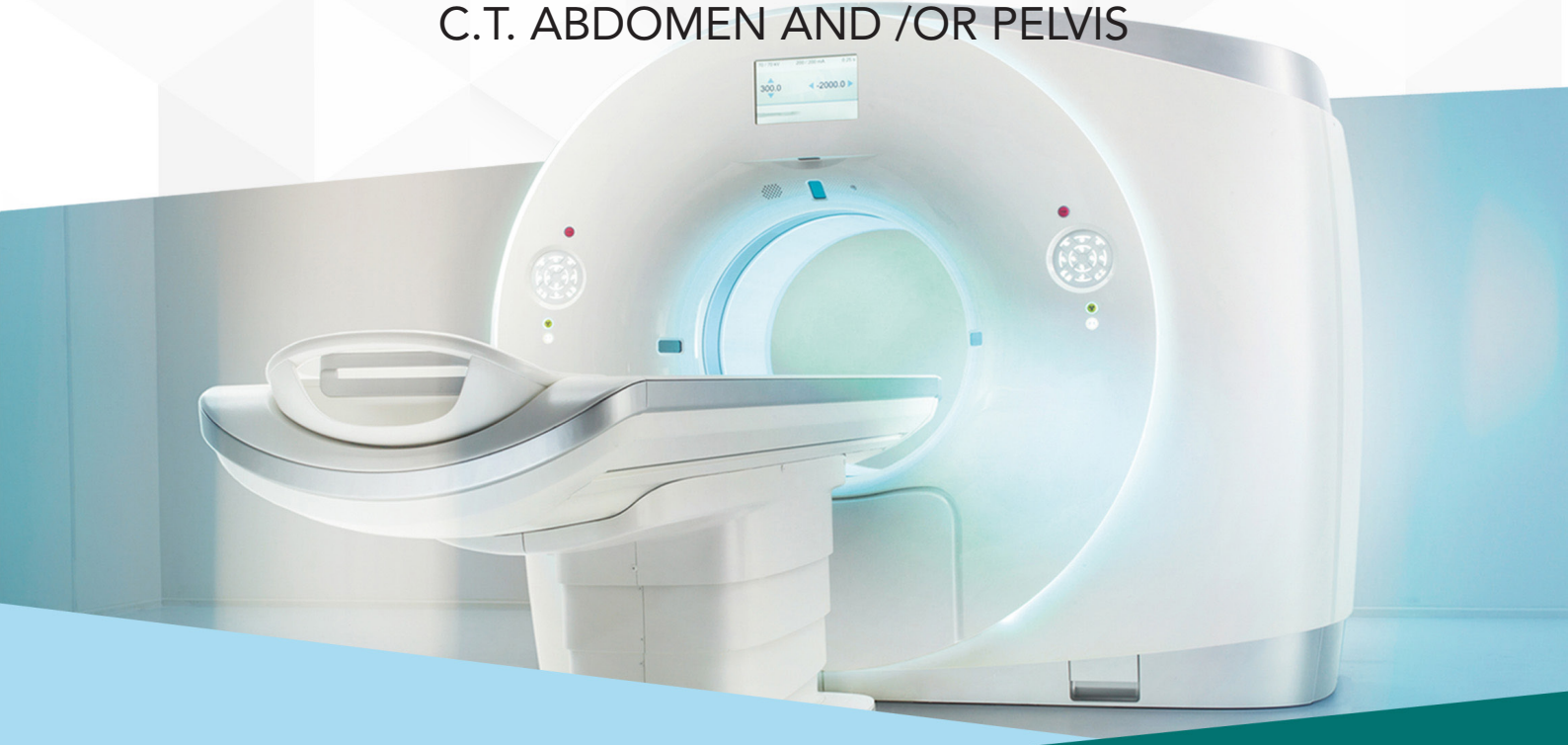
COMPUTED TOMOGRAPHY

C.T. ABDOMEN AND /OR PELVIS



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In some cases, CT images can be combined to create 3-D images. CT scan images can provide much more information than do plain X-rays. A CT scan has many uses, and can be used to visualize nearly all parts of the body.

Radiology Services
Ahmadi Hospital - Medical Group,
Kuwait Oil Company.

Which organs will be visualized?

The internal organs like liver, pancreas, stomach, intestines, kidneys, lymph nodes, urinary bladder, uterus, ovaries, rectum can be visualized. As a screening method usually your physician will request an ultrasound of the abdomen first and if needed a CT Scan will be ordered to complete the examination.

Pre requisite before your scan:

1. Scheduling your CT Scan:

The Radiology receptionist will need to know:

a. If you have allergies to iodine, any medications, any particular food, or if you have a history of bronchial asthma. Also, please inform us if you have had previous reactions to contrast media injection. Radiology department will arrange for pre-medication before the scan to prevent an allergic reaction.

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On the Day of the CT Scan

1. You have to be fasting for 5 hours prior to your CT scan.

2. Patient will need to arrive 2 hours prior to your scheduled appointment time to drink the oral contrast. The oral contrast will have a funny taste- but you must do your best to complete drinking the required amount.

3. CT preparations for children:

Anesthesia: for unco-operative children, the CT study will be done under general/sedation anesthesia after arranging with ward and anesthesiologist. The children

prior to CT scan. Parents should sign the consent form. The appointment will be given based on availability of anesthetist

4. During the CT procedure:

a. You will be asked to take off some of your clothing and wear a hospital gown and remove any metal objects, such as a belt or jewelry, which might interfere with image results.

b. You will be asked to drink one last cup (about 200 ml) of remaining contrast.

c. Then you will lie on a scan table that slides slowly into the center of the CT scanner to cover the interested area.

d. Intravenous line will be inserted in your hand/arm for the I.V. contrast injection. During the injection of the contrast media, you will feel a warmth in your hand which is a normal phenomenon and you need not to worry. The radiology nurse will be by your side during the injection.

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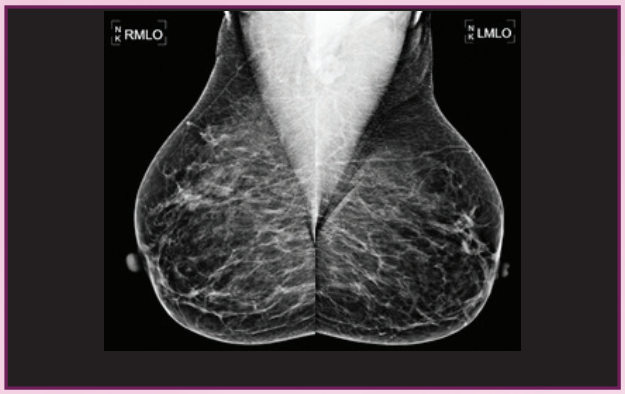
DIGITAL MAMMOGRAPHY

RADIOLOGY UNIT - AHMADI HOSPITAL

"Moving Forward"

What is Mammogram?



A Mammogram is a study of the internal structure of the breast using x-rays.

There are Two Types of Mammogram:
1. Screening Mammogram
2. Diagnostic Mammogram

1. Screening Mammogram:

This is an X-Ray examination of the woman's breast, who has no symptoms. The goal of the Screening Mammogram is to find cancer when it is still too small to be felt by the patient or her doctor. To find small breast cancers at an early age greatly improves a women's chance for successful treatment. Screening mammograms are usually done for all women over 40 years of age on an annual basis.

How Reliable is Breast Screening?

Mammography is the most reliable way of detecting breast cancer early but, like other screening tests, it is not perfect. For example: Some cancers are very difficult to be seen on the Mammogram; Some cancers, even though they exist, cannot be visualised on the Mammogram at all. The Radiologist reading the Mammogram may miss the cancer (this will happen occasionally, no matter how experienced the reader is).

2. Diagnostic Mammogram:

Mammograms are also used in women who have breast symptoms, such as a lump, breast pain, nipple discharge or who have a suspicious change seen on a screening mammogram. These are called diagnostic mammograms.

When to get Mammogram done?

There is a lot of confusion about when and how often to get a mammogram. For now, the recommendation is that women get a mammogram done once a year beginning at age 40. If you are at high risk for breast cancer, with a strong family history of breast or ovarian cancer, or have had radiation treatment to the chest in the past, it is recommended that you start having annual mammograms at a younger age (often beginning around age 30). This, however, is something that you should discuss with your health care provider.

Breast Cancer Detection

Important Things to Know About Mammograms:

- They can save your life. Finding breast cancer early reduces your risk of dying from the disease by 25-30% or more. Women should begin having mammograms yearly at age 40, or earlier if they are at high risk.

- Don't be afraid: Mammography is a fast procedure (about 20 minutes), and its discomfort is minimal for most women. The procedure is safe; there's only a very limited amount of radiation exposure from a mammogram.

- Get the best quality you can: Always enquire what machine is being used for the study. A digital mammography system is the best which gives high quality image. We are using a full field digital system in KOC hospital.

- Mammography is our most powerful breast cancer detection tool. However, mammograms can still miss 20% of breast cancers that are simply not visible using this technique. Other important tools such as breast self-exam, clinical breast examination, and possibly ultrasound or MRI can and should be used as complementary tools, but there are no substitutes or replacements for a mammogram.

- An unusual result which requires further testing does not always mean you have breast cancer.

Hologic - Selenia at Ahmadi Hospital

Tips for Having a Mammogram

- Use a facility that specializes in mammograms and does many mammograms a day.
- If you are satisfied that the facility is of high quality, continue to go there on a regular basis so that your mammograms can be compared from year to year.
- If you are going to a facility for the first time, bring a list of the places, dates of mammograms, biopsies, or other breast treatments you have had before. If you have had mammograms at another facility, you should try to get those mammograms to bring with you to the new facility (or have them sent there) so that they can be compared to the new ones.
- On the day of the exam, kindly ensure to shave your armpits. Don't put deodorant or antiperspirant. Some of these have substances that can be seen on the x-ray as white spots.
- You may find it easier to wear a skirt or pants, so that you'll only need to remove your top and bra for the mammogram.
- If you are still having periods, try to not schedule your mammogram one week before your period. Instead schedule it when your breasts are not tender or swollen to help reduce discomfort and get a good picture - preferably one week after your period.
- Always inform any breast symptoms or problems you are having to the technologist who is doing the mammogram. Be prepared to describe any related medical history such as surgeries, hormone use, and any breast cancer that you or a family member has had. Also talk to your doctor or nurse about any new findings or problems in your breasts before having the mammogram.
- Before having any type of imaging test, tell your radiology technologist if you are breast - feeding or if you think you might be pregnant.
- Be in touch with your treating Doctor reqarding the result of the memmogram.

How is the Mammogram Done?

The mammographic study usually takes around 20 minutes.

On arrival in the mammographic room the female technologist will explain the procedure to you. You will be guided to a private cubicle and asked to remove the clothes above your waist (wearing something like a blouse and trousers/skirt is ideal). A hospital gown will be provided to you. You must mention if you are pregnant or have breast implants.

You and the technologist are the only people in the room during the study.

When you have a mammogram, your breast will be compressed or squeezed between two plates attached to the mammogram machine - a plastic plate (on top) and x-ray plate (on - the bottom). The technologist compresses your breast to keep it from moving, and to make the layer of breast tissue thinner.

Compression technique will reduce the radiation, reduce blurring, and make the image sharper. Although the compression can feel uncomfortable and even painful for some women, it only lasts for a few seconds and it is needed to get a good picture. The entire procedure for a mammogram takes about 20 minutes.

We have a full field Digital Mammographic unit which captures the image in a digital format that is studied on a computer screen. The image is interpreted by the radiologist.

If you had mammograms in the past, kindly ensure they are available with you on the day of the exam, so that they can be compared with the new one. It is always advisable to have your mammograms done at one centre.

Mammogram Report

The American College of Radiology (ACR) has developed a standard way of describing mammogram findings. In this system, the results are given a code (numbered 0 through 6). This system is called the Breast Imaging Reporting and Data System (BI-RADS). This code is usually mentioned at the conclusion of your report.

Breast Imaging Reporting and Data System

Assessment is incomplete

Category 0 : Additional imaging evaluation and/or comparison to prior mammograms is needed

This means a possible abnormality may not be clearly seen or defined and more tests are needed, such as the use of spot compression (applying compression to a smaller area), magnified views, special mammogram views, or ultrasound. This also suggests that the mammogram should be compared with older ones to see if there have been changes in the area over time.

Assessment is complete

Category 1 : Negative

In this case, there is no significant abnormality to report. The breasts look the same (they are symmetrical) with no masses, distorted structures, or suspicious calcifications. In this case, negative means nothing bad was found.

Category 2 : Benign (non-cancerous) finding

This is also a negative mammogram result, but the reporting doctor chooses to describe a finding known to be benign, such as benign calcifications, intra-mammary lymph nodes, or calcific fibroadenomas. This ensures that others who look at the mammogram will not misinterpret this benign finding as suspicious. This finding is recorded in the mammogram report to help compare with future mammograms.

Category 3 : Probably benign finding - Follow-up in a short time frame is suggested

The findings in this category have a very good chance (greater than 98%) of being benign (not cancer). The findings are not expected to change over time. But since it is not proven benign, it is helpful to see if an area of concern does change over time. Follow-up with repeat imaging is usually done in 6 months and regularly thereafter until the finding is known to be stable (usually at least 2 years).

Category 4 : Suspicious abnormality - Biopsy should be considered

Findings do not definitely look like cancer but could be cancer. The radiologist is concerned enough to recommend a biopsy.

Category 5 : Highly suggestive of malignancy - Appropriate action should be taken

The findings look like cancer and have a high chance (at least 95%) of being cancer. Biopsy is very strongly recommended.

Category 6 : Known biopsy-proven malignancy - Appropriate action should be taken

This category is only used for findings on a mammogram that have already been shown to be cancer by a previous biopsy.

Other tests which can be asked for you

Some women (about one in every 20 that are screened) are called back because the appearance of the mammogram suggests that more tests are needed. Do not be surprised if we call you back and then tests show that there is nothing to worry about.

1. Additional mammogram views - called magnification or laterals views might be requested by the radiologist.
2. At times the radiologist can ask for a complimentary ultrasound on the same or another day to assess a certain area in your breast. If ultrasound is asked for, you need not worry as it is usually a complimentary study.

- An ultrasound can build up a picture of the inside of the breast with the help of a small hand-held probe pressed against the skin surface. The probe can be moved over the skin to view the breast from different angles. The images are displayed on a monitor and recorded for subsequent study.
- There are no known risks for Ultrasound examination and it is considered to be a safe examination.
- No special preparations before an ultrasound examination are needed.

MRI Examination

- During the Ultrasound scan:
  a. You will have your total privacy in the ultrasound room with the female ultrasound assistant. The door will be locked at all times. The female assistant will ask you to undress totally from waist above and you will be asked to lie on the couch. Both your breasts will be covered by a gown. Once ready the assistant will call the radiologist.
  b. The radiologist will generally ask you about the breast problem you have. Once you are lying on the couch, your breasts will be examined by the ultrasound machine to check for any lumps.
  c. A gel will be applied to your skin over the area of the breast to be scanned. This gel allows the probe to slide easily over the skin and helps to produce clearer pictures. The lights in the room will be dimmed, so that the pictures on the screen can be seen more clearly.
  d. The radiologist will be beside you, slowly moving the probe over your skin while viewing the images on the screen. Records of selected images will be made so that they can be viewed later.
  e. Upon completion, the gel will be wiped off and you will be free to get dressed.
  f. The actual scan should take around 5 -10 minutes.

3. If there is a suspicious or definite area in the breast which is worrying the Radiologist, you might be asked to undergo an MRI of the breast for further assessment. This will be arranged by your referral physician.
4. Finally to have a definite answer to the pathology of a suspicious area you might have to undergo a biopsy/aspiration to obtain tissue samples.

Ultrasound Examination

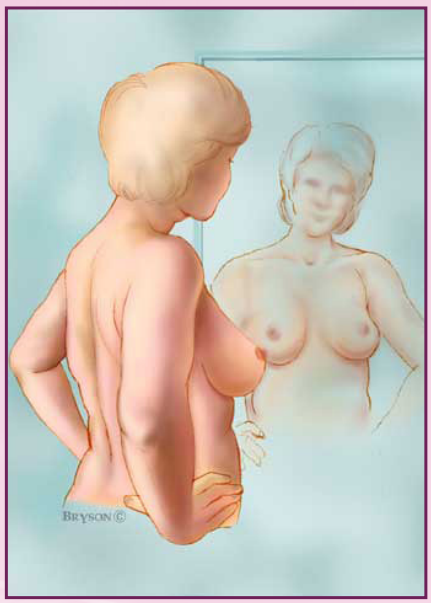
How to do your Breast Self - Examination?

The purpose of breast self-examination is for a woman to know how her breasts normally feel and be able to identify changes in the breast if they occur in the future. Breast self-examination consists of two basic steps: visual and physical examination of the breast.

A. Visual Examination

In preparing for the visual examination, the woman should:

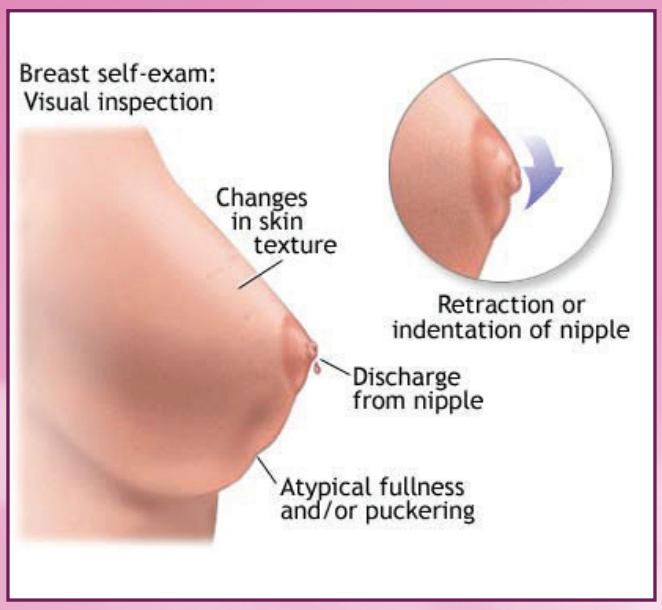
- Stand in front of a mirror with her upper body unclothed.
- Place a good light to the side, rather than above, to better differentiate any irregularities.



The woman should examine the breast with her :

- Arms relaxed and to the side.
- With her arms raised.
- And with her palms flat on the sides of her hips and pressing down.

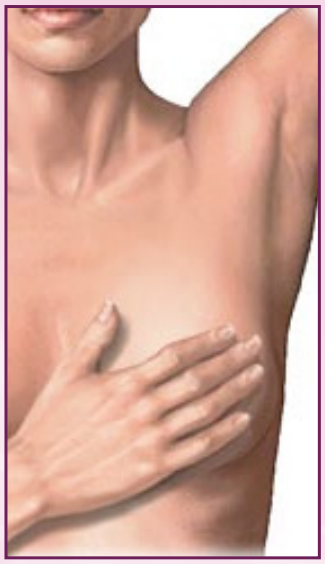
When looking in the mirror, the woman must look for :



- Asymmetry in size of both breasts
- Changes in contour of the breasts, such as swelling puckering.
- Changes in color and shape, redness, irritation or prominent veins in the breast that often accompanies tumor growth.
- Discharge from the nipples, whitish scale on the nipples, and ulcers and sores that do not heal properly.
- "Orange peel" skin (swollen and shiny with large deep pores) associated with blocked lymph ducts.
- A nipple that is flat, inverted or retracted, especially if this is new development, or one that is not inverted when the woman is upright but inverts when she leans forward.

B. Physical Examination

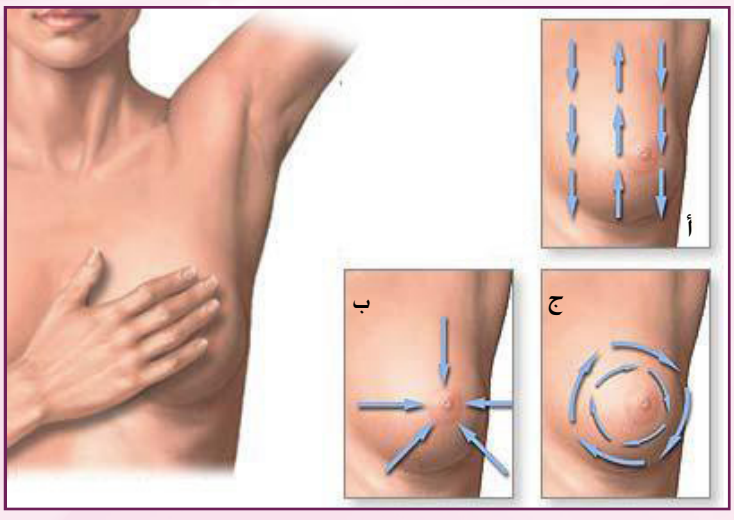
Lie down on the back, put a pillow under your right shoulder, put your right arm behind the head and use the pad of your three middle fingers of the left hand to feel your right breast. To examine your left breast put the pillow under your left shoulder and use your right hand to feel the left breast (Always keep your fingers flat).



Cover the whole area of each breast, including underarms and upper chest, from the collarbone to below the breasts and from the armpits to the breastbone.
Cover each area of examination three times, using light, medium and firm pressure.
The breast self-examination can be done using vertical strip, wedge section, and / or concentric circle detection methods.

Choose one of the following ways :

a. Vertical Strip
b. Wedge Section
c. Concentric Circular



Make sure that you cover all the breasts and the axilla or armpits. Press the nipple between your index and thumb fingers and look for any discharge.

In all three methods, the woman should :

- Make a systematic and careful feel of the breast using two or three fingers, thumb extended.
- Use the sensitive palmar pads on the flat, inner surfaces of the fingers because the fingertips are less sensitive and long nails can impede the movement of the hand.
- Be careful not to compress the breast between fingers as it may result in feeling a lump that does not really exist.

Feel your breasts while you are standing or sitting under the shower - this is the easiest way to feel the breasts when the skin is wet and smooth.

What you are going to look for :

- Any changes in the direction of one of the nipples.
- Any discharge or blood coming from the nipples.
- Any changes in the color around one of the nipples.
- Any changes in the temperature of the skin
- Any changes in the shape, thickness, or the size in the upper or lower part of the breast.
- Lump or bulge in the breast or the axilla.
- Any dimpling/puckering of the skin.

Factors that help in early detection of cancer breast :

- Regular breast self-examination every month starting from age of 20 years.

- Annual Mammogram Screening for women over 40 years old which is recommended by the National Cancer Institute and American College of Radiology and 30 years for the women at high risk such as strong family history of breast cancer or women who had radiation treatment to the chest in the past.

- If you find any changes consult your doctor immediately.

Breast Awareness Code:

There is a simple breast awareness code that all women should remember.

- Know what is normal for you.
- Look at and feel your breasts.
- Know what changes to look for (lumps, pain, discharge from the nipple or anything else unusual).
- Tell your doctor about any changes immediately.

There are many reasons for changes in the breast. Most of them are harmless but you should get all of them checked as there is a small chance that they could be the first sign of cancer.

Breast awareness and regular mammograms together offer you the best chance of finding breast cancer early.

Radiation Exposure from Mammography

The modern mammography machine uses low radiation doses to produce images that are high in image quality (usually about 0.1 to 0.2 rads per picture). Older mammography units delivered higher doses, and led to concerns about radiation risks.

Many people are concerned about the exposure to x-rays, but the level of radiation from a mammogram today does not significantly increase the breast cancer risk for a woman who gets regular mammograms.

Important Statistics:

10% of women who have a mammogram might require additional tests. Of these patients only 8 – 10% will require a biopsy. About 80% of their biopsies will turn out not to be cancer.

Prepared in Collaboration with Health Promotion Unit (HPU)
- Ahmadi Hospital

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Bone Mineral Densitometry (DEXA Scan)

Radiology Unit - Ahmadi Hospital

"Moving Forward"

Risks:

- Women should always inform their physician or imaging technologist if there is any possibility that they are pregnant.
- No complications are expected within the DEXA procedure.

What are the limitations of DEXA Bone Densitometry?

- A DEXA test cannot predict who will experience a fracture but can provide indications of relative risk.
- Despite its effectiveness as a method of measuring bone density, DEXA is of limited use in people with a spinal deformity or those who have had previous spinal surgery. The presence of vertebral compression fractures or osteoarthritis may interfere with the accuracy of the test; in such instances, CT scans may be more useful.
- Central DEXA devises are more sensitive than peripheral DEXA devices but they are also somewhat more expensive. Our machine is a central DEXA.
- A test done on a peripheral location, such as the heel or wrist, may help predict the risk of fracture in the spine or hip. These tests are not helpful in following response to treatment, however, and if they indicate that drug therapy is needed, a baseline central DEXA scan should be obtained.

A word about minimizing radiation exposure:

Special care is taken during the x-ray examination to obtain the lowest radiation dose possible while producing the best images for evaluation. National and international radiology protection councils continually review and update the technique standards used by radiology professionals.

State-of-the-art x-ray systems have tightly controlled x-ray beams with significant filtration and dose control methods to minimize stray or scatter radiation. This ensures that those parts of a patient's body not being imaged receive minimal radiation exposure.

For further clarifications regarding bookings and appointments for BMD, Please contact:

Ahmadi Hospital

Radiology Reception: **23862355/23862381**

Which part of the body will be scanned?

The study is usually done on bones that are most likely to break because of osteoporosis.

- Low back bones (Lumbar Vertebrae)
- The neck of the femur (thigh bone)
- Sometimes bones of your wrist /forearm depending on patient condition.

How do you know your BMD result?

- After the scan, analysis of the bone is done and your result is generated. The report consists of the part been scanned (usually back / hip) and the bone density measurements.
- The T score - it is a numerical value which gives you an indication of your bone density and is available on your report.
- Your report can be:-

  Normal – T Score above (-1).

  Osteopenia – T Score between -1 and -2.5 – low risk fracture.

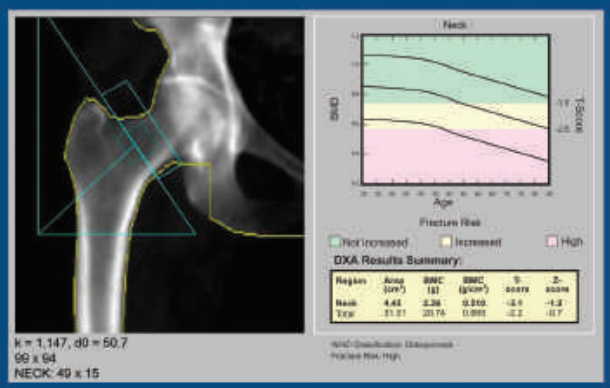
  Osteoporosis – T Score below -2.5 – high risk of fracture.
- A graphical representation is made on the report to show the current status of your bone density. (Fig 3)
- Your BMD report will be sent electronically to your ordering physician after one week.

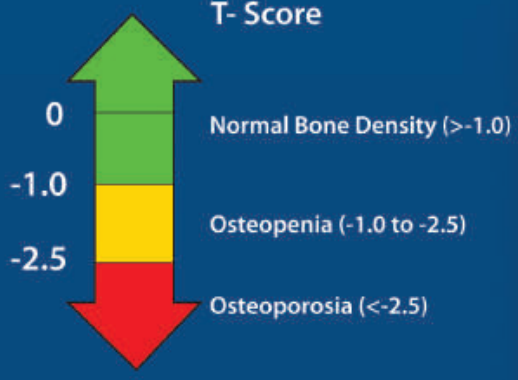
What are the benefits vs. risks?

Benefits:

- DEXA bone densitometry is simple, quick and noninvasive procedure.
- No anesthesia is required.
- The amount of radiation used is extremely small – less than one-tenth the dose of a standard chest x-ray and less than a day's exposure to natural radiation.
- DEXA bone density testing is the most accurate method available for the diagnosis of osteoporosis and is also considered an accurate estimator of fracture risk.
- No radiation remains in the patient's body after an x-ray examination.
- X-rays usually have no side effects in the diagnostic range.

(Fig 3)

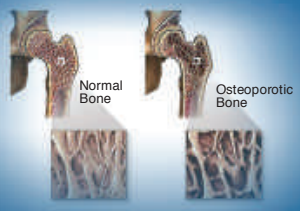




Osteop

What is Bone Mineral Densitometry (BMD)?

It is a radiological examination used to measure the strength (density) of the patients bones.



What is osteoporosis?

Osteoporosis is a skeletal disease in which the bones become fragile and are more likely to break if left untreated. These broken bones also known as fractures, occur typically in the hip, spine and wrist. Even with minor trauma (simple fall down /a cough or sneeze) can produce such fractures. (Fig. 1)

How do we measure BMD?

Previously, radiographs (X-rays) of the spine were used to detect any visible changes in bone density which were very subjective. It actually takes a loss of 30-50 % bone mass to produce a visible change on the radiograph. In other wards detecting osteoporosis radiographically was delayed until late in the course of the disease. Now with new technology-"Dual Energy X-ray Absorption (DEXA) machines", we can accurately measure the bone loss in early stages and help treat the disease early. At Ahmadi hospital, we are using the latest DEXA machine (Discovery - Hologic System) for evaluating the strength of the bones. (Fig. 2)

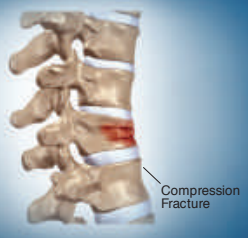


Fig. 1

How does the procedure work?

The DEXA machine sends a thin, invisible beam of low-dose x-rays with two distinct energy peaks through the bones being examined. One peak is absorbed mainly by soft tissue and the other by bone. The soft tissue amount can be subtracted from the total and what remains is a patient's bone mineral density.

DEXA machines feature a special software that compute and display the bone density measurements on a computer monitor.

Is DEXA bone scan same as a bone scan?

No, although the two procedures sound the same they are very different techniques used for different purposes. A bone scan is a nuclear medicine study (using injections of an isotope) used to detect cancer, stress fractures, and other bone or joint problems. It does not measure bone density and is not used to diagnose osteoporosis.

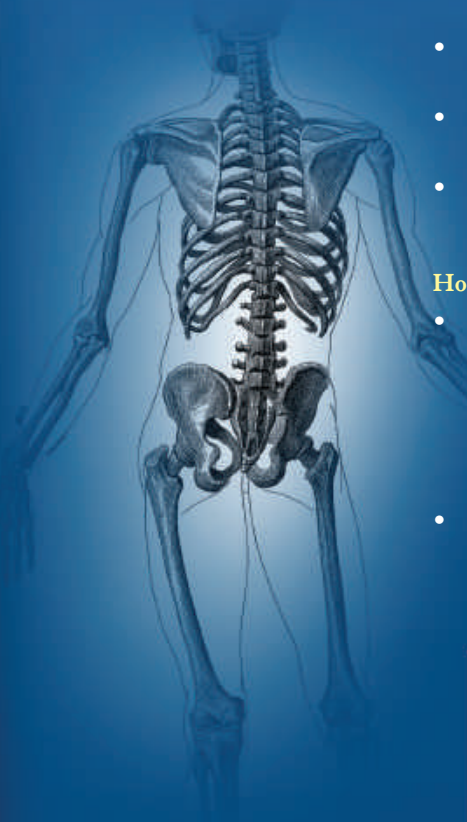
Why do you need to do a BMD test?

Those patients who are at risk for developing osteoporosis need to do this examination. By this test your doctor will be able to assess your bone strength and follow it up over time. The examination will tell us if your bone strength is normal or at risk for fractures. These tests can also be used to evaluate the response to treatment - to evaluate if your bone is strengthening – proving therapy is effective.Please make it a point to ensure that the test done to reevaluate your bone strength after treatment is done on the same machine- as results can vary from model to model.

What are guidelines for doing a BMD Examination?

The ISCD (International Society of Clinical Densitometry) currently recommends that a bone density test be done for:

- All women aged 65 and older.
- All men aged 70 and older.
- Anyone with a fragility fracture.
- Anyone with a disease, condition or medication associated with osteoporosis.
- Anyone who is considering therapy for osteoporosis, if bone density testing would facilitate the decision.
- Women who have been on hormone replacement therapy for prolonged periods.
- Anyone being treated for osteoporosis, to monitor the effect of therapy. (usually done after one year of treatment).



How should the patient prepare for the examination?

- You should wear loose, comfortable clothing, avoiding garments that have zippers, belts or buttons made of metal. You may be asked to remove some or all of your clothes and to wear a gown during the exam. You may also be asked to remove jewelry, dentures, eye glasses and any metal objects or clothing that might interfere with the x-ray images.
- On the day of the exam you may eat normally. You should not take calcium supplements for at least 24 hours before your exam.

Fig. 2 **Discovery - Hologic Systems**

- Inform your physician if you recently had a barium examination or had been injected with a contrast material for a computed tomography (CT) scan or radioisotope scan. In such cases you have to wait 10 to 14 days before undergoing DEXA test.
- Women should always inform their physician and imaging technologist if there is any possibility that they are pregnant. Many imaging tests are not performed during pregnancy so as not to expose the fetus to radiation. If an x-ray is necessary, precautions will be taken to minimize radiation exposure to the baby.

How is the procedure performed?

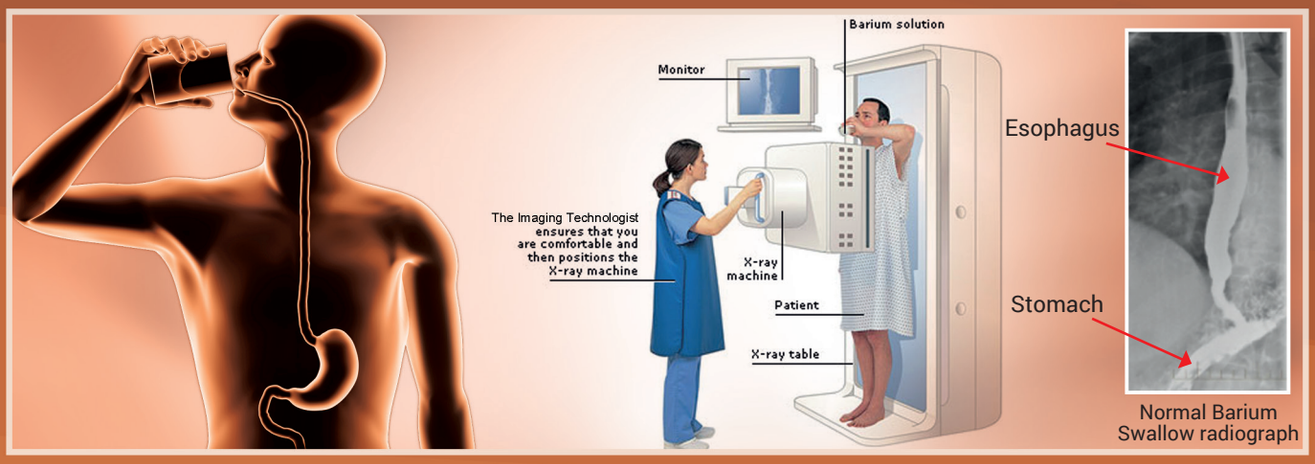
- This examination is usually done on an outpatient basis.
- In our machine at Ahmadi Hospital examination, which measures bone density in the hip and spine, the patient lies on a padded table. An x-ray generator is located below the patient and an imaging device, or detector, is positioned above. (Fig.2)
- To assess the spine, the patient's legs are supported on a padded box to flatten the pelvis and lower (lumbar) spine. To assess the hip, the patient's foot is placed in a brace that rotates the hips inward. In both scans, the detector is slowly passed over the area, generating images on a computer monitor.
- You must hold very still and may be asked to keep from breathing for a few seconds while the x-ray picture is taken to reduce the possibility of a blurred image. The technologist will walk behind a screen to activate the x-ray machine.
- The DEXA bone density test is usually completed within 10 to 30 minutes.

What will you experience during and after the procedure?

Bone density test is a quick and painless procedure. Routine evaluations every one year may be needed to see any significant changes in bone mineral density. Few patients, such as patients on high dose steroid medication, may need follow-up at six months.

BARIUM SWALLOW

"Barium Swallow" is a radiological investigation to examine the tube that leads to the stomach. It includes pharynx, oesophagus and limited views of stomach.



PREPARATION:

1. Don't eat or drink 8 hours before the examination.
2. Kindly arrive 15 minutes prior to your appointment time. We strive hard to be punctual. However, you may have to wait a little longer, if we have an emergency.
3. If you are diabetic, you need to make sure you have enough to eat the day before your examination to prevent low blood sugar.

PROCEDURE:

1. The procedure lasts about 20 minutes.
2. You will have to change your clothes and wear the hospital gown. Do not wear any jewellery on your neck.
3. You will find a Radiologist, an Imaging Technologist and a Nurse in the examination room.
4. You may be asked to stand upright or lie on the X-Ray table.
5. You will be asked to drink a liquid called barium or water-soluble iodine, depending upon your history. The liquid solution can have a funny taste but you have to cooperate while drinking.
6. You will be instructed to hold the liquid in your mouth and drink it when instructed by the radiologist.
7. You may be asked to move into different positions and to hold your breath while the images are acquired.

POST PROCEDURE:

1. You can eat and drink normally immediately after the procedure.
2. You should drink plenty of fluids to help the barium pass out of your system. Eat plenty of fruits on that day.
3. After the test, barium can cause your faeces to be white or pale until it has all come out (usually a day or two). This is a normal phenomenon.

WARNING:

Female patients should notify the Radiology Reception / Imaging Technologist / Radiology Nurse if she is or suspecting to be pregnant. Please inform about the date of your last menstrual cycle

NOTE:

1. Relatives are not allowed during the examination.
2. The result will be available in your electronic file on the computer for your referral doctor to view within a week.

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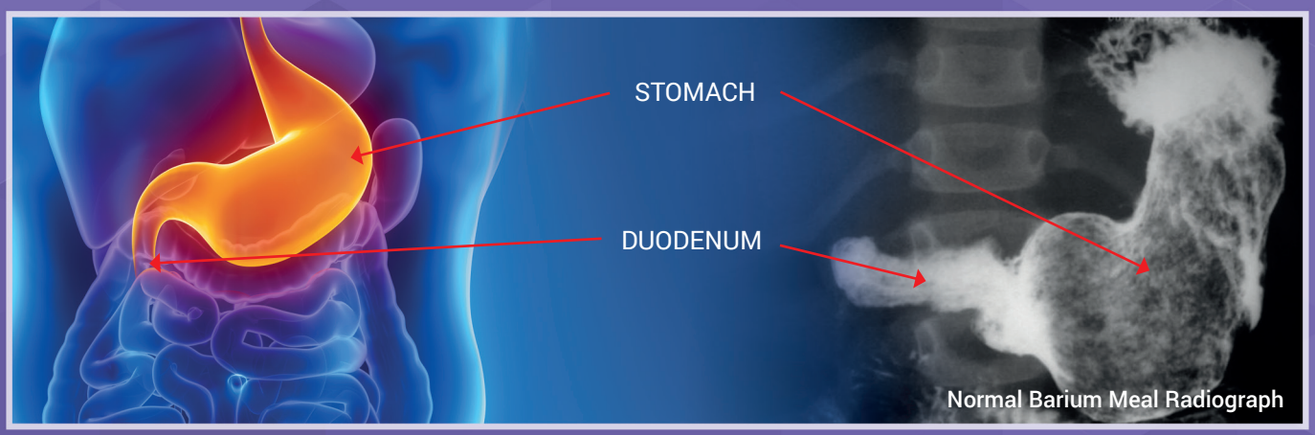
BARIUM MEAL

"Barium Meal" is a Radiological Investigation to examine your stomach and the first part of small intestine called duodenum.



PREPARATION:

1. Don't eat or drink 8 hours before the examination.
2. If you take any medications in the morning, do not take your morning dose, but bring your medicines to the radiology department with you. You can have them after the procedure.
3. Kindly arrive 15 minutes prior to your appointment time. We strive hard to be punctual. However, you may have to wait a little longer, if we have an emergency.
4. If you are diabetic, you need to make sure you have enough to eat the day before your examination to prevent low blood sugar.

PROCEDURE:

1. The procedure lasts about 30 minutes.
2. You will have to change your clothes and wear the hospital gown. Do not wear any jewellery on your neck.
3. You will find a Radiologist, an Imaging Technologist & a Nurse in the examination room.
4. You may be asked to stand upright or lie on the X-Ray table. The X-ray table will be moved to different positions.
5. You will be asked to drink a liquid called barium or water-soluble iodine, depending upon your history. The liquid solution can have a funny taste but you have to cooperate while drinking.
6. You may be asked to swallow a spoon of granules along with water, which produces gas in the stomach.
7. You may be given an injection to relax your bowel.
8. You may be asked to move into different positions and to hold your breath while the images are acquired.

POST PROCEDURE:

1. You can eat and drink normally immediately after the procedure.
2. You should drink plenty of fluids to help the barium pass out of your system. Eat plenty of fruits on that day.
3. After the test, barium can cause your faeces to be white or pale until it has all come out (usually a day or two). This is a normal phenomenon.
4. If you had an injection to relax your bowel, it may cause some blurring of your vision for an hour or so. If this happens, it is best not to drive.

WARNING:

Female patients should notify the Radiology Reception / Imaging Technologist/Radiology Nurse if she is or suspecting to be pregnant. Please inform about the date of your last menstrual cycle

NOTE:

1. Relatives are not allowed during the examination.
2. The result will be available in your electronic file on the computer for your referral doctor to view within a week.

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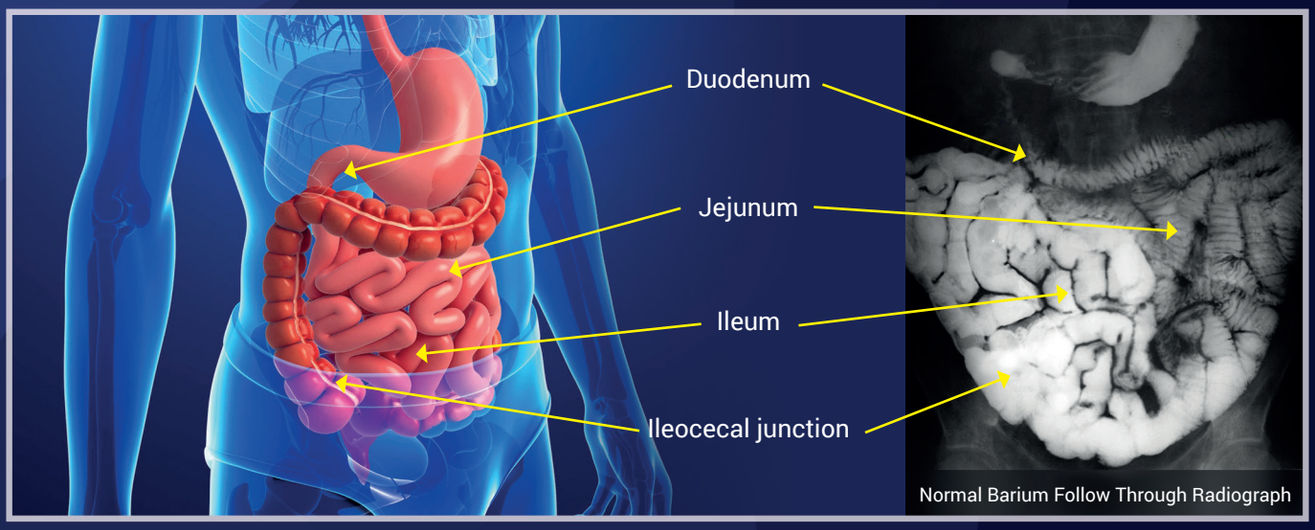
BARIUM FOLLOW THROUGH

"Barium Follow Through" is a Radiological Investigation to examine your small intestine (Duodenum/Jejunum/Ileum).



PREPARATION:

1. Don't eat or drink after midnight prior to the day of examination.
2. Kindly arrive 15 minutes prior to your appointment time. We strive hard to be punctual. However, you may have to wait a little longer, if we have an emergency.
3. If you are diabetic, you need to make sure you have enough to eat the day before your examination to prevent low blood sugar.

PROCEDURE:

1. The procedure may last up to 4 hours.
2. You will have to change the clothes and wear the hospital gown.
3. You will find a Radiologist, an Imaging Technologist and a Nurse in the examination room.
4. You will be asked to lie on the X-Ray table.
5. You will be asked to drink 4 to 5 cups of a liquid called barium or water-soluble iodine, depending upon your history. The liquid solution can have a funny taste but you have to cooperate while drinking.
6. You may be asked to move into different positions and to hold your breath while the images are acquired.
7. A series of images may be acquired to monitor the passage of barium along the small intestine.

POST PROCEDURE:

1. You can eat and drink normally immediately after the procedure.
2. You should drink plenty of fluids to help the barium pass out of your system. Eat plenty of fruits on that day.
3. After the test, barium can cause your faeces to be white or pale until it has all come out (usually a day or two).This is a normal phenomenon.

WARNING:

Female patient should notify the Radiology Reception / Imaging Technologist / Radiology Nurse if she is suspecting to be pregnant. Please inform about the date of your last menstrual cycle.

NOTE:

1. Relatives are not allowed during the examination.
2. The result will be available in your electronic file on the computer for your referral doctor to view within a week.

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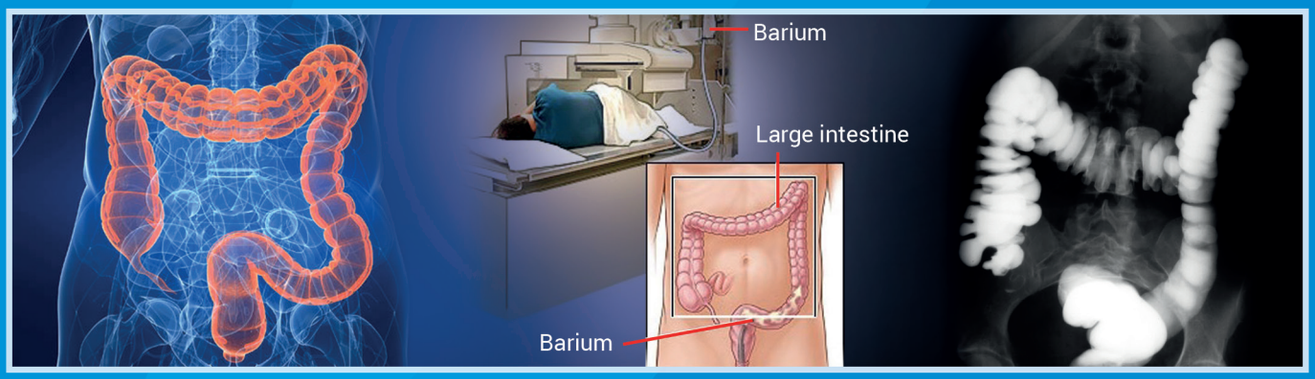
BA-ENEMA

X-Ray Imaging of the Large Intestine

It is a digital x-ray screening examination of the large intestine (colon) by injecting almost one liter of barium and some air through the rectum.



PREPARATIONS:

1. Avoid fatty meals and milk three days before the examination.
2. Drink a lot of fluid for three days before the examination.
3. Regarding bowel preparation, please follow instructions provided by radiology reception.
4. Fast for eight hours before the examination.

PROCEDURE:

1. Exam duration may last one hour or more depending on patient condition and exam.
2. Patient should change all his clothes and wear the hospital gown.
3. A Radiograph of the abdomen will be taken to check the intestine preparation. If the preparation is not good, the patient will be given another appointment.
4. A tube will be inserted into the rectum by the nurse and one liter of barium and some air will be injected through the rectum.
5. Imaging will be done in different positions and the patient has to hold the tube while changing positions to avoid displacement of the tube.

POST PROCEDURE:

1. You can eat and drink normally immediately after the procedure.
2. You should drink plenty of fluids to help the barium pass out of your system. Eat plenty of fruits on that day.
3. After the test, barium can cause your faeces to be white or pale until it has all come out (usually a day or two).This is a normal phenomenon.

WARNINGS:

Female patient should notify the Radiology Reception / Imaging Technologist / Radiology Nurse if she is suspecting to be pregnant. Please inform about the date of your last menstrual cycle.

NOTE:

1. The results will be available on the computer for the ordering doctor to view within a week.
2. No relatives will be allowed inside the examination room.

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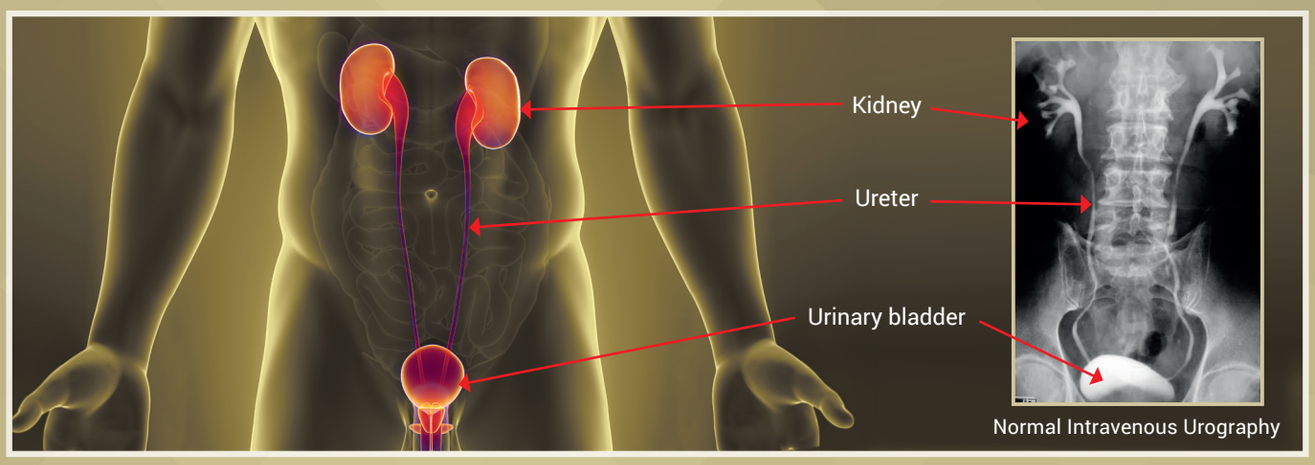
INTRAVENOUS UROGRAPHY (IVU)

It is a radiographic examination to assess the kidneys, Ureters and the Urinary bladder (Urinary tract) by injecting a special dye (Contrast Media) via a vein. The procedure is performed for patients who have repeated infections, renal colic, suspected obstruction and hematuria.



PREPARATION:

1. Your appointment for IVU will be stated in the appointment slip.
2. You will be asked to get a renal profile blood test done in order to check the kidney function.
3. Two days before your examination avoid fatty food and milk. A lot of liquids are advisable.
4. You are required to fast 8 hours before the examination.
5. You will have to take two laxative pills at 10 am and two pills at 6 pm one day prior to the examination to guarantee clearance of the bowel.
6. On the day of the examination you will insert one “micro lax “suppository 2 hours before the appointment time.

EXAM PROCEDURE:

1. In the examination room, you will be asked to disrobe, remove any jewelry, and put on a hospital gown.
2. You will lie on your back on the X-ray table and an image will be taken to assess your preparation. If your preparation is not meeting the standards, you will be given another appointment with proper bowel preparation.
3. Contrast media will be injected through a vein (by the Radiologist/Nurse).
4. After injection, you may feel warm in your arm and metallic taste in your mouth. This is a normal phenomenon and will disappear after a few minutes.
5. You should hold your breath during the X-ray exposure as instructed by the Imaging Technologist.
6. A series of images will be acquired at different time intervals. The number and the timing of images taken depend on the reason for the examination.
7. A compression band might be applied to your abdomen to improve the image quality.
8. The procedure should last about one hour. It may take longer depending on your renal function.

WARNING:

1. If you have a history of Bronchial asthma or any type of allergies you should inform about it to radiology reception/Imaging Technologist.
2. If you are Diabetic on Metformin tablets (Glucophage/Janumet) you should stop tablets on the day of the examination. You must have another blood test after 48 hours of your examination with contrast media injection to check your kidney function before you can start taking metformin again. Check with your doctor for the results of the blood test and instructions about resuming metformin.
3. Female patients should notify the Radiology Reception/Imaging Technologist/Radiology Nurse if she is or suspecting to be pregnant. Please inform about the date of your last menstrual cycle

NOTE:

1. Relatives are not allowed during the examination.
2. The result will be available in your electronic file on the computer for your referral doctor to view within a week.

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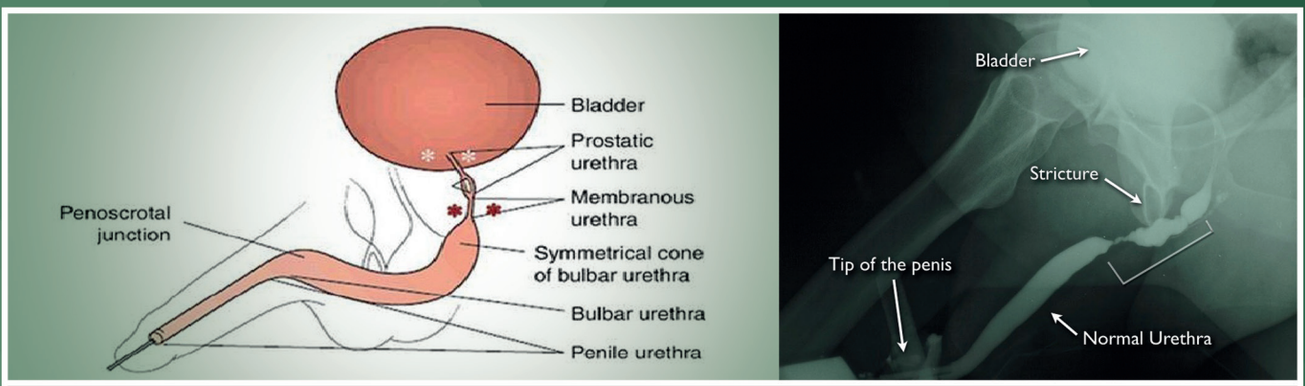
URETHROGRAM

X-Ray Imaging of The Urethra



A Urethrogram is a digital x-ray screening examination to evaluate any abnormalities in the urethra by injecting contrast media into the urethra. The urethra is the tube that runs from the bladder through the prostate and penis. A Urethrogram is usually carried out to show the cause of poor urinary flow, thought to be caused by narrowing (a stricture) of the urethra.

PREPARATIONS:

1. Please shave the genital area before the appointment.
2. If you had any reaction to contrast media before please inform the radiology reception staff and technologist before the procedure.

PROCEDURE:

1. Exam duration may last 30 to 60 minutes or more depending on patient condition.
2. Patient will be asked to empty the bladder, change all his clothes and wear the hospital gown.
3. There will be a radiology nurse / Technologist in the room to assist the radiologist.
4. The patient lies on his side on a X-ray table called a Fluoroscopy table.
5. Sterile drapes will be placed over the lower body. The urethral opening will be cleaned and disinfected and some local anesthetic gel will be applied before injecting the Contrast Media by the radiologist.
6. The radiologist will carry out the procedure by placing a narrow catheter (a thin rubber tube) just into the end part of the penis where the urine comes out. Most people will experience some discomfort during placement of the tube.
7. Contrast media is gently injected through the catheter and imaging is done. You might be asked to move slowly to different positions during the procedure.
8. In some instances after injecting the contrast, you may be asked to pass urine into a bowl in standing position and imaging will be done.

POST PROCEDURE:

1. After the Urethrogram is over, you may notice some blood at the tip of your penis. It is normal to feel some discomfort when passing urine for 24/48 hours following the examination. You may also note a small amount of blood in the urine. This is normal after having a catheter inserted, will go away in a day or two and you do not need to worry If bleeding persists consult your referral doctor.
2. The patient can resume usual daily activities immediately following the examination.

NOTE:

1. The results will be available in your file on the computer for your ordering doctor to view within a week.
2. No relatives will be allowed inside the examination room.

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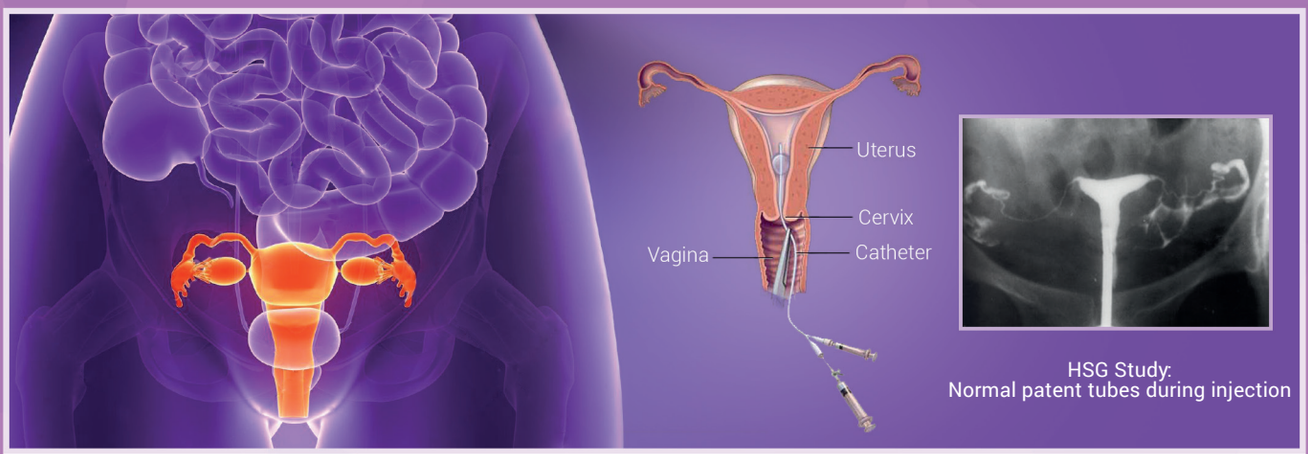
HYSTEROSALPINGOGRAPHY (HSG)

"It is an internal radiological investigation of the uterus and uterine tubes by injecting Contrast media into the uterus. This procedure is done to study the patency of the uterine tubes".



HSG Study:
Normal patent tubes during injection

PREPARATION:

1. Ladies for HSG should inform the Radiology department about their first day of period to get appointment at eight or ninth day of period.
2. No sexual intercourse from end of your period till examination day.
3. Please shave your private parts.
4. Make sure that your menstrual bleeding has stopped because we are unable to perform the examination if you are still bleeding.

THE PROCEDURE:

1. The examination will take about 20 minutes.
2. You will find a Gynecologist / Radiologist / Female Imaging Technologist / Nurse in the examination room. Your privacy will be protected at all times.
3. You should change your clothes and put on the hospital gown.
4. You should empty your bladder before the examination.
5. You will be asked to lie down on your back on the X-Ray table.
6. The Gynecologist places the cannula into cervix and injects the contrast media.
7. Fluoroscopic images are taken by the radiologist while the contrast media is injected. You might experience some pain during the injection. Deep breaths will help relieve the pain.
8. At the end of this exam, you might have minor bleeding for a few days.

WARNING:

Female patient should notify the Radiology Reception / Imaging Technologist / Radiology Nurse if she is suspecting to be pregnant. Please inform about the date of your last menstrual cycle.

NOTE:

1. The result will be available in your electronic file on the computer for referral doctor to view within a week.
2. No relatives are allowed inside the examination room.

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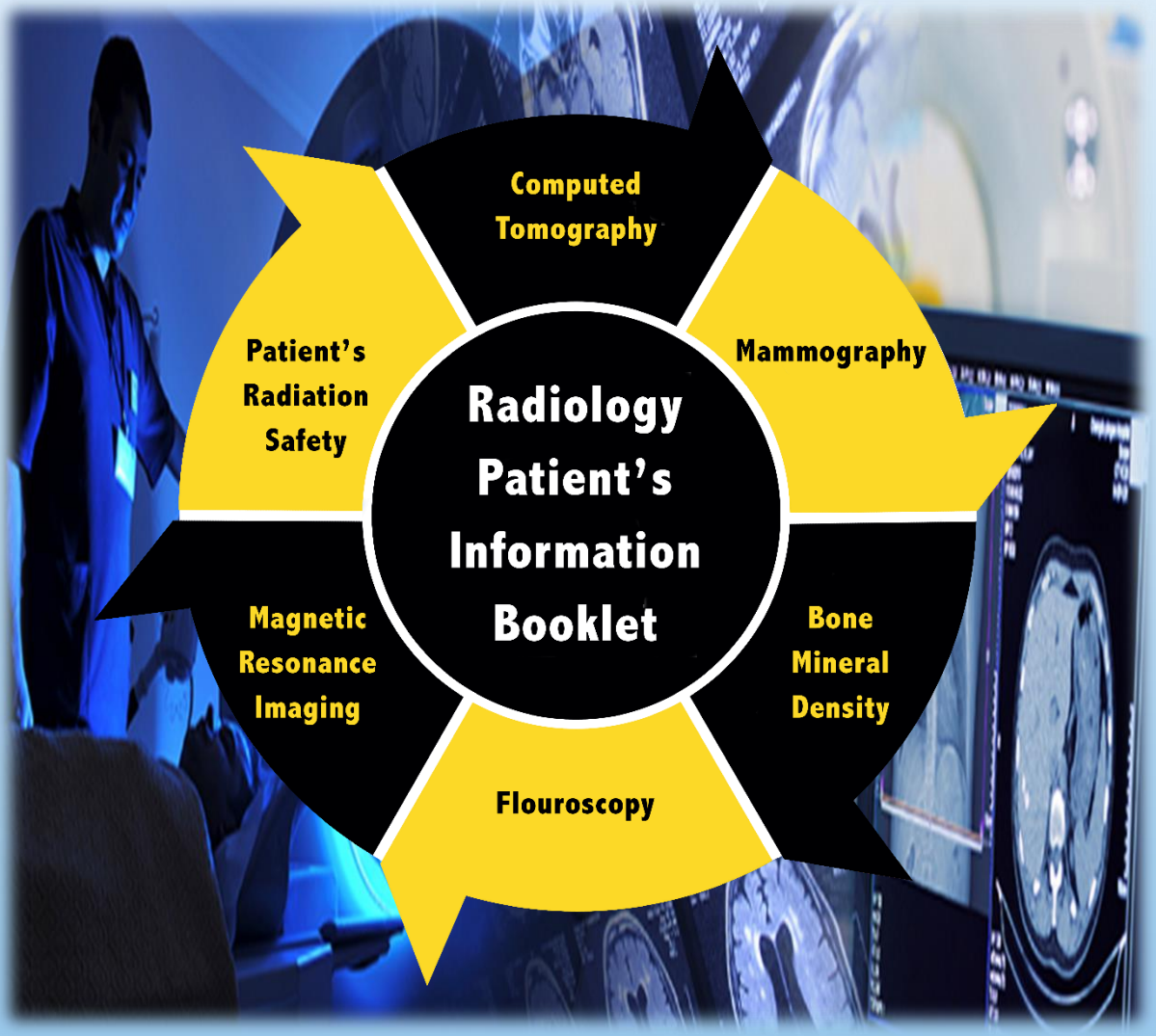

For further clarifications regarding bookings and Appointments for Radiology, Please contact:

Ahmadi Hospital

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