Bone Marrow Aspiration and Biopsy

What is bone marrow?

Bone marrow is the spongy tissue and fluid found inside some of the larger bones in your body. Bone marrow is where your body makes three types of blood cells: red blood cells, white blood cells, and platelets.

What are bone marrow aspiration and biopsy?

Bone marrow aspiration and biopsy are procedures to collect and look at your bone marrow. They can show if your bone marrow is healthy and making normal amounts of blood cells.

Bone marrow aspiration is a procedure to collect a sample of bone marrow fluid. This fluid is then looked at under the microscope. It is checked for abnormal cells. It may also be tested in other ways.

A bone marrow biopsy is when a small sample of bone is removed from a part of your body. The sample of bone is then looked at under the microscope and may also be tested in other ways.
Who needs a bone marrow aspiration and biopsy?

Your doctor may ask you to have a bone marrow aspiration or both an aspiration and a biopsy for many reasons. Some reasons may be:

1. To find the reason for:
   • a low number of red blood cells (anemia)
   • a low number of white blood cells (leucopenia)
   • a low number of platelets (thrombocytopenia)

2. To find the reason for a high number of the types of blood cells listed above.

3. To monitor a condition that causes a change in the blood cells.

Many conditions can cause these changes in your blood, such as leukemia, lymphoma, myeloma, and various other types of blood disorders.

What are the risks of bone marrow aspiration and biopsy?

Bone marrow procedures are considered low risk. It is rare that things may go wrong. If there are complications, they are generally mild.

Watch for these signs and symptoms:

Bleeding from the biopsy site.

- This happens to a small number of people. This is usually not a big problem and the bleeding stops quickly when some pressure is put on the site.
- Sometimes, the bleeding is more serious. Rarely, some people may need a blood transfusion to deal with it.
Infection after the biopsy or aspiration.

- There is a small risk that the site where the bone marrow was collected will become infected after the biopsy or aspiration.

- Rarely, the biopsy needle damages areas of the body where the needle was inserted.

**What should I do to get ready for this procedure?**

- Your doctor will decide if you will need a blood test before the bone marrow procedure. This blood sample will be used to check how well your blood clots to make sure that you will not bleed too much from the biopsy site. The blood sample will be compared to your bone marrow sample(s).

- If you normally take medicines that affect blood clotting, such as Aspirin® or warfarin, your doctor may ask you to stop taking these, or to reduce the dose. You will need to do this for 1 week before the procedure. Your doctor will decide if you need to stop these medicines before your procedure.

- Tell your doctor if you have ever had an allergic reaction to a local anesthetic, latex, cleaning solutions, or Elastoplast®.

- Tell the doctor if you have had hip replacement surgery or radiotherapy to your pelvis.

- You will need to sign a consent form before the procedure. Signing the form means that you understand what the procedure involves and what the risks may be.

**How is the procedure done?**

Just knowing that you are going to have a bone marrow aspiration and biopsy may cause some stress or anxiety for you. Keep in mind that bone marrow procedures are not always painful. The procedures are also over quickly.
Please ask all the questions you need to before you have the procedure to help you feel comfortable before the procedure begins.

What can I expect during a bone marrow aspiration?

1. Bone marrow samples are usually taken from the top of the pelvic bone. This is the bone that you can easily feel just below each side of your waist. Sometimes, other large bones are used, such as the breastbone (sternum).

2. You will be asked to lie on a bed on your stomach or your side. How you will lie down depends on the exact site the doctor chooses to use. If you are on your side, you will be asked to bring your legs up to your chest as far as you can.

3. The skin over the area where the sample will be taken will be cleaned with antiseptic (to kill all the germs).

4. You are then given a needle to numb or “freeze” the area of skin and tissues just over the bone where the sample will be taken. The medicine used for numbing stings at first, but after a short time the skin becomes numb.

5. A needle is pushed through the numb skin into the bone to collect the bone marrow fluid. A syringe is used to draw out some liquid bone marrow. You may feel a brief sharp pain or a stinging, sucking or pulling sensation in the pelvic area as the liquid is withdrawn. Once the needle is in the right spot, the procedure takes less than a minute.
6. Your doctor may need to take several samples of fluid. The doctor needs to make sure that there is enough for testing. In rare cases, a "dry tap" may occur. This means that fluid could not be collected from the bone. The needle may need to be moved to another spot to try again.

7. After enough fluid is collected, the needle is removed from the bone and skin. If a biopsy sample is not needed, the area is cleaned and a bandage will be placed on the sample site.

**What can I expect during a bone marrow biopsy?**

A bone marrow biopsy happens after an aspiration (if you need it).

1. A thicker needle is inserted into the bone after the aspiration is completed.

2. Your doctor will turn the needle to the right and then to the left while pushing the needle into the marrow of the bone. The aim is to get a 1 to 2 cm core sample of bone marrow in one piece.

   Once the needle is in far enough, the doctor will again turn the needle to the right and then to the left to try and free the bone marrow sample from the tissue around it.

3. The doctor will then draw out the needle, containing its core sample of the marrow.

4. A bandage is then applied over the site to prevent bleeding.
It can sometimes be painful when the needle goes into the hip bone, but the pain does not last for long. You may feel a dull, aching pain or a feeling of tugging or pushing as the sample is taken. We can give you more medicine to numb the area if you find this painful.

**What will happen after the procedures?**

1. A doctor or a nurse will watch you for about 10 to 20 minutes as you lie on a bed. This is to make sure that you are not bleeding too much.

2. You can go home when you are ready if you came into the hospital just for the procedure. If you are staying at the hospital, the procedure will be done in your room.

3. The bone marrow samples are sent to a laboratory for analysis. The doctors will be able to see if your bone marrow is making enough healthy blood cells and will look for abnormal cells.

Most of the time, the information from a bone marrow procedure can help your doctor make a diagnosis, find out how advanced a disease is, or if treatment is working. Sometimes, the doctor may need you to do more tests.

Your doctor will usually give you the results within 2 weeks.

**What do I need to do after the procedure?**

- After the procedure, your hip may ache for a couple of days. You can manage this pain with medicines, such as Tylenol®. There may be some bruising where the procedure was done for a few days.

- Keep the bandage on the wound and keep the wound dry for 24 hours.

- Do not get the wound wet for 24 hours. Do not take a shower or bath, and do not swim or use a hot tub. After 24 hours, you can get the aspiration and biopsy area wet.
• Although you can return to your normal activities after a bone marrow procedure, do not exercise for 24 hours. This will help keep down bleeding and discomfort.

• A small amount of bleeding is normal.

Contact your doctor right away if:

• Blood soaks through the bandage or the bleeding does not stop with direct pressure
• Your pain gets worse
• You feel more discomfort
• If there is swelling at the procedure site
• You see redness around the site
• You notice any discharge from the bone marrow site

Who can I talk to if I have question or concerns about a bone marrow procedure?

Please talk to your doctor or nurse if you have any questions or concerns about your bone marrow aspiration and biopsy.