

Bone Biopsy Procedure Diagnosis for Bone Cancer

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A biopsy is a procedure done to remove tissue or cells from the body to be looked at under a microscope. A bone biopsy is a procedure in which bone samples are removed (with a special biopsy needle or during surgery) to find out if cancer or other abnormal cells are present [1]. A bone biopsy involves the outer layers of bone, unlike a bone marrow biopsy, which involves the innermost part of the bone. There are 2 types of biopsy:

- **Needle biopsy:** After a local anesthetic is given, your healthcare provider makes a small cut (incision) in your skin [2]. He or she inserts the special biopsy needle into your bone to get a sample.
- **Open biopsy:** After a general anesthetic is given, your healthcare provider makes a larger incision in your skin and surgically removes a piece of bone. Depending on the lab findings, you may need more surgery.

Bone biopsies may be done to evaluate bone pain or tenderness, investigate an abnormality seen on X-ray, find out if a bone tumor is cancer (malignant) or not cancer (benign), and also find the cause of an unexplained infection or inflammation [3].

Needle biopsy procedures include:

- **Fine-needle aspiration:** During fine-needle aspiration, a long, thin needle is inserted into the suspicious area. A syringe is used to draw out fluid and cells for analysis.
- **Core needle biopsy:** A larger needle with a cutting tip is used during core needle biopsy to draw a column of tissue out of a suspicious area [4].
- **Vacuum-assisted biopsy:** During vacuum-assisted biopsy, a suction device increases the amount of fluid and cells that is extracted through the needle. This can reduce the number of times the needle must be inserted to collect an adequate sample.
- **Image-guided biopsy:** Image-guided biopsy combines an imaging procedure such as a CT scan, MRI or ultrasound with a needle biopsy.

Image-guided biopsy allows your health care provider to access suspicious areas that can't be felt through the skin, such as on the liver, lung or prostate. Using real-time images, your health care provider can make sure the needle reaches the correct spot.

Types of biopsy procedures used to diagnose bone cancer include

This includes inserting a needle through your skin and into a tumor. During a needle biopsy, your doctor inserts a thin needle through your skin and guides it into the tumor. Your doctor uses the needle to remove small pieces of tissue from the tumor. Surgery is used to remove a tissue sample for testing [5]. During a surgical biopsy, your doctor makes an incision through your skin and removes either the entire tumor or a portion of it.

Determining the type of biopsy you need and the particulars of how it should be performed requires careful planning by your medical team [6]. Doctors need to perform the biopsy in a way that won't

interfere with future surgery to remove bone cancer. For this reason, ask your doctor for a referral to a team of doctors with extensive experience in treating bone tumors before your biopsy. Bone marrow is the spongy material inside some of your larger bones where blood cells are made [7]. Analyzing a sample of bone marrow may reveal what's causing your blood problem. A bone marrow biopsy is commonly used to diagnose a variety of blood problems, both cancerous and not cancerous [8]. A bone marrow biopsy can diagnose blood cancers, such as leukemia, lymphoma and multiple myeloma. It can also detect cancers that started elsewhere and traveled to the bone marrow. During a bone marrow biopsy, your health care provider draws a sample of bone marrow out of the back of your hipbone using a long needle. In certain situations, the sample can be collected from other bones in your body. You'll receive a local anesthetic or other medicine to minimize discomfort during the procedure [9]. However, in surgical biopsy, a surgeon makes an incision in your skin to access the suspicious area of cells. Examples of surgical biopsy procedures include surgery to remove a breast lump for a possible breast cancer diagnosis and surgery to remove a lymph node for a possible lymphoma diagnosis [10]. Surgical biopsy procedures can be used to remove part of a suspicious area of cells. Or surgical biopsy may remove all of the cells.

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Received: 05-Jan-2022, Manuscript No: joo-22-52386, **Editor assigned:** 7-Jan-2022, PreQC No: joo-22-52386(PQ), **Reviewed:** 14-Jan-2022, QC No: joo-22-52386, **Revised:** 17-Jan-2022, Manuscript No: joo-22-52386(R), **Published:** 24-Jan-2022, DOI: 10.35248/2472-016X.1000159

Citation: James AW (2022) Bone Biopsy Procedure Diagnosis for Bone Cancer. *J Orthop Oncol* 8: 159.

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