

# **SURGICAL MANAGEMENT OF CANCER THAT SPREADS TO THE BONE**

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THE BONE AND CANCER FOUNDATION**



## **1. When is surgery necessary for cancer patients whose disease has spread to the bone?**

The need for surgery is based on the condition of the cancer that has spread to the bone and the quality of the bone affected by the cancer. Affected bones that do not represent a risk for fracture may be treated with radiation or medical treatment to prevent further bone destruction rather than surgery. Bones affected by cancer that are significantly weakened and at risk of developing a pathologic fracture should be stabilized through surgery.

## **2. What is a pathologic fracture and how is it treated?**

A pathologic fracture is different from a simple bone fracture caused by a fall, an accident or other injury to the body. A pathologic fracture is the fracturing of a bone weakened by a pre-existing benign disease, such as Paget's disease of bone, osteoporosis, osteomalacia (disorder of bone mineralization), or the spread of cancer to the bone. Patients with lung cancer, breast cancer, kidney cancer, prostate cancer and thyroid cancers that have spread to the bone or bones affected with myeloma are at a greater risk for a pathologic fracture than patients with other cancers. Most pathologic fractures require surgery. The physician needs to determine the tumor type responsible for the fracture so that appropriate treatment can be initiated in addition to pre-planning for surgery.

## **3. What are the risks of a possible pathologic fracture?**

When a tumor spreads to the bone, the risk for fracture depends upon: 1) the specific location; 2) the size of the tumor; 3) whether the tumor causes bone loss or new bone formation and; 4) the amount of pain caused by the tumor. Large tumors involving the hip that are painful and cause extensive bone loss have a greater likelihood of fracturing. Painless tumors that increase new bone have a much lower risk of fracture and can be treated without surgery.

Tumors in bones in the upper part of the body such as the collar bone, the humerus (the long bone of the arm extending from the shoulder to the elbow), or the upper vertebrae (spine) can often be treated without surgery. However, surgery may be necessary if these bones are weight-bearing or weakened due to some prior injury or condition. The bones of the lower body such as the hips, the legs, lower back, pelvic bone and the feet are more likely to require surgery than the bones in the upper body. Since these bones of the lower part of the body bear a significant portion of the weight of the body, they are more likely to fracture and develop complications.

The spine is the most common site of cancer spreading to the bone. Patients with spinal tumors who are in severe pain, have significant neurologic complications, such as paralysis, bladder and bowel dysfunction, or have developed a spinal deformity, usually need surgery.

## **4. What are the goals of surgery for patients with cancer that has spread to the bone?**

The main goals of surgery for patients with bone metastasis are to decrease pain and improve the overall quality of life.

## 5. What are the main issues to consider before having surgery?

One of the most critical parts of surgery is pre-planning. Patients and physicians need to work together to determine the extent of the pathologic fracture and the goals of surgery. It is important that patients understand, with guidance from their physicians, the potential for full or partial healing of the specific bone fracture. Also, regarding post-surgery, patients and physicians need to work together to plan further treatment and physical therapy to prevent future re-fracturing of the bone.

## 6. Are there alternative treatments to surgery?

Yes. There are a few minimally invasive procedures that are alternative treatments to surgery. These procedures are often out-patient or short in-patient procedures that can be of great assistance in quick pain relief and improving the quality of life of cancer patients. Again, patients and physicians should work closely together to explore which procedure best matches the specific pathologic fracture and determine the potential for partial and full healing of the fracture after surgery.

### **Vertebroplasty**

This is a minimally-invasive procedure that focuses on cancer that has spread to the bones of the vertebra (spine). Vertebroplasty is the injection of bone cement into the collapsed vertebra to stabilize the fracture and reduce pain. Guided by an imaging device, physicians use a syringe to inject bone cement into the fracture. Patients undergo this procedure under anesthesia and remain in bed for approximately one hour while the cement hardens. Patients may need to stay overnight in the hospital for this procedure.

### **Kyphoplasty**

This procedure is similar to Vertebroplasty using bone cement to stabilize a fracture in the vertebra and reduce pain. Kyphoplasty uses small balloons attached to the needle to initially correct the vertebral deformity, restore the height of the collapsed vertebra, and create a space for the deposit of the bone cement. After the space has been created, the balloon is then removed and the bone cement is inserted to fill the space. This procedure lasts less than an hour and patients are under anesthesia. The procedure may require an overnight stay in the hospital.

### **Radiofrequency ablation**

This procedure is used for cancer in multiple bone sites—upper and lower body bones. It involves the use of a small needle to transmit an electric current. The needle is placed into a painful tumor that has not responded to radiation therapy. The goal of the electric current is to destroy the tumor and relieve pain. This procedure is conducted while the patient is under anesthesia.

### **Cyberknife treatment**

Cyberknife is a non-invasive procedure that directs highly focused radiation beams to tumors in the lung, prostate, spine, kidney, pancreas, and other areas. Because of its precision, cyberknife treatment can access tumors that are difficult to reach, while avoiding damage to surrounding tissue. The goal of this procedure is to destroy tumors and relieve pain.

Although the name of the procedure suggests images of scalpels and surgery, cyberknife treatment is a non-surgical, minimally invasive outpatient treatment that does not require any anesthesia. The procedure lasts for 30-90 minutes. Patients may need one-to-five treatments as determined by their physician.

## **7. Improving quality of life**

Cancer that spreads to the bone can create a number of difficulties in the quality of life of a cancer patient. Symptoms range from short-term discomforts such as decreased appetite, difficulty sleeping, extreme tiredness, nausea, and bladder/bowel dysfunction to more severe long-term effects such as paralysis or coma. The earliest and most common challenge to quality of life is recurring pain in the bones. The goal of surgery and other procedures mentioned in this booklet is to reduce pain and improve the overall quality life of all patients whose cancer has spread to the bone.

### **The mission of The Bone and Cancer Foundation is to:**

- Provide information to cancer patients and family members on the causes and current treatment of cancer that involves the bone;
- Provide information and serve as a resource for physicians, nurses and other health professionals regarding the management of cancer that spreads to the bone.

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