

**GCT  
GLOSSARY  
OF TERMS**



**GCT**  
Support

# Glossary of Terms

## A

**Ablation:** A medical procedure paired with surgery where heat or intense cold is used to destroy remaining tumor cells.

**Anterior:** a medical term specifying a direction, generally the front side of a body part.

**Arthroplasty:** A surgical technique used to remove and replace damaged joints using metal, ceramic, or non-metal material. The goal of this surgery is to reconstruct or replace the joint.

**Arthroscopy (Arthroscopic surgery):** A surgical technique that utilizes multiple small incisions into which a camera and tube are inserted. The camera allows the surgeon to visualize inside the joint and project it on a monitor. The surgeon will use the other small incisions to insert surgical instruments to cut and remove damaged tissue and loose tumors. Both types of TGCT may be operable using this technique, although, depending on the size and extent of disease, this surgical technique may lead to incomplete removal.

## B

**Benign:** A non-cancerous mass/growth/tumor which may be locally very aggressive but is not life-threatening or cancerous and does not usually spread to other organs or joints..

**Biopsy:** A procedure used to remove a small tissue sample to analyze its cells and determine their origin ( non-cancerous or cancerous) by a trained tissue specialist (Pathologist).

**Bone Cement:** A material, known as polymethyl methacrylate (PMMA) widely used as a bone substitute during orthopedic surgery. Used to fill and remake bone.

**Bone Graft:** a surgical procedure that replaces missing or receding bone with bone from other areas of the body to encourage regeneration.

**Bone Resection:** A procedure where the impacted bone is removed and replaced with a prosthetic.

**Bursa (Bursae is plural):** This is a fluid-filled sac lubricating the area between bone and soft tissue, bone and tendons, and bone and muscles/joints. The sac functions to reduce wear and tear.

## C

**Cancer:** An umbrella term for diseases that have cells that are life-threatening and can invade and spread to healthy cells. The ability to spread is what separates cancer from GCT. However, GCT can undergo transformation into a cancer.

**Campanacci Grade:** Based on radiological appearance, a Grade (I-III) can be given to describe how destructive a tumor is.

**Cartilage:** A firm and flexible connective tissue type that serves for structural support for the joints and bones, keeping bones from rubbing against one another. The knee has two different types of cartilage, articular and meniscus. Articular cartilage is a smooth tissue that covers the ends of bones. The meniscus is the cartilage between the bone, allowing shock absorption with wear and tear. Cartilage is not as flexible as tendons or ligaments.

**Chronic:** Diseases and symptoms described as 'chronic' are persistent and long-lasting.

**Clinical Trial:** A research study that uses human participants to extend scientific knowledge. In the case of GCT, there are observational studies where GCT patients are just monitored to learn about the disease states. Another form of study is when GCT patients are given a medicine and tracked for the impact of the medicine on the tumors and the side effects incurred.

**Connective Tissue:** This tissue type connects, separates, and supports all other types of tissue within our body.

**Colony stimulating factor 1 (CSF1):** CSF1 is a protein used by cells to signal growth, survival, and development. TGCT over-produces this protein, leading to the recruitment of other cells to become part of the tumor.

**Curettage:** A medical procedure where tissue is removed by scrapping. Often, this includes the scrapping of bone too.

**Cryosynovectomy:** A surgical technique during a synovectomy where a liquid nitrogen spray is used to make the joint uninhabitable by tumor cells. This is commonly used to attempt to reduce recurrence, although it is inconclusive if it impacts recurrence rates. [1](#)

**Cyst:** a sac-like pocket of fluid, air, or other substances. Most cysts are benign. Cysts can develop almost anywhere in the body.

## D

**Diffuse:** A form of TGCT that grows in and around the joint, tendon sheath, or bursae and is known for its aggressive characteristics. These tumors tend to grow quite large (> 5cm), have no defined boundary, and grow in larger joints, such as, the knee (75% of diagnosed), the hip, and the shoulder. There may be a single tumor or multiple.

**Denosumab:** Also known by its brand name, Xgeva or Prolia. Is a drug used to treat bone cancer and bone problems in patients who have cancer. The drug works by blocking a certain receptor in the tumor cells which slows tumor cells that dissolve bone.

**Distal Femur:** An area at the bottom of the femur (thigh bone) where the bone and the knee joint meet.

**Distal Radius:** The end of the bone in your wrist closest to where your wrist meets your thumb.

## E

**Edema/Effusion:** Swelling caused by excessive fluid (often synovial fluid) trapped in tissue.

**Embolization:** This treatment approach cuts off the blood supply to a tumor by inserting beads into its blood supply (artery).

## F

**Fibroblasts:** This is a type of connective tissue cell that produces collagen and acts as structural support throughout your body. These are the most common connective tissue cell types.

**Foot Drop:** This is a general term for a syndrome in which you cannot lift your foot or flex your toes and/or ankle. This is a common post-operative complication seen with knee surgeries.

## G

**Giant Cell Tumor of the Tendon Sheath (GCT-TS):** GCT-TS is now a term used synonymously with localized TGCT.

**Giant Cell Tumor of the Bone (GCT-B):** A rare, typically noncancerous, locally aggressive intermediate tumor that develops on the ends of long bones.

## H

**Hemosiderin Deposition:** an iron-storage compound in your tissue, commonly present in the tumors creating an orange and brown stain. TGCT is typically pigmented due to hemosiderin leading to the original name of pigmented villonodular synovitis.

**H3F3A Mutation:** A mutation seen in >90% of GCT of the bone that leads to changes in how tightly genes are held. The biological implications of this mutation are unknown, but can be used to conclude diagnosis.

## I

**Idiopathic:** A disease which arises spontaneously and randomly with an unknown cause. GCT is idiopathic.

**Insidious:** A term used to describe the disease or symptom development where there is a gradual and slow onset of the disease.

**Intermediate Tumor:** This is a classification that describes a tumor that acts as a low-grade local cancer with the possibility of secondary metastasis, often to the lungs. It shows locally destructive and infiltrative growth patterns similar to cancers, however, these are not cancerous. GCT-B is described as an intermediate tumor.

## J

**Joint:** A location of connective tissue where two bones meet, linking the skeletal system and allowing different types of movement.

**Joint Preserving Treatment:** A form of treatment that protects the joint, possibly delaying the need for a joint replacement. This can include surgeries like joint reconstruction, physical therapy, or nonsurgical options.

## L

**Ligament:** A short band of flexible and firm fibrous connective tissue that attaches one bone to another bone. This holds the bones together and provides stability.

**Limb Salvaging Surgery:** This phrase encompasses any surgical approach that attempts to remove a tumor in a limb without removing the limb. The bone and tissue surrounding the tumor may also be removed and replaced. These surgeries attempt to preserve the function and appearance of the limb.

**Localized:** A form of TGCT that grows inside and outside the joint, tendon sheath, or bursae. Localized TGCT tend to grow in smaller joints, such as fingers, toes, wrists, and knees. These tumors tend to be small (< 5cm) and present with

a clear boundary, sometimes encapsulated, making them easier to completely remove during surgery.

## M

**Magnetic Resonance Imaging (MRI):** an imaging technique used to diagnosis TGCT and GCT-B. This technique is used in radiology to see soft tissue and other anatomy of the body. Using a strong magnetic field, radio waves, and magnetic gradients, an image can be generated that includes skeletal structures, vasculature, soft tissue, and organs. Contrasting dye, known as a gadolinium-based dye, can be used to enhance the imaging quality of soft tissue. This technique does not emit ionizing radiation.

**Malignant:** a term used to describe an abnormal tumor cell that invades and spreads among healthy tissue, also known as cancerous.

**Metastasis:** Malignant, also known as cancerous, cells can spread from the primary tumor location to a secondary location, such as the lungs, liver, or other limbs. Metastasis is used as another word for cancerous spread. It is rare for GCT to metastasize to other locations.

**Monoclonal Antibody:** A laboratory-produced protein that is used to target specific targets. Denosumab works by blocking a protein called RANKL.

**Monocytes:** Monocytes are a type of white blood cells that aid in the immune response. These cells are one of the types of cells recruited from the TGCT cells to become part of the tumor.

**Mononuclear:** refers to a characteristic of a cell type. GCT cells can be mononuclear or multinuclear. Mononuclear means that the cells have a single rounded center. Pathologists can determine the cell type based on features of the cell. White blood cells, such as monocytes, commonly have single rounded centers and are part of the tumor.

**Morbidity:** A general term for a physical or psychological illness or impairment. This is often used to describe chronic diseases that may lead to different illnesses with time.

**Multinuclear:** Multinuclear refers to cells with multiple rounded centers. This

occurs when a GCT cell fuses with a monocyte, a type of white blood cell. GCT has different types of cells as part of its tumor and pathologists use these characteristics to diagnose patients.

## N

**Neoplasm:** A term, synonymous with tumor, used to describe a mass of cells that is either benign or malignant.

**Neuropathy:** A disease or symptom as a result of peripheral nerve damage, typically causing numbness and weakness in the affected limb. This can be a post-operative complication or a complication of advanced disease.

**Nodule:** A small mass of soft tissue that appears rounded. These small tumors can be loose in the joint or attached to the joint lining.

**Non-Malignant (non-cancerous):** means that the tumor cells are unable to invade and spread among healthy tissue. Non-malignant also can refer to benign.

## O

**Oncologist: Medical Doctors** specializing in diagnosing and treating tumors, including other soft tissue tumors like GCT.

**Open Surgery:** A surgical technique that utilizes a large incision to gain access to a joint or bone.

**Osteoarthritis:** Osteoarthritis is the most common form of arthritis. This occurs when the tissue at the end of and between bones wears down.

**Osteoclasts:** A type of cell part of GCT of the bone that can dissolve bone.

**Orthopedic Oncologist:** Orthopedic Oncologists use a combination of pharmaceuticals and surgery to treat tumors.

**Orthopedic Surgeon: Medical Doctors** specializing in operating on skeletal and anatomical structures. Generally, orthopedic surgeons fall into sports medicine, generalists, upper extremity, or lower extremity specializations. It is important to

have a multi-disciplinary team that includes an orthopedic oncologist and medical oncologist that specializes in soft tissue and sarcomas.

## P

**Patella:** Also known as the 'kneecap'.

**Posterior:** a medical term specifying a direction, generally the back side of a body part.

**Prognosis:** refers to the expected outcome of the course of a disease. A healthcare provider makes an assessment of the prognosis based on the disease, patient history, and other patient specific characteristics, such as treatment, diagnosis, and symptoms.

**Progression Free Survival (PFS):** PFS refers to the duration of time during and after treatment of a disease until the disease progresses or gets worse. This is often used in clinical trials as a measurement for drug effectiveness.

**Proximal Tibia:** The upper portion of the 'leg' bone closest to the kneecap.

**Pigmented Villonodular Synovitis:** A term that was used prior to the 2013 to describe diffuse TGCT.

## R

**Radiation:** A therapy that uses ionizing radiation to kill or control cells. This can be done through local administration, Y-90 injections, during surgery or through external beam pre/post-operatively. The effectiveness of radiation on TGCT is inconclusive. For GCT, it is generally discouraged as secondary malignancy has been found. There is a risk of radiation-induced sarcoma that detours its use based on the lack of proven efficacy. Consult with your healthcare team, if radiation has been suggested for you.

**Radiosynoviorthesis (Radiosynovectomy):** A novel technique used during the removal of the synovial membrane to locally administer a small amount of beta-emitting atom to the synovium. This is a form of localized radiation therapy.

**RANKL:** A protein that promotes bone dissolving cell development.

**RANKL Inhibitor:** Drugs produced to treat osteoporosis and bone density. In high doses, they are used to prevent bone damage and stop growth of giant cell tumors.

**Range of Motion (ROM):** ROM refers to the mobility and flexibility of a joint. This can be measured as the distance and direction a joint can move to its full potential.

**Recurrence:** the reappearance of a tumor following treatment. Diffuse TGCT has recurrence rates of around 55%, while localized TGCT has recurrence rates around 15%. Recurrence can also occur due to incomplete removal of the tumor during surgery. Recurrence in GCT-B is somewhere around 6-43% depending on the literature.

**Recurrence Free Survival (RFS):** RFS is the length of time after a primary treatment ends that the patient goes without recurrence of symptoms or disease. This is commonly measured during a clinical trial to evaluate how well a drug treatment may work.

**Rheumatologist:** A Medical Doctor who is a board-certified internist that has had extra training and experience in the diagnosis of arthritis and other musculoskeletal diseases.

## S

**Sacrum:** The lowest part of the spine connected to the pelvis, known as the tailbone. This structurally supports and strengthens the pelvis.

**Sarcoma:** A general term for a malignant soft tissue tumor that is made up of connective tissues, such as cartilage, bone, fat, vascular, and other tissues. TGCT is not a sarcoma, however, sarcoma specialists are an important part of a healthcare team since they have experience in soft tissue tumors similar to TGCT.

**Soft Tissue Tumor:** An umbrella term for all benign and malignant tissues made out of connective tissue, such as cartilage, bone, synovial tissue, fat, vascular tissue, smooth muscles, and other tissue.

**Stable Disease:** A term used to describe a tumor that is neither growing nor

shrinking. Stable disease may include the presentation of symptoms or it may not.

**Standard of Care:** refers to the recommended treatment for a disease. Different patients may require different standards of care based on their specific disease. TGCT does not have a consensus on the standard of care, making treatment more patient-specific and physician-specific.

**Synovium:** Soft tissue that lines the cavity of the synovial joint, tendon sheath, and bursae. The synovium lines the inner surface of the joint.

**Synovial Fluid:** Synovial fluid is a viscous fluid found in the cavity of the synovial joint. This fluid lubricates the joint and allows movement to occur with ease.

**Synovectomy:** A surgical procedure where the synovial tissue lining of the joint is removed.

## T

**Tendon:** A fibrous connective tissue that serves to move the bone by attaching muscle to bone.

**Tendon sheath:** A layer of the synovial membrane around a tendon. This helps the tendon to stretch and not get stuck.

**Tenosynovial:** A term referring to the tendon sheath.

**TGCT:** A type of non-malignant, locally aggressive, rare tumor disease occurring in and surrounding the joint, tendon sheath, and/or the bursae. There are two subtypes: diffuse and localized.

**Tumor:** An abnormal growth of cells that create a solid mass. Tumors can be benign or malignant.

## Y

**Yttirum-90 Radiotherapy (Y-90):** A locally administered radiation therapy that uses a radioactive isotope to kill cells.