

BONE AND SOFT TISSUE PATHOLOGY GROSSING GUIDELINES

- **NOTE: Margins should be taken before representative sections of tumor to avoid contamination.**
- **NOTE: Document in your cassette summary which cassettes (for each specimen part) are submitted for decal**
 - **Ex: Representative sections are submitted (A1, A3; B2-B4; C3-C4 following decalcification).**
 - **Ex: Representative sections are submitted:**
 - **A1- bone (decal)**
 - **A2- skin resection margin, perpendicular**
 - **B2- tibia shave (decal)**

Specimen Type: LOWER/UPPER EXTREMITY (AMPUTATION FOR TUMOR)

NOTE: Consult with the attending pathologist or contact the BST fellow before grossing.

Often, these specimens have been previously diagnosed and treated. For this reason, the importance of precise dissection to reveal structural relationships outweighs the need for expediency. **There are two methods** commonly used to process the specimen. If you are unsure of which method to use, please check with the attending physician before proceeding.

The first method is the more standard method used for most specimens and involves removing the soft tissue portion of the tumor and fixing it and sectioning (or sectioning and fixing if appropriate) it as you would other specimens. After fixation, thorough dissection of the soft tissue portion of the specimen is completed. This includes the careful measurement of the dimensions of any tumor, and its relationship to underlying bone and adjacent soft tissue structures and vasculature. The relationship of the tumor to the previous biopsy site is noted. Also noted is the relationship of the tumor to the proximal soft tissue surgical margins. Dissection of the neurovascular structures is carried out, as well as identification of lymph nodes. At this point, the following sections should be submitted for processing:

1. Representative sections of the distal and/or proximal soft tissue margins including nerve, artery, vein, lymph nodes, muscle, and synovium if present. **(Should be taken before sectioning the tumor!)**
2. Sections of any additional lymph nodes identified.
3. Representative sections of tumor including relationship to adjacent tissue.
4. Sections of any other unusual appearing tissue.

After thorough dissection of the soft tissue portion has been completed, the soft tissue portion of the specimen is removed from the specimen. The bony portion of the specimen is examined and described further. Proximal marrow margin should be sampled. This may be done by scooping out the proximal portion of the marrow, or by using the band saw to obtain a cross section, as appropriate. If there is a distal bony margin, a section of the distal bony surgical margin is also taken. The specimen is then carefully serially sectioned along the long axis. A description of the appearance of the longitudinally sectioned bone is necessary at this time. Important points to note include the size of the tumor, as well as the location, such as intramedullary, cortical,

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diaphyseal, metaphyseal, *etc.* It is important to mention extent of spread within the bone itself, for example extension through the epiphyseal plate, expansion through the cortex, involvement of the periosteum, *etc.* Always note the gross distance of the tumor from the closest proximal or distal margin. For patients who received prior treatment, one of the most important assessments is the amount of tumor necrosis by gross and microscopic examinations. For this reason, the amount and the type of necrosis (solid, cystic, mixed) by gross examination should be indicated. For further microscopic determinations, an entire longitudinal slice of the tumor is submitted for histologic study. A diagram of the longitudinal section of the bone displaying the location and extent of the tumor is sometimes useful, but is not required. This diagram may also be used to show where various sections were taken. At this point the following sections should be submitted for processing:

1. Proximal (and distal) bony margins. (Should be taken before any sectioning the tumor!)
2. Representative tumor (should include a complete longitudinal sample of the tumor).
3. Any other interesting or unusual sections.

The second method of processing involves freezing the specimen. For some specimens it is helpful to freeze the specimen before fixing and sectioning. An example of such a specimen would be a treated osteosarcoma of the distal femur. Freezing the specimen prior to cutting makes the specimen firm and easier to cut while holding the tumor together (much like a giant frozen section). Sometimes you will want to freeze the entire specimen. Other times it will be easier to disarticulate the uninvolved portions of the specimen, and sample, examine, and remove excess soft tissue before freezing the involved portion of the specimen. Check with your attending pathologist before processing to know which method would be most appropriate for an individual specimen.

All portions of the specimen should be stored until the final diagnosis has been made.

It should be obvious that careful planning and experience are necessary to properly describe, and dissect these specimens. For that reason, do not hesitate to ask for guidance from somebody with experience in this type of dissection before and during the process!

Gross Template:

Labeled with the patient's name (**), medical record number (**), designated "****", and received [*fresh/in formalin*] is an [*above-knee disarticulation, hip disarticulation, etc.*] measuring ** x ** x **cm. The skin surface is remarkable for [*describe any lesions present/location/distance to margins*]. The underlying bone is [*describe cut surfaces*]. The vasculature is remarkable for [*describe patency/calcifications/stenosis*]. The adherent soft tissue is dissected through for lymph nodes. [*Describe number/size of lymph nodes identified*]. Representative sections are submitted following decalcification in [*describe cassette submission*].

Cassette Submission: Described previously.