###### Purpose

To provide a procedure for the gross dissection of a bone resection for tumor.

1. **Principle**

To take histologic sections to demonstrate the pathologic process so that a diagnosis can be made microscopically by a Pathologist. All margins should be examined microscopically.

###### Equipment

1. Ruler
2. Forceps
3. Scalpel
4. Scissors
5. Large Knife
6. Stryker Saw or Table Saw
7. **Safety**
8. **PPE** should be worn.
9. **FORMALIN** is a known carcinogen.
10. **DECALCIFICATION SOLUTION** is a strong acid.
11. **Supplies and Reagents**
12. **10% NEUTRAL BUFFERED FORMALIN** (pH range 6.9 – 7.2)
13. **DECALCIFYING SOLUTION**
14. **MOL-DECALCIFIER** (Unbuffered 10% EDTA decalcification solution for morphology and molecular studies)
15. **Quality Control**

All remaining tissue should be retained in formalin.

1. **Limitations/ Notes**

The following may influence the validity of test results:

1. The specimen should be fixed in formalin for a minimum of 6 ½ hours before being decalcified.
2. All bone dust should be well rinsed from the specimen as it can create artifact.
3. Prolonged decalcification will affect the histologic detail and the preservation of some nuclear antigens.
4. **Procedure**
5. Measure the bone resection overall (3 dimensions – cm.).
6. If the bone resection is small (ex: osteochondroma), describe the identifiable cartilage, ink the resection margin, and serially section the specimen using the Stryker Saw or Table Saw. Describe the cut surfaces and submit one section per centimeter after decalcification. (MUST fix for a minimum of 6 ½ hours before placing in decal).
7. If the bone resection is larger, provide a measurement of the bone without the attached soft tissue (3 dimensions – cm.) after measuring the specimen overall.
8. For a larger bone resection, x-rays are necessary to determine a dissection plane.
9. All soft tissue surgical margins should be inked black or multiple colors if orientation is possible.
10. Use vinegar as a mordant for the ink.
11. Any attached skin should be measured (2 dimensions – cm.) and described.
12. Using a saw, shave the surgical margin of the bone, fix and decalcify, and submit to be embedded reverse en face.
13. Section the surrounding soft tissue. Appropriately sample the closest soft tissue margins (perpendicular) and place them in cassettes before using the saw to make large bone slices.
14. Using a saw, cut the bone portion of the specimen at an appropriate thickness so that the greatest extent of the tumor is present. Saw as many parallel bone slices at an appropriate thickness as possible. If the patient has been treated, one slice (the main slice) representing an entire cross-section with the greatest extent of the tumor should be photographed so that a diagram can be made.
15. Collect a portion or portions of the tumor for special studies. If soft tumor is present, submit the portion of tumor without decal. If the tumor is completely calcified, either submit a single 1x1 cm section of tumor, no more than 1 mm thick or use a bone core needle to obtain specimen for Mol-Decal. Give all Mol-Decal cassettes to histology, ensuring a minimum of 6 ½ hours fixation in formalin before placing in Mol-Decal.
16. The sawed large bone slices must fix in formalin for a minimum of 6 ½ hours prior to decalcification. The large main slice will be decalcified with “Regular Decalcification.” Other slices that are not submitted initially for histology will also be decalcified with “Regular Decalcification” and then returned to formalin after proper decalcification for possible future histologic examination.
17. Describe the tumor and note its size (3 dimensions – cm.), shape, color, consistency, location (diaphysis vs. metaphysis vs. epiphysis), and structures that are involved.
18. Measure the distance from the tumor to the surgical resection margin of the bone and to the closest soft tissue resection margin(s).
19. Note if the tumor extends through the periosteum.
20. Measure the distance from the tumor to any attached joint.
21. Describe and measure the thickness of any attached articular cartilage (cm).
22. Describe the cancellous bone away from the tumor
23. Submit a representative section of any attached skin.
24. Submit perpendicular sections of the soft tissue margin closest to the tumor. If possible, include the tumor.
25. If the patient was previously treated, the percentage of viable tumor must be determined by submitting the entire cross-section (main slice) of the specimen that demonstrates the greatest extent of the tumor with an attached photograph with mapped out sections.
26. Additional representative sections of the tumor with the closest periosteum, articular cartilage, and adjacent cancellous bone should be submitted.
27. All bone sections should be fixed well (a minimum of 6 ½ hours) in formalin before being decalcified.
28. Include a detailed cassette summary. Photographs and diagrams should always be considered.
29. Include in the dictation which cassettes are decalcified, specifying which cassettes are Mol-Decal vs. Decal.
30. **References**

Hruban RH, Westra, WH, Phelps, PH, & Isacson, C: Surgical Pathology Dissection An Illustrated Guide, New York, NY, Springer-Verlag Inc., 1996.

Lester, SC: Manual of Surgical Pathology, New York, NY, Churchill

Livingstone, 2001.

1. **Related Documents**

RA.HI.PR.SP.005- Molecular Decalcification

1. **Authorized Reviewers**
2. Medical Director, Anatomic Pathology
3. Chief, Surgical Pathology

##### Document Control

##### Location of Master: Master electronic file stored on the Beaumont Laboratory server under

S:\ AP\_Grossing\_Manual

**Number of Controlled Copies posted for educational purposes: 0**

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**Location of circulating Controlled Copies:** Master Grossing Manual located in Surgical Pathology

##### Document History

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| Signature | Date | **Revision #** |  | **Related Documents**  **Reviewed/**  **Updated** |
| Prepared by: *Anne Tranchida, PA(ASCP)* | 09/09/2007 | **r00** |  |  |
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| *Ali-Reza Armin, MD* | 12/10/2008 | **r00** |  |  |
| *Anne R. Tranchida,PA(ASCP)* | 10/20/2009 | **r00** |  |  |
| *Ali-Reza Armin, MD* | 10/20/2011 | **r00** |  |  |
| *Ali-Reza Armin,MD* | 04/02/2013 | **r00** |  |  |
| *Mitual B. Amin,MD* | 02/14/2015 | **r00** |  |  |
| *Zhenhong H. Qu, MD* | 03/14/2015 | **r00** |  |  |
| *Kurt Bernacki, MD* | 10/27/2017 | **r00** |  |  |
| *Kurt Bernacki, MD* | 09/14/2018 | **r00** |  |  |
| Revised and approved by: *Kurt Bernacki, MD* | 10/03/2018 | **r01** | Added steps for Mol-Decal |  |
| *Kurt Bernacki, MD* | 10/22/2019 | **r01** |  |  |
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| Revised by: Heather Genson, HTL(ASCP)CMPACM | 01/14/2022 | **r02** | Removed specific time in Mol-Decal |  |
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