



PATHOLOGY DEPARTMENT
NORTH CAROLINA BAPTIST HOSPITALS, INC.

MUSCLE BIOPSY PROTOCOL -- NORTH CAROLINA BAPTIST HOSPITAL

Evaluation of skeletal muscle biopsies for neuromuscular disease is a complex process requiring the coordinated effort of several people with special expertise including clinicians, surgeons, histotechnologists with special training in this procedure, and pathologists. The processing of a muscle biopsy involves orientation of the specimen so that good cross sections can be obtained to assess muscle fiber size and shape, cutting several frozen sections for muscle histochemical stains (including stains for mitochondrial enzymes, glycogen, and lipids), saving a small piece of tissue in glutaraldehyde for electron microscopy, and saving a somewhat larger piece of tissue in an ultralow (-70° C) freezer for molecular and biochemical testing, should these be needed later.

1. The ideal size of a specimen from an adult is **2 cm in length and about the diameter of a pencil**. It does not need to be in a clamp or stretched. **It should be submitted in saline-moistened gauze, not floating in saline or fixatives.**

2. Because an assessment of mitochondrial enzymes is important in the evaluation of these specimens, **the specimen must be submitted for processing as soon as possible after the tissue is removed from the patient.**

3. The preparation, sectioning, and staining of muscle biopsies must be performed by histotechnologists with special training in these procedures. Because the specimens must be frozen and sectioned immediately, they must be received in the laboratory when a qualified histotechnologist is on duty. In order to insure proper handling of the specimens, **they must be received at the NCBH Histology Laboratory by 3:00 PM (Monday-Thursday) and 2:00 PM on Friday.** Surgeons should schedule these biopsies (which are almost exclusively elective procedures) so that these deadlines can be met. Surgeons at outside institutions should factor in the time it will take the pathology laboratory at their hospital to get the specimen to NCBH.

4. **Although this practice is strongly discouraged, specimens that arrive too late to meet the deadline on Monday through Thursday should be stored in the refrigerator (not the freezer) overnight and transported to the NCBH Histology Laboratory first thing the following morning. Under no circumstances can the NCBH Histology Laboratory accept a specimen after 2:00 PM on Friday or one that has remained unprocessed over the weekend.** This is not meant to be an arbitrary rule, but as an indicator that patient care is seriously compromised by not permitting proper processing of the specimen.

5. **Please call the NCBH Histology Laboratory at 716-2682 or 716-4847 before sending the specimen** so that the histotechnologist covering muscle biopsies is aware it is coming.

6. Clinical information is essential for optimal evaluation of specimens. Neuropathologists have specialized knowledge in the field neuromuscular disease that allows for correlation of the pathological findings with the clinical data. For some diseases, special procedures outside the usual routine need to be ordered based on diagnoses under consideration by clinicians or based on clinical symptoms. It is also difficult address the concerns of the clinicians taking care of the patient without some knowledge of what questions are to be answered by the pathological examination of the specimen. **The surgeon performing the biopsy and referring laboratory should send any documents with clinical information with the specimen. For biopsies performed at NCBH, please include the referring clinician's name on the pathology requisition. For outside specimens, if the referring clinician is not known to the laboratory, please include the name and phone number of the surgeon, so that the neuropathologist can contact the surgeon's office to obtain the referring physician's name and phone number.** Copies of reports will then be sent to all physician's involved in the patient's care.

7. **For specimens coming from outside NCBH, the referring laboratory should submit the patient's billing information with the specimen.**



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MUSCLE BIOPSY PROTOCOL -- CHECKLIST

1. Muscle specimen, roughly 2 cm in length x 0.7 cm in diameter.
 - ✓ Wrapped in saline-moistened gauze.
 - ✓ No fixatives or other fluids in container.
2. Submit to NCBH, ASAP.
Deadlines: 3 PM (Monday-Thursday)
2 PM (Friday)
3. Notify NCBH Histology Laboratory that specimen is coming.
 - ✓ Call 716-2682 or 716-4847.
4. Send with specimen:
 - ✓ Submitting physician's name and telephone number.
 - ✓ Any documents with clinical information that come with specimen.
 - ✓ Patient billing information.
5. Couriers should take specimens to:
Pathology Department Receptionist
Watlington Hall, 2nd floor
Call 716-4311 (if need directions)