

# Skeletal Muscle Biopsy Considerations and Guidelines

In patients in whom there is a clinical consideration of diseases of skeletal muscle, skeletal muscle biopsies may be indicated to determine the underlying pathologic process. Although diagnosis by ancillary testing (e.g. genetic testing on peripheral blood) has progressed significantly, in many cases, muscle biopsy remains the only route to a definitive diagnosis. By following the guidelines below, improper handling that may limit the diagnostic utility of biopsies can be avoided.

## **What needs to be done before the biopsy?**

- Notify surgical pathology gross room personnel that the biopsy specimen will be arriving soon. Please page the AP call pager (number 4491) approximately one hour prior to bringing the specimen to surgical pathology. This allows the laboratory staff to begin the procedures for snap-freezing the tissue; liquid nitrogen and isopentane requires significant time to prepare before the tissue can be frozen.
- The Mayo Muscle Histochemistry Patient Information sheet **must be** completed by the requesting Neurologist/Rheumatologist before the specimen can be sent to Mayo for further processing. Mayo will not accept the specimen without the information sheet. If the appropriate paperwork is not completed, the biopsy will be held in the -70 degree freezer until completed paperwork is received.

**How much tissue should be obtained?** The amount of tissue required varies by the clinical indication for the biopsy...

- Routine cases (i.e. the majority of adult biopsies, inflammatory myopathy workups, cases without requests for specific ancillary testing): **Obtain two separate 1 x 1 x 1 cm pieces of muscle**, placed on saline-moistened gauze in a sterile container. This provides adequate tissue for routine histology, enzyme histochemistry, and EM.
- Complex cases (i.e. all pediatric cases, suspected mitochondrial disease, glycogen storage disorders, and cases with anticipated requests for non-standard testing). **Obtain three separate 1 x 1 x 1 cm pieces of muscle** (i.e. one additional piece of tissue for the extra testing). The additional piece will be stored in the -70 degree freezer for future studies as required.
- If specific ancillary testing is required, please contact the LLUMC Neuropathologists (call general surgical pathology extension X44398, ask to speak with Neuropathologist on service). For the majority of cases, the need for additional studies will be determined by the indicated clinical indication for biopsy, in combination with the diagnostic features seen on routine histology. After reviewing these data, a determination of the need for send-out histochemical studies and electron microscopy will be made.

## **How should the tissue be handled and transferred to the pathology laboratory?**

- Avoid traumatizing the tissue during the biopsy procedure. Tissue that is subjected to injections, electrocautery, or recent EMG studies is difficult to interpret, and may not be adequate for diagnosis. A sharp cold scalpel should be used. **Do not use muscle clamps** – these are notorious for crushing large areas of the biopsy, rendering it useless for diagnosis.
- Place the biopsy in a sterile container (labeled with patient name, MRN, and site of biopsy) on saline moistened gauze. **Do not allow the specimen to contact formalin or other fixatives!** It is not possible to perform enzyme histochemical studies on formalin-fixed tissues.
- Hand the specimen directly to the Pathologists' Assistant (PA) in the LLUMC surgical pathology department. Do not place on counter or otherwise leave specimen unattended, as this may delay processing and impair diagnosis.

## **What about after-hours biopsies?**

- When possible, biopsies should be done during LLUMC surgical pathology office hours (M-F, 8:00 AM to 5:00 PM). This ensures that the proper laboratory personnel are available to properly handle the specimen. The residents and students in surgical pathology are not trained to properly process these specimens, and there are no Pathologists' Assistants (PAs) on call after hours. If a biopsy is performed after working hours, it will be placed in the refrigerator in the surgical pathology accessioning area and processed the next day. In general, these specimens that remain in the fridge overnight are adequate for diagnosis, but this situation is suboptimal.

For further information, please contact Dr. Jeremy Deisch (pager 4742) or the Surgical Pathology Dept (X44398).

