MUSCLE BIOPSY TRIAGE Specimen Handling Procedure # 10410

I. PURPOSE:

Proper collection and triage of muscle biopsies.

II. POLICY:

To triage muscle biopsy specimens for complete evaluation.

III. PRINCIPLE:

The muscle biopsy requires the immediate attention of a pathologist/pathology resident/or qualified pathology staff- person.

IV. SUPPLIES:

Pink dental wax sheet, to provide firm surface for cutting tissue
Razor blade, single edged
Liquid nitrogen
Aluminum foil, labeled with permanent marker
Wet ice (not dry ice)
Karnovsky's fixative for electron microscopy
Formalin
-80C freezer for storage of specimens for biochemical analysis

V. PROCEDURE:

A. Specimen collection (Instructions for Collecting Physicians)

1. If possible, the surgeon should consult with the pathologists in advance of the procedure to discuss the differential diagnosis and requirements for special studies. Advance notification of the procedure is highly desirable to ensure that a pathologist/pathology resident/ trained pathology technician is on site to receive and triage the specimen properly and promptly.
2. Vastus lateralis, biceps brachii, gastrocnemius, and deltoid muscles are the most common sites selected for biopsy since their histology/cytochemistry are best characterized. The specimen must be removed atraumatically, i.e., without cautery or forceps applied to the segment submitted for workup. The site of a previous EMG should not be biopsied since the procedure induces an inflammatory response which may be incorrectly

interpreted as myositis or obscure other significant findings.

3. The ideal specimen is a well-oriented cylinder of skeletal muscle, measuring 2x1x1 cm. If the specimen is smaller, the priority is to provide the enzyme histochemical lab with a well-oriented cross-section of skeletal muscle, that is processed for enzyme histochemistry as soon as possible, and within 24 hours.
4. For metabolic defect workup provide at least a 1 x 1 x 1 cm cube skeletal muscle specimen.
5. Immediately after excision, tissue is placed on a saline-moistened Telfa and transferred to the hospital surgical pathology suite (N2).

B. Specimen Preparation and Triage in the Department of Pathology:

1. The specimen is divided for enzyme histochemistry, electron microscopy, and paraffin sections.
2. Place the intact specimen with fibers oriented longitudinally on dental wax. Trim one edge of the specimen to provide a cross-section; the irregular tissue fragments can be submitted for paraffin embedding.
3. Continue cutting a full cross-section of the cylinder, which should be at least 5 mm thick. Wrap this carefully in saline-moistened Telfa and in the closed container in which the specimen arrived.
4. The next cut is a full cross-section, approximately 1 mm thick. A small portion of this can be minced into 1 mm cubes and placed in glutaraldehyde. This specimen can be held in N2 or at the campus EM lab until further notice from the examining neuropathologist. Any remainder from that cut can be submitted for paraffin sectioning.
5. If excess tissue has been provided, 1 cm cubes can be can, preserving cross-sections if possible, then wrapped carefully in aluminum foil, labeled, snap-frozen in liquid nitrogen, and placed in the -70° freezer for possible biochemical analysis.
6. If metabolic studies are indicated (advanced notice should be given to the neuropathologist on call or to the surgical pathology lab), a separate 1 cm cube of skeletal muscle tissue should be provided. A 1x1x1 cm cube of skeletal muscle should be taken and immediately snap frozen in liquid nitrogen and then stored at 70-80C for subsequent biochemical analysis. Muscle tissue must be processed as soon as possible because of deterioration of crucial muscle enzymes over time.
7. Tissue designated for enzyme histochemistry should be refrigerated until transfer arrangements are made to the Davis Campus laboratory. When ready for transfer, the refrigerated, labeled container holding the specimen for enzyme histochemistry is to be wrapped in several layers

of paper towel, place in a small zip lock bag, then into a styrofoam/insulated container at least half-full of wet ice. The paper towels prevent the specimen from freezing.

8. The campus pathology laboratory should be notified that a specimen will be transported, by what means, location and approximate time of specimen arrival on campus:

   Please notify: Colette Williams
   530-752-1170 (lab)
   530-752-7570 (cell)

9. If the specimen is to be sent by campus shuttle, the specimen package should be addressed as follows:

   Veterinary Medicine Pathology Laboratory
   c/o Medical School Deans Office
   Med Sci 1C
   Mail Room 138
   UC Davis Campus, Davis

10. Should a specimen arrive late on Friday, or over the weekend, notify the neuropathologist on call. In the interim, the specimen should be subdivided as above by the resident or available staff, and tissue for the enzyme histochemistry lab refrigerated over the weekend if other means of transportation to the laboratory are not possible.

PROCEDURE HISTORY

Date	Written/Issued by	Revision/Review	Approved Date	Approved by
1994	J. Brown-Simmons	New		
4/97	R. Davis	Reviewed/revised		
06/98		Reviewed	06/98	W. Finkbeiner
10/99		Reviewed	11/99	W. Finkbeiner
07/01		Reviewed	07/01	R. Ramsamooj
10/02	W.Widmann	Revised	10/12/02	R. Gandour-Edwards
09/03		Reviewed	11/03	R. Gandour-Edwards
11/04		Reviewed	11/15/04	R. Gandour-Edwards
12/05		Reviewed	12/02/05	R. Gandour-Edwards
09/06	W. Widmann	Revision	09/25/06	L. Howell
11/07		Reviewed	11/25/07	L. Howell
06/08		Reviewed	06/16/08	J. Bishop
07/09	W.Widmann	Revision	07/27/09	L. Howell