

## **Instructions to Surgeons: Nerve and Muscle Biopsies**

If a surgeon calls requesting information about performing a muscle or nerve biopsy regarding either site selection, amount of tissue necessary, and shipping procedures, they could be provided with the following information:

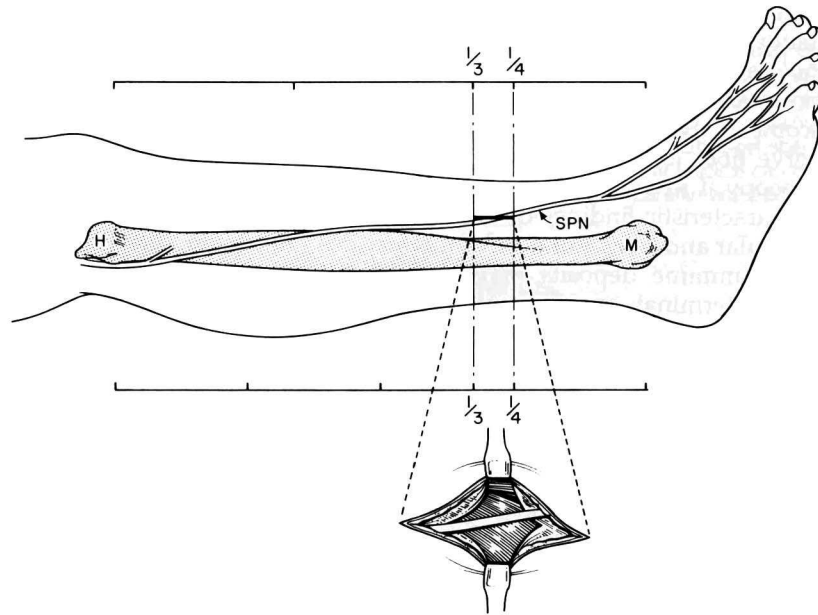
### **I. Muscle**

The site of muscle biopsy is generally chosen by the referring clinician, based on the degree of involvement of a particular muscle. In muscle diseases, typically a proximal leg or arm muscle is selected. In very chronic conditions, the muscle should not be severely affected and have evidence of fibrosis, since it would be an “end-stage” muscle. In recent onset disorders, a severely affected muscle can be biopsied. In the upper extremities, the typical sites are deltoid or biceps. In the lower extremities, the typical site is the vastus lateralis, but the referring physician should be certain that the vastus lateralis is affected clinically and by EMG since some muscle conditions spare the quadriceps. In neuropathies, it is reasonable to biopsy a distal muscle for evaluation of vasculitis or amyloid. (See Nerve section.) If an EMG had been performed recently, the biopsy should be performed contralateral to the side studied by EMG.

Ideally, the surgeon should obtain three 1 x 1 cm pieces of muscle, obtained along the longitudinal orientation of the muscle fibers and away from the tendon insertion. At least one piece should be placed on a muscle clamp. All pieces can be clamped if desired. The tissue should then be kept cool (not frozen) on saline-moistened (not soaked) gauze and shipped to Pathology as soon as possible. (See flow of normal muscle processing in the Neuromuscular Pathology section of the manual.)

### **II. Nerve**

The most commonly biopsied nerves are the superficial peroneal and sural sensory nerves. The superficial peroneal sensory nerve should be biopsied preferentially because the underlying peroneus brevis muscle can be obtained through the same incision. To locate the superficial peroneal sensory nerve, the region between the proximal fibula and lateral malleolus is divided into thirds and fourths and an incision is made just anterior to the fibula between the segments shown below. (See figure.)



If the peroneal nerve is not affected by the disease process or if the sural nerve is more affected on nerve conduction studies, then the sural nerve could be biopsied. Generally, a muscle biopsy of the gastrocnemius should be performed at the same time if the sural nerve biopsy is being performed to assess for vasculitis or amyloid. We would prefer that the surgeon obtain two centimeters of nerve. If the surgeon can only obtain 1 cm of nerve, then teased fibers will not be assessed. If the biopsy is being sent from an outside institution, the segment of nerve should be stretched across a tongue blade using sutures at the very end. It could also be stretched and pinned in dental wax. The nerve should be placed in formalin and shipped immediately. (See flow of normal processing of nerve in the Neuromuscular Pathology section for additional information.)