Skin Biopsy Specimen Shipping

Specimens should be returned same day in the original kit (with the provided ice pack) via overnight express mail to:

Cleveland Clinic
Cutaneous Nerve Laboratory
Attn: David Polston, MD
9500 Euclid Ave. Lab TT3-05
Cleveland, OH 44195

The completed request form should also be included. Please do not ship specimens on Fridays, weekends or holidays. Please call 216.444.5353 with questions.

Specimen Processing

Upon receiving the specimens, our staff will do a gross examination. Damaged, over-fixed or poorly labeled specimens will be rejected. Skin biopsy specimens will be processed and PGP 9.5 immunostaining will be performed per our protocol.

Reporting

The biopsy will be processed and interpreted. A biopsy report will be provided to the referring provider, generally within two weeks of receiving the specimens.

Contact Us

For more information, please contact David Polston, MD, at 216.444.5353 or 800.223.2273, ext. 4535. Visit us online at clevelandclinic.org/skin-biopsies.

Cleveland Clinic's Neuromuscular Center specializes in the diagnosis, treatment, and research of neuromuscular disorders including myotrophic lateral sclerosis (ALS), peripheral nerve injury, myasthenia gravis and myopathies, requiring a unique combination of medical expertise and compassion. To assist in the accurate diagnosis of these disorders, our specialists rely on diagnostic modalities such as electrodiagnosis (EMG); autonomic testing; and muscle, nerve and skin biopsies to supplement the history and physical evaluation.

Specialists at the Neuromuscular Center offer comprehensive workups to achieve accurate diagnosis of nerve disease and rely upon state-of-the-art treatment modalities to optimize quality of life. Both inpatients and outpatients benefit from well-orchestrated teamwork by Cleveland Clinic specialists and allied health professionals.

Neurologists, pulmonologists, rheumatologists, pathologists, anesthesiologists, surgeons, and orthopedists join forces with orthotics, physical and occupational therapists, speech pathologists, dieticians, nurse clinicians, and social workers to offer comprehensive, compassionate care for those with neuromuscular disorders.

Cleveland Clinic

Every life deserves world class care.

9500 Euclid Ave., Cleveland, OH 44195

The Neurological Institute is a leader in the diagnosis and treatment of common and complex neurological disorders of adult and pediatric patients. Its more than 300 specialists combine expertise and compassion to achieve measurably superior results. By promoting innovative research and integrated care models, the Neurological Institute accelerates the adoption of new treatments and technologies into patient care. The Neurological Institute is one of 27 institutes at Cleveland Clinic, a nonprofit academic medical center ranked among the nation's top hospitals (*U.S. News & World Report*), where more than 3,000 physicians and researchers in 120 specialties collaborate to give every patient the best outcome and experience.
clevelandclinic.org

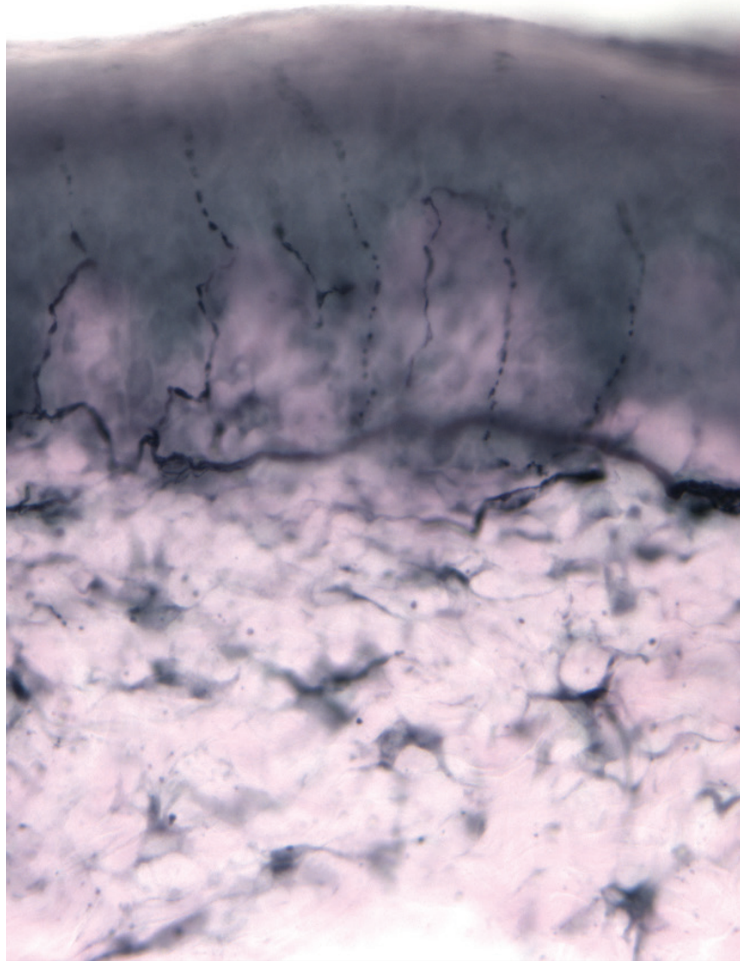
14-NEU-1564

Cleveland Clinic

NEUROMUSCULAR CENTER

Skin Biopsy in the Diagnosis of Small Fiber Neuropathy

A Guide for Providers



Why a Skin Biopsy Can Be Useful for Your Patient

Cleveland Clinic's Cutaneous Nerve Laboratory, one of only a few in the country, is dedicated to improving diagnosis and research in small fiber sensory neuropathy. Small fiber sensory neuropathy is a common neuromuscular disorder associated with many medical conditions, including diabetes mellitus, amyloidosis, HIV infection, connective tissue diseases and pharmacological neurotoxicity. In many cases, particularly in elderly patients, no specific cause is found.

The clinical presentation usually consists of cutaneous pain, sensory loss and autonomic dysfunction, which can lead to functional impairment. Some patients may present with pain as the primary or only symptom, but pain is inherently subjective and difficult to measure or quantify. A sensitive and specific diagnostic tool is thus essential for making a correct diagnosis and providing appropriate subsequent management.

Small caliber nerve fibers consist of somatic (type C and Ad fibers) and autonomic fibers. They play key roles in cutaneous nociception, thermoreception and autonomic function. Autonomic function can be assessed by specialized tests which quantify sweat output and assess cardiovascular regulation.

However, not all patients with small fiber neuropathy have autonomic involvement, so a test that will assess the somatic fibers may be quite useful. These fibers are small and many are unmyelinated with very slow conduction velocities; therefore, their conduction responses cannot be captured and evaluated by routine nerve conduction studies. This gap has been filled by a histological method to evaluate cutaneous nerve fiber density. By immunostaining using the panaxonal marker, protein gene product 9.5 (PGP 9.5), of skin biopsies, intraepidermal small nerve fibers (IENF) become visible and can be assessed.

IENF density evaluation is not only a powerful technique for diagnosing small fiber sensory neuropathy, but also a valuable tool for research into this disease. Since 3-mm punch skin biopsy is minimally invasive and well-tolerated, it can be safely repeated to monitor disease progression and treatment response.

How to Order Skin Biopsy

Cleveland Clinic's Cutaneous Nerve Laboratory is a clinical diagnostic lab, which holds a valid CLIA license. We offer commercial testing to referring physicians and hospitals and accept skin biopsy specimens for PGP 9.5 immunostaining and intraepidermal nerve fiber density evaluation. To control the quality of this service, the guidelines listed below should be followed by all referring physicians and hospitals.

Skin Biopsy Specimen Collection

Referring providers may choose to refer patients to us to have specimens collected or perform the collection themselves and send skin specimens directly to us for processing.

Patient Referral

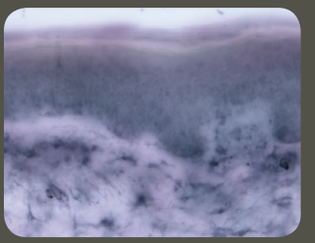
Complete the patient referral form available on our website: clevelandclinic.org/skin-biopsies and fax it to 216.445.1563. We will then contact the patient and schedule the biopsy.

Specimen Referral

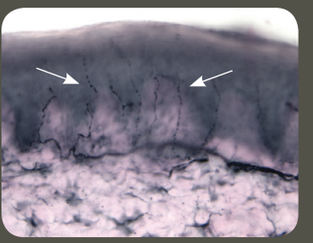
Contact David Polston, MD, at 216.444.5353 or call the Cutaneous Nerve Laboratory directly at 216.444.4131 to request a biopsy kit. You will be asked to complete the specimen referral form (available at clevelandclinic.org/skin-biopsies) and fax it to 216.445.1563 along with the patient's demographic and insurance information. We will then contact the patient's insurance carrier to obtain insurance approval.

Please note: Insurance approval may take up to two business days. Once insurance approval is obtained, we will notify you that the patient's biopsy kit will be sent via express mail along with a return shipping label. Then simply perform the biopsy and return the kit.

Specimen kits must be returned immediately for quality-control purposes. If immediate return is not possible, please contact us for further instructions. This kit contains a 3-mm biopsy punch, scalpel, forceps and specimen tubes filled with 2% PLP fixative solution. These tubes are pre-labeled and designated "distal leg," "distal thigh," and "proximal thigh."



Representative section from a patient with severe SFN. Note the specimen is devoid of nerve fibers in the epidermis.



Representative section from a patient with normal nerve fiber density. Note the presence of the nerve fibers as indicated with arrows.

Skin Biopsy Specimen Collection

a. Place the patient in a lateral position.

b. Identify three standard biopsy sites in one leg: distal leg (10 cm above the lateral melleolus), distal thigh (7 cm above the knee, lateral), and proximal thigh (7 cm below the hip, lateral).

c. Clean the biopsy sites with alcohol swabs and numb the sites with local anesthesia.

d. Perform the biopsy using a 3-mm punch.

e. Remove biopsy specimens using a surgical blade and forceps. Do not pinch epidermis.

f. Put each specimen into a tube containing 2% PLP fixative solution immediately after removing it.

g. The tube should be labeled with patient's name, DOB, and biopsy side and site (e.g. left distal leg).

h. Apply dressing to each site. No stitch is needed.

For additional information, please see our downloadable protocols at clevelandclinic.org/skin-biopsies under Resources.

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