

Surgical Pearl: Use of nerve blocks for botulinum toxin treatment of palmar-plantar hyperhidrosis

Mayumi Fujita, MD, PhD,^a Teresa Mann, MD,^a Orville Mann, MD,^b and Daniel Berg, MD^a
Seattle, Washington

Botulinum toxin, a polypeptide that irreversibly blocks release of acetylcholine from presynaptic membranes, has become an alternative for the treatment of localized hyperhidrosis.¹⁻⁷ Pain during injection of palms and soles is one of the main disadvantages of its use. Injections are aimed at the junction of the dermis and subcutaneous tissue where the sweat glands are located. Intracutaneous or subcutaneous injections have been given without anesthesia,^{1,5} with cold packs,⁴ or with regional blockade of the median and ulnar nerves.⁷ We report techniques for peripheral nerve blocks that may be considered to diminish the pain of injection.

TECHNIQUES

Although nerve blocks are relatively safe, a separate informed consent is recommended, specifically discussing the uncommon complication of neuropathy. The risk of this complication can be reduced by avoiding direct injection into the nerve (if paresthesias are felt, one should withdraw a little). Thirty minutes before each treatment, the wrist block or ankle block is performed with 1% or 2% lidocaine.

Nerve block for the palm⁸

Analgesia of the palm is achieved with median and occasionally ulnar nerve block (Fig 1). Radial nerve blocks may be considered for fingertip injections. For block of the median nerve at the wrist, the tendons of the palmaris longus and flexor carpi radialis are identified by flexing the wrist. A 1-inch, 25-gauge



Fig 1. Sensory innervation of the palm. Median nerve is represented by lines. Radial nerve is represented by dots and ulnar nerve by X's.

needle is inserted between the tendons 1 cm proximal to the crease of the wrist (Fig 2, A). The needle should be introduced perpendicularly to all planes of the skin into the deep fascia. Local anesthetic, 3 to 5 mL, is slowly injected as the needle is withdrawn. The ulnar nerve is anesthetized by palpating the ulnar artery and introducing a needle between it and

From Dermatologic Surgery, Division of Dermatology, Department of Medicine,^a and the Department of Anesthesiology,^b University of Washington School of Medicine.

Reprints not available from authors.

J Am Acad Dermatol 2001;45:587-9.

Copyright © 2001 by the American Academy of Dermatology, Inc. 0190-9622/2001/\$35.00 + 0 16/74/116341

doi:10.1067/mjd.2001.116341

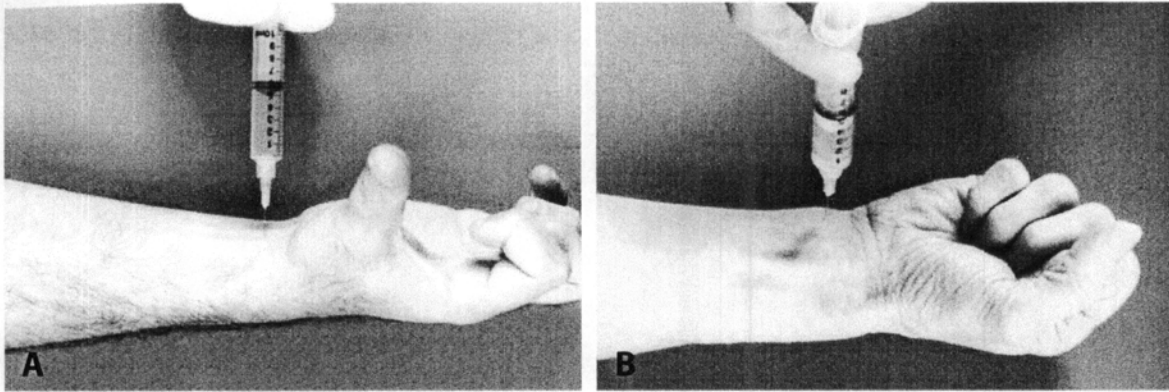


Fig 2. A, Median nerve block: Flexing wrist accentuates the palmaris longus tendon, which is just ulnar to the flexor carpi radialis. Needle is inserted between the palmaris longus tendon and the flexor carpi radialis tendon at proximal flexion crease of the wrist. **B,** Ulnar nerve block: Needle is inserted between the ulnar artery and the flexor carpi ulnaris tendon, being careful to avoid intra-arterial injection.

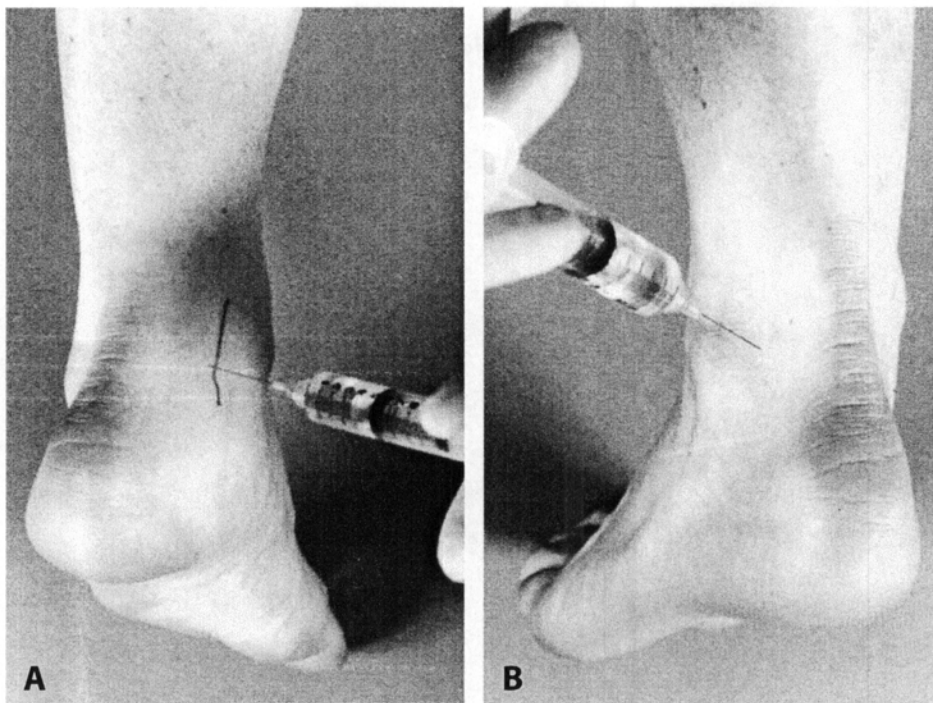


Fig 3. A, Medial ankle block: Tibial nerve is blocked by inserting the needle posterior to the pulse of the posterior tibial artery (*marked in pen*) and between the Achilles tendon and the medial malleolus. **B,** Lateral ankle block: Sural nerve is blocked by inserting the needle between the Achilles tendon and the superior border of the lateral malleolus and directing it perpendicular to skin.

the flexor carpi ulnaris directed toward the ulnar styloid process 1 cm proximal to the crease of the wrist (Fig 2, B). The bone should be contacted above the process and 3 to 5 mL of local anesthetic is injected

while the needle is being slowly withdrawn. Should radial nerve blocks be needed, the radial nerve can be blocked by subcutaneously injecting a wheal of continuously administered local anesthetic anterior-

ly to posteriorly on the lateral aspect of the wrist at the level of the wrist crease.

Nerve blocks for the sole⁹

Analgesia is achieved for the sole by blocking the posterior tibial nerve and the sural nerve. With the patient in the lateral or prone position, the posterior tibial nerve is blocked by introducing the needle at the level of the superior border of the medial malleolus, midway between it and the Achilles tendon, posterior to the pulse of the posterior tibial artery (Fig 3, A). The needle is advanced perpendicular to the skin until bone is encountered. The needle is then withdrawn several millimeters and 5 mL of local anesthetic is injected. Alternatively, a fanning technique in the mediolateral plane can be used. The sural nerve is then anesthetized midway between the Achilles tendon and the superior border of the lateral malleolus and by directing the needle perpendicular to the skin until bone is felt (Fig 3, B). Local anesthetic, 6 to 7 mL, is injected in a fanning technique to partially fill the groove between the lateral malleolus and calcaneus.

Direct all Surgical Pearl submissions to Dr Stuart J. Salasche, 5300 N Montezuma Trail, Tucson, AZ 85750.

Twenty to 30 minutes after the nerve block, treatment with botulinum toxin type A can be performed.

REFERENCES

1. Naumann M, Flachenecker P, Brocker EB, Toyka KV, Reiners K. Botulinum toxin for palmar hyperhidrosis [letter]. *Lancet* 1997; 349:252.
2. Naumann M, Hofmann U, Bergmann I, Hamm H, Toyka KV, Reiners K. Focal hyperhidrosis: effective treatment with intracutaneous botulinum toxin. *Arch Dermatol* 1998;134:301-4.
3. Odderson IR. Hyperhidrosis treated by botulinum A exotoxin. *Dermatol Surg* 1998;24:1237-41.
4. Schnider P, Binder M, Auff E, Kittler H, Berger T, Wolff K. Double-blind trial of botulinum A toxin for the treatment of focal hyperhidrosis of the palms. *Br J Dermatol* 1997;136:548-52.
5. Schnider P, Binder M, Kittler H, Steinhoff N, Auff E. Uses of botulinum toxin [letter]. *Lancet* 1997;349:953.
6. Shelley WB, Talanin NY, Shelley ED. Botulinum toxin therapy for palmar hyperhidrosis. *J Am Acad Dermatol* 1998;38:227-9.
7. Naver H, Aquilonius S. The treatment of focal hyperhidrosis with botulinum toxin. *Eur J Neurol* 1997;4(Suppl):S75-9.
8. Mulroy M, Thompson G. Wrist. In: Hahn MB, McQuillan PM, Sheplock GJ, editors. *Regional anesthesia: an atlas of anatomy and techniques*. St Louis: Mosby; 1996. p. 117-9.
9. Keifer J, McQuillan P. Peripheral nerves at the ankle. In: Hahn MB, McQuillan PM, Sheplock GJ, editors. *Regional anesthesia: an atlas of anatomy and techniques*. St Louis: Mosby; 1996. p. 157-62.

Direct all Medical Pearl submissions to Dr Mark G. Lebwohl, Mount Sinai Medical Center, One Gustave L. Levy Place, Box 1048, New York, NY 10029.

IOTADERMA #93

Name one disease, other than urticaria pigmentosa, in which a positive Darier's sign can sometimes be elicited.

Robert I. Rudolph, MD

Answer will appear in the November issue of the Journal.

SEPTEMBER IOTADERMA (#92)

What rare childhood condition appears as an acquired linear hyperpigmented atrophoderma following Blaschko's lines and is sometimes associated with preceding inflammation?

Answer: Atrophoderma of Moulin

REFERENCE

Browne C, Fisher BK. Atrophoderma of Moulin with preceding inflammation. *Int J Dermatol* 2000;39:846-52.
