Significant retraction of the sciatic nerve due to neuroma formation after above the knee amputation

John J. Finneran IV, MD · Julie N. Robles, MD · Brian M. Ilfeld, MD, MS (Clinical Investigation)

Received: 28 March 2021 / Revised: 5 May 2021 / Accepted: 6 May 2021 / Published online: 24 May 2021
© The Author(s) 2021

Neuroma formation after above- or below-knee amputation is a common source of post-amputation pain, which has been successfully treated with surgical interventions and ultrasound-guided percutaneous injections of local anesthetic and steroids. Performing ultrasound-guided injections or cryoneurolysis of the sciatic nerve after above knee amputations can be challenging because the normal anatomic relationships may change once the distal insertions of muscles and nerves are severed.

We report here an additional potential challenge to understanding the anatomic relationships after above knee amputations that was observed while performing cryoneurolysis of the sciatic nerve for persistent post-amputation pain. Written consent for publication was obtained from the patient.

In this patient, the sciatic nerve was significantly retracted, presumably because a neuroma had formed. The nerve could not be identified for the first 10 cm proximal to the stump ([Figure A](#)). Scanning distally from the subgluteal view of the sciatic nerve confirmed that a neuroma had formed approximately 13 cm proximal to the stump ([Figure B](#)) resulting in retraction of the nerve and an empty nerve sheath distally. Anesthesiologists should be aware of this phenomenon when performing ultrasound-guided nerve blocks or other therapies on above-knee amputees. In such patients, nerve stimulation or scanning from a more proximal point where the anatomy can be clearly visualized should be considered ([Figure C](#)).

J. J. Finneran IV, MD (✉) · B. M. Ilfeld, MD, MS (Clinical Investigation)
Department of Anesthesiology, University of California San Diego, San Diego, CA, USA
e-mail: jfinneran@health.ucsd.edu

Outcomes Research Consortium, Cleveland, OH, USA

J. N. Robles, MD
Department of Anesthesiology, University of California San Diego, San Diego, CA, USA

FIGURE A) Empty nerve sheath due to retraction of the sciatic nerve; B) Neuroma at the distal tip of the sciatic nerve; C) Subgluteal view of the sciatic nerve

Disclosures Drs Finneran and Ilfeld: The University of California has received funding and product for research projects from cryoneurolysis device manufacturer Epimed (Farmers Branch, TX); infusion pump manufacturer InfuTronix (Natick, MA); and a manufacturer of a percutaneous peripheral nerve stimulation device, SPR Therapeutics (Cleveland, OH).

Funding statement None.

Editorial responsibility This submission was handled by Dr. Stephan K.W. Schwarz, Editor-in-Chief, *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*.

Open Access This article is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License, which permits

any non-commercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc/4.0/>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.