

Background

Phantom limb pain (PLP) which was first clinically characterized in 1551 by French surgeon Ambroise Pare, occurs in up to 85% of patients after amputation ¹. Although there is considerable overlap in the neural circuitry that transmits pain and itch ², phantom limb itch (PLI) is extremely rare, with only one prior report ³ to the best of our knowledge. We herein report a case of bilateral PLI which developed soon after bilateral transtibial amputations.

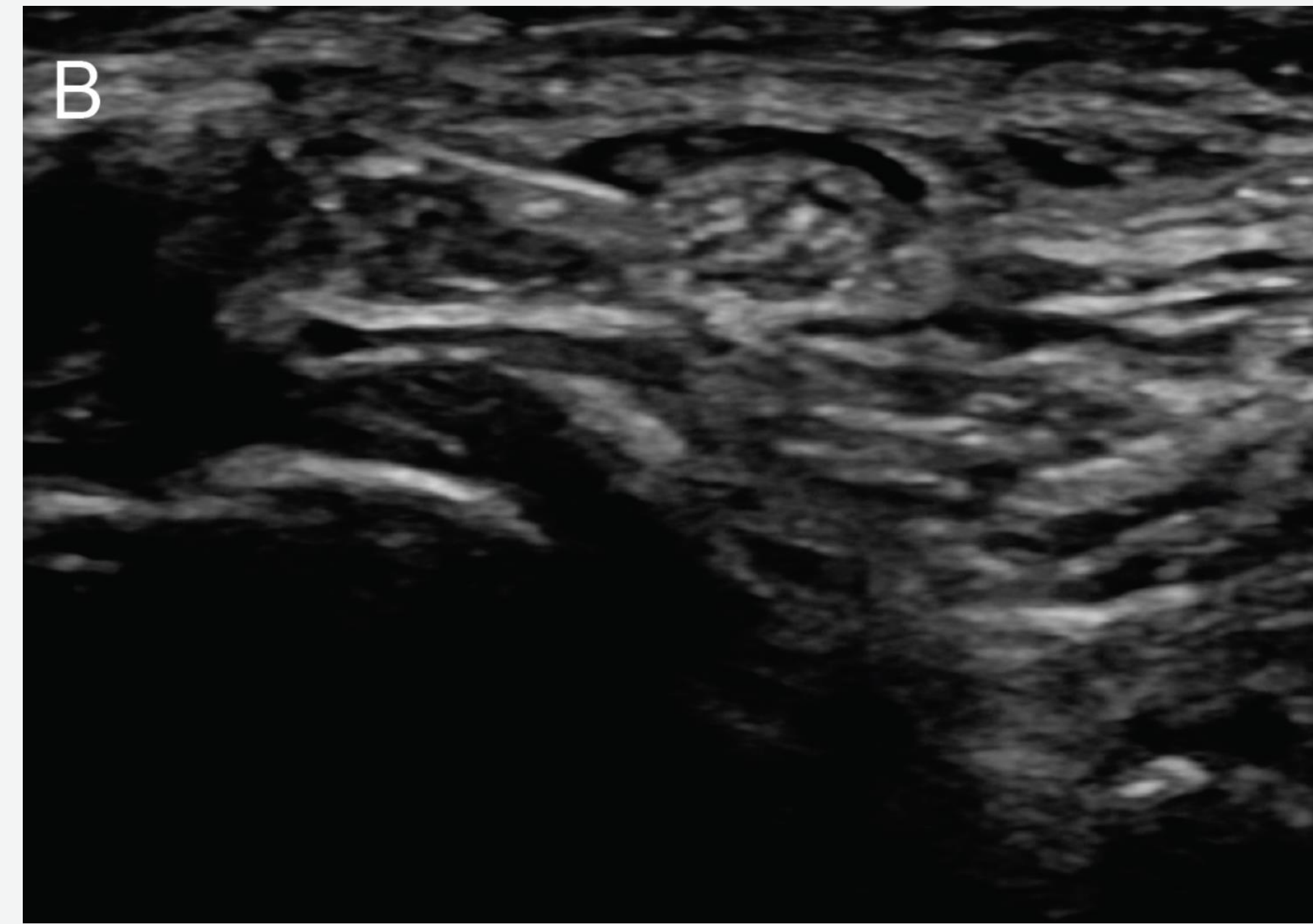
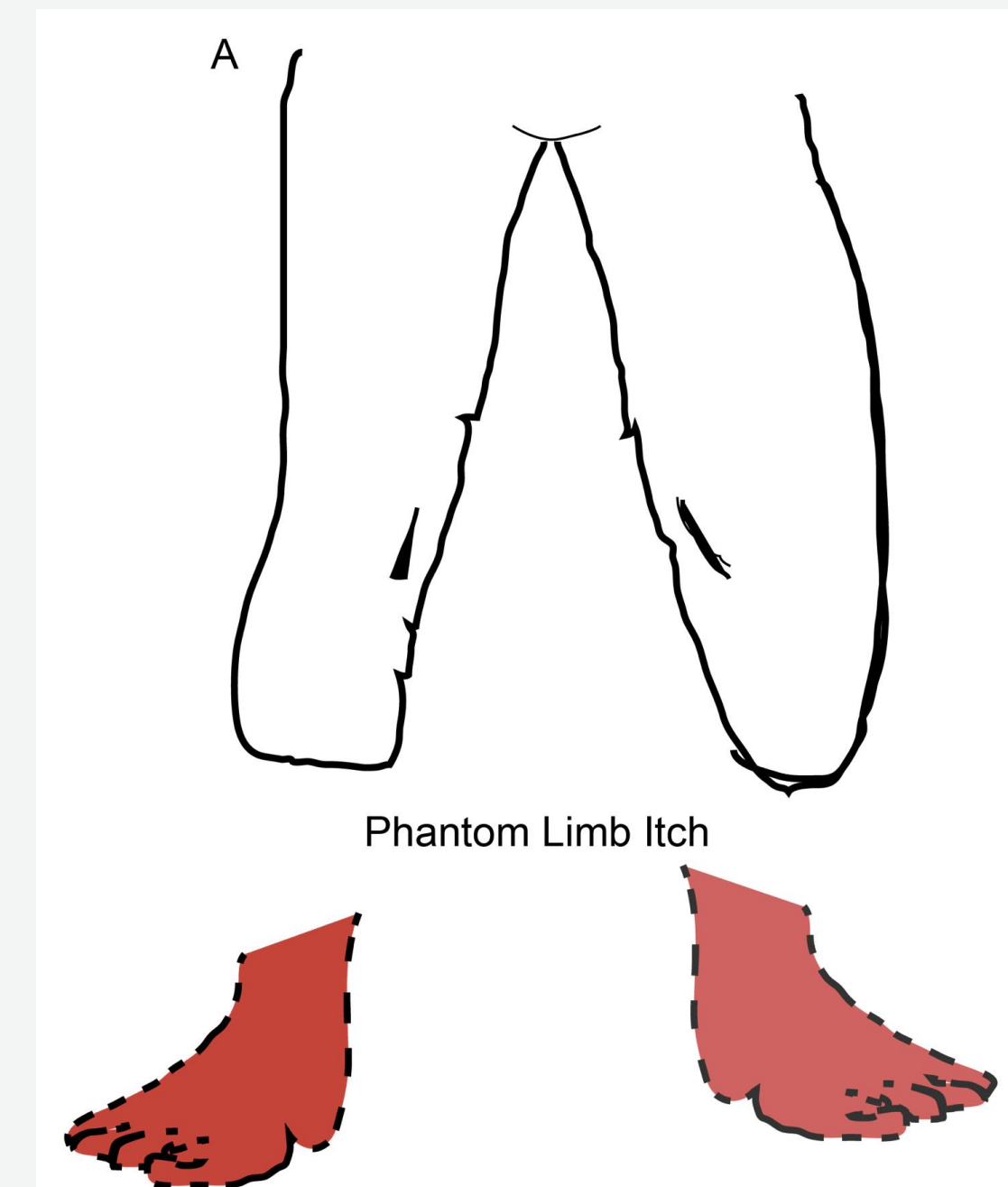
Case Presentation

43yo woman with HFrEF 20%, DM type II, ESRD on HD, and severe peripheral arterial disease complicated with critical limb ischemia who underwent bilateral transtibial amputations. Her postoperative course was complicated by right surgical wound infection treated with debridement and prolonged antibiotic treatment.

Three months post her amputations, the patient presented to our chronic pain clinic and reported severe, right greater than left, phantom dorsal foot itch (**Fig. A**). The phantom itch developed within weeks of her amputation and were described as intermittent and provoked by applying pressure to the lateral aspect of the distal residual limbs. She reported no alleviating factors. Pharmacologic management was minimally effective. A trial of escalating doses of gabapentin was limited by ESRD. Oxycodone and Benadryl provided mild relief of itch but resulted in many intolerable side effects including cognitive impairment. Physical exam revealed well-healed surgical incisions. Notably, her bilateral dorsal foot phantom itch was reliably evoked by applying pressure to the common peroneal nerves at the level of the fibular head suggesting that the mechanism of her PLI is unlikely due to central sensitization. We hypothesized that the common peroneal nerves are hyperactively relaying sensory information, such as itch, to the brain. A trial of 5% lidocaine cream applied to the residual limbs produced no clinical improvement. Thus, we proposed a trial to target itch sensation at the level of transmission by blocking the common peroneal nerves.

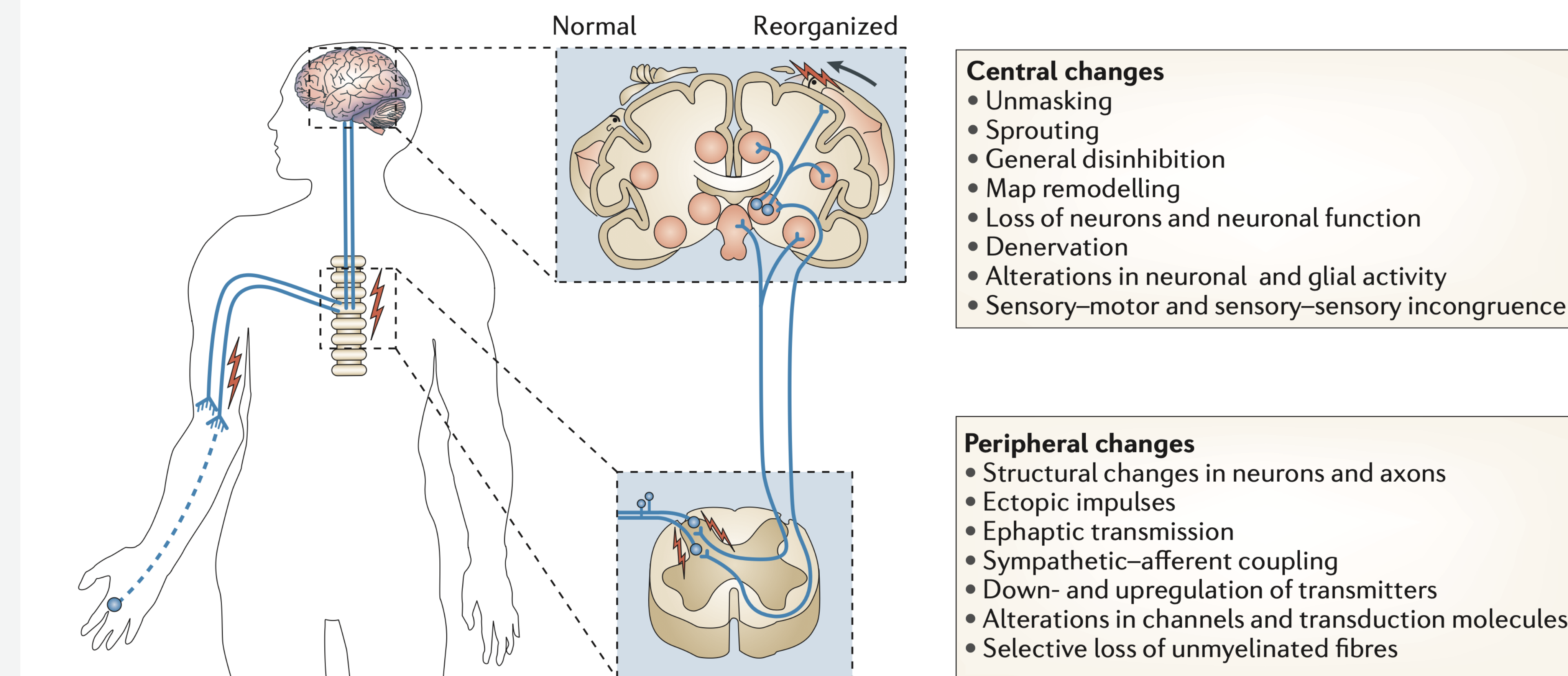
We performed a diagnostic bilateral ultrasound-guided common peroneal nerve diagnostic blocks (**Fig. B**) with 2.5 ml of 0.25% bupivacaine at the level of the fibular head producing 70-80% relief in phantom itch sensation bilaterally within the first hour with gradual return to baseline over 12 hours. We subsequently performed neurolysis of the bilateral common peroneal nerves with anhydrous ethanol with sustained relief.

A Anatomic distribution of Phantom Limb itch



US-Guided Block of the Common Peroneal Nerve

A Proposed Mechanism for Phantom Limb Itch vs. Phantom Limb Pain



C

Discussion:

In this report, we described PLI, a neuropathic phenomenon rarely encountered after amputation. In contrast, the prevalence of PLP is very high. Early studies of PLP suggested the contribution from the injured peripheral nerves. However, clinical attempts to target the ectopic nerves have failed to demonstrate efficacy ⁴. It is now commonly believed that PLP results from maladaptive brain plasticity with cortical remapping ⁵ (**Fig. C**). However, it is impossible to know if this remains true in rare PLI. In our case, the patient's PLI was responsive to peripheral nerve block. Based on our physical exam and patient post-block outcome, we concluded that her PLI was not mainly contributed by the mechanism of central sensitization. Thus, peripheral nervous system should be considered as a viable contributor to PLI, and possibly PLP during our decision making to identify timely interventions to ameliorate the symptoms.

References:

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