Vein stripping is the traditional treatment for primary varicose veins of the lower extremity. However, this procedure is associated with a risk of nerve damage. Postoperative sensory deficit has been reported in 7%–11% of patients after greater saphenous vein stripping. It was reported that postoperative pain reported in 7%–11% of patients after greater saphenous vein stripping. The work cannot be changed in any way or used commercially without permission from the journal.

CASE DESCRIPTION

A 78-year-old woman complained of numbness, tingling, and pain in the left leg 6 months after greater saphenous vein stripping. Ultrasonography identified a mass adjacent to the saphenous nerve at the scar. Ultrasound-guided hydrodissection separated the mass from the nerve. The pain disappeared after hydrodissection, and the patient remained pain free for 3 days. The visual analog pain scale decreased from 80 (before treatment) to 60 three days later. The hydrodissection was repeated weekly for a total of 8 times, and the pain completely resolved 4 months later. Ultrasound-guided hydrodissection is effective to treat nerve entrapment after lower extremity varicose vein stripping. (A&A Practice. 2020;14:28–30.)

From the *Department of Anesthesiology, Kyorin University School of Medicine, Tokyo, Japan; and †Department of Surgery, Jichi Medical University, Tochigi, Japan.

Accepted for publication October 16, 2019.

Funding: None.

The authors declare no conflicts of interest.

Address correspondence to Kunitaro Watanabe, MD, PhD, Department of Anesthesiology, Kyorin University School of Medicine, 6-20-2 Sinkawa, Mitaka, Tokyo 181-8611, Japan. Address e-mail to kunitarowatanabe@yahoo.co.jp.

Copyright © 2019 International Anesthesia Research Society. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

DOI: 10.1213/XAA.0000000000001143

DISCUSSION

Saphenous vein stripping for varicose veins of the lower extremity is associated with a risk of saphenous nerve injury. Therapeutic strategies other than surgical stripping have been considered and are generally less invasive, such as ultrasound-guided hydrodissection.
as radiofrequency or laser ablation, cryosurgery, bipolar coagulation, and foam sclerotherapy. However, the efficacy of these less invasive procedures has not been conclusively shown.

Below the knee, especially in the lower third of the leg, there is an increased risk of saphenous nerve injury with saphenous vein procedures, because the vein and nerve are adjacent to each other. Branches of the nerve lie along the vein. Saphenous nerve injury may be caused by ablation of these complexes of neighboring vein and nerve tissue with the stripping wire. Lower extremity varicose vein stripping frequently results in saphenous neuropathy, but it is usually self-limited. However, long-term unrelenting pain has been reported. In the present patient, we found a small mass adjacent to the saphenous nerve. Ultrasound-guided hydrodissection relieved the pain immediately. The pain was believed to be due to saphenous nerve entrapment by the mass. Magnetic resonance imaging showed that the mass may have been related to the stripping wire. This is the first report of refractory pain

Figure 1. Photograph of the patient’s left leg and ultrasound view at the operative site. A, Position of the probe. Applying pressure at the site (*) with the ultrasound probe elicits a positive Tinel sign. White dashed line indicates the incisional scar. B, A mass is adjacent to the saphenous nerve. M indicates mass; N, saphenous nerve.

Figure 2. Magnetic resonance imaging of the left lower extremity. Magnetic resonance imaging (diffusion-weighted images) shows a round mass in the transverse plane view (A), which looked like an empty shell of the vein in the coronal plane view (B and C). Magnetic resonance imaging was taken 1 week after the start of hydrodissection therapy. A, Transverse plane view of the middle of the left leg. The red circle shows the location of the mass. B, Coronal plane view of the middle of the left leg. The dashed red circle shows the location of the mass. C, Magnified coronal plane view (B). The yellow circle shows an empty shell, likely caused by the vein stripping procedure. The red ring shows a high-density area, which is the saphenous nerve.
after lower extremity varicose vein stripping diagnosed as saphenous nerve entrapment. This suggests that other patients with continued pain after vein stripping may also have saphenous nerve entrapment. We recommend ultrasound examination for patients with refractory pain after varicose vein stripping.

Ultrasound-guided nerve hydrodissection is a minimally invasive treatment for various neuropathies, including carpal tunnel syndrome, scleroderma hand, meralgia paresthetica, mastitis, and sural neurona.7–11 The mechanism of hydrodissection therapy has not been elucidated but may lyze the adhesion between the mass and the nerve. Supporting this idea, Fader et al.7 reported that symptoms disappeared with 1 hydrodissection therapy performed for neurona. Depending on the density of the adhesions, there may be situations where it can be cured with 1 hydrodissection session, and others may not resolve no matter how many times hydrodissection is performed. The present patient had resolution of pain with 8 hydrodissection sessions. The density of the adhesions may not have been so severe in this patient. Further studies are needed to elucidate the efficacy of ultrasound-guided hydrodissection for nerve entrapment syndrome.12

Keishikajutsubuto has been used to treat neuropathic pain.13 We felt that Keishikajutsubuto may relieve the numbness in this patient and has been reported to have an anti-inflammatory effect.14 Physical peeling from hydrodissection may induce inflammation at the procedure site, which can lead to scar formation at the site. Hence, an anti-inflammatory drug may prevent future scar formation.

Ultrasound diagnosis and ultrasound-guided hydrodissection may be effective for the diagnosis and treatment of saphenous nerve entrapment after lower extremity varicose vein stripping.

DISCLOSURES

Name: Kunitaro Watanabe, MD, PhD.
Contribution: This author helped write the original draft and methodology.
Name: Joho Tokumine, MD, PhD.
Contribution: This author helped write the draft.
Name: Alan Kawarai Lefor, MD, MPH, Ph.D.
Contribution: This author helped edit the draft and with conceptualization.
Name: Kumi Moriyama, MD, PhD.
Contribution: This author helped with validation and data curation.
Name: Tomoko Yorozu, MD, PhD.
Contribution: This author helped validate and supervise.
This manuscript was handled by: BobbieJean Sweitzer, MD, FACP.

REFERENCES

1. Hirsch T. Varicose vein therapy and nerve lesions. Vasa. 2017;46:96–100.
2. Pan Y, Zhao J, Mei J, Shao M, Zhang J. Comparison of endovenous laser ablation and high ligation and stripping for varicose vein treatment: a meta-analysis. Phlebology. 2014;29:109–119.
3. Dermody M, O’Donnell TE, Balk EM. Complications of endovenous ablation in randomized controlled trials. J Vasc Surg Venous Lymphat Disord. 2013;1:427–436.e1.
4. Flu HC, Breslau PJ, Hamming JE, Lardenoye JW. A prospective study of incidence of saphenous nerve injury after total great saphenous vein stripping. Dermatol Surg. 2008;34:1333–1339.
5. Wood JJ, Chant H, Laugharne M, Chant T, Mitchell DC. A prospective study of cutaneous nerve injury following long saphenous vein surgery. Eur J Vasc Endovasc Surg. 2005;30:654–658.
6. Cox SJ, Wellwood JM, Martin A. Saphenous nerve injury caused by stripping of the long saphenous vein. Br Med J. 1974;1:415–417.
7. Fader RR, Mitchell JJ, Chadayammuri VP, Hill J, Wolcott ML. Percutaneous ultrasound-guided hydrodissection of a symptomatic sural neurona. Orthopedics. 2015;38:e1046–e1050.
8. Wu YT, Chen SR, Li TY, et al. Nerve hydrodissection for carpal tunnel syndrome: a prospective, randomized, double-blind, controlled trial. Muscle Nerve. 2019;59:174–180.
9. Mulvaney SW. Ultrasound-guided percutaneous neuroplasty of the lateral femoral cutaneous nerve for the treatment of meralgia paresthetica: a case report and description of a new ultrasound-guided technique. Curr Sports Med Rep. 2011;10:99–104.
10. DeLea SL, Chavez-Chiang NR, Poole JL, Norton HE, Sibbitt WL Jr, Bankhurst AD. Sonographically guided hydrodissection and corticosteroid injection for scleroderma hand. Clin Rheumatol. 2011;30:805–813.
11. Ueshima H. Ultrasound-guided interfascial hydrodissection for severe pain in mastitis. J Clin Anesth. 2019;57:40.
12. Cass SP. Ultrasound-guided nerve hydrodissection: what is it? A review of the literature. Curr Sports Med Rep. 2016;15:20–22.
13. Nakanishi M, Arimitsu J, Kageyama M, et al. Efficacy of traditional Japanese herbal medicines-Keishikajutsubuto (TJ-18) and Bushi-matsu (TJ-3022)-against postherpetic neuralgia aggravated by self-reported cold stimulation: a case series. J Altern Complement Med. 2012;18:686–692.
14. Satoh K, Takano S, Kobayashi T. Keishikajutsubuto (Guizhi-shu-fu-tang) treatment for refractory accumulation of synovial fluid in a patient with pustulotic arthro-osteoitis. Fukushima J Med Sci. 2007;53:33–38.