



Video. Supplemental Digital Content 1 shows pertinent clinical and intraoperative findings demonstrating radial arteriovenous fistula. This video demonstrates duplex ultrasound findings, intraoperative dissection, and gross specimen following resection. <http://links.lww.com/PRS/B73>. © W. Thomas McClellan, MD, FACS.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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Collagenase *Clostridium histolyticum* Injection for Plantar Fibromatosis (Ledderhose Disease)

Sir:

In February of 2010, collagenase *Clostridium histolyticum* injection was approved by the U.S. Food and Drug Administration for treatment of palmar fibromatosis (Dupuytren contractures) in patients with a palpable cord. In December of 2013, it was approved by the U.S. Food and Drug Administration for the treatment of penile fibromatosis (Peyronie disease) in adult men with a palpable

and a curvature deformity of 30 degrees or greater on erection. Dupuytren and Peyronie disease are considered by many to be systemic manifestations of a common progressive fibrotic process that also includes plantar fibromatosis (Ledderhose disease).^{1,2} There has been substantial evidence in the literature supporting the use of collagenase *C. histolyticum* for both Dupuytren contracture³ and Peyronie disease.⁴ However, it was for plantar fibromatosis (Ledderhose disease) has not been previously investigated. This report contains the first known use of collagenase *C. histolyticum* injection for plantar fibromatosis.

A 72-year-old Caucasian man presented with bilateral plantar pain on ambulation. On examination, the patient had a nodular thickening of the mid-plantar surface proximal to the great toe without flexion contracture bilaterally (Figs. 1 and 2). He had previously undergone a left partial fasciectomy with recurrence of his symptoms; conservative management and steroid injections were also previously attempted without success. The patient was noted to have Dupuytren flexion contractures of bilateral palms, but he did not seek treatment for his hands because they did not cause him pain or substantial functional problems. Considering his prior failed treatments and lack of desire for further surgery, the patient wished to attempt collagenase *C. histolyticum* injection as an off-label use. Each plantar nodule was injected with XIAFLEX (Auxilium Pharmaceuticals, Inc., Malvern, Pa.) at the standard dosage for a metacarpophalangeal joint (0.58 mg in 0.25 ml of reconstituted solution). The patient was injected on three separate occasions with a greater than 1-month interval between injections. Passive plantar extension to disrupt the fibrotic process could not be performed 24 hours after each treatment in a fashion analogous to that for palmar cords because of the lack of a palpable



Fig. 1. Preinjection appearance of the patient's right foot revealing no contracture deformity.

plantar cord. Plantar fibromatosis characteristically presents as a palpable nodule without the contracture deformity commonly seen in the palms.² In addition, the rigidity of the dorsal surface of the foot also resists performing such a maneuver in the foot compared with the hand. Unfortunately, after completion of the series of injections, the patient did not have any softening of the plantar nodule and did not report any improvement in pain on ambulation.

Experimental therapies reported in the literature for plantar fibromatosis include radiotherapy, extracorporeal shock wave therapy, and antiestrogen therapy.⁵ Although very effective for Dupuytren contractures and Peyronie disease, collagenase *C. histolyticum* was not effective in treating plantar fibromatosis in this patient. This lack of success is likely attributable to the anatomical properties unique to this disease process in the plantar region (which typically includes a nodule instead of a cord or plaque) rather than specific to this patient. However, additional studies are needed to further evaluate the effectiveness of collagenase *C. histolyticum* as a treatment modality for plantar fibromatosis.

DOI: 10.1097/PRS.0000000000000433

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Fig. 2. Preinjection appearance of the patient's left foot revealing no contracture deformity.