Iodine Iontophoresis in Reducing Scar Tissue

MITCHELL TANNENBAUM, BS

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A 24-year-old housewife was referred for treatment
to improve active and passive extension and flexion
of the right great toe. The patient had undergone a
bunionectomy that resulted in an 8-cm longitudinal scar over the dorsal surface of her right hallux ex-tending from just proximal to the metatarsopha-langeal joint to just distal to the interphalangeal joint. The suture line was dry and well healed. Examination revealed intact sensation and propri-oception, with trace active movements of flexion and extension at both the metatarsophalangeal and inter-phalangeal joints. Passive flexion and extension at the interphalangeal joint was within normal limits. Pas-sive flexion and extension range of motion at the metatarsophalangeal joint was 5 degrees. The limita-tion was believed to be due to postsurgical scarring over the tendon of the extensor hallucis longus mus-cle. The patient had pain at the right great toe upon early toe-off of the swing phase. There was, however, no gait deviation.
While under the care of a podiatrist, the patient received five consecutive daily treatments of ultra-sound over the scar and stretching, with no noticeable improvement. In addition, she experienced a moder-ate amount of pain after each session. The treatments were given in the podiatrist's office by his nurse. After consulting her physician, we gave the patient a treatment of iontophoresis at the physical therapy department. The ion decided upon was iodine, from Iodex®

* ointment, because it is sclerolytic and is effective in reducing scar tissue.1

The iodine increases
the extensibility of the scar and therefore increases the effectiveness of stretching following iontophoresis. The patient was positioned supine with the right leg supported on a pillow for comfort. Iodex®

was

massaged over the scar and surrounding area after cleaning the dorsal surface of the hallux and forefoot. Gauze pads (4 in X 4 in) were moistened in warm

water and were applied evenly over the treatment
area. Five folded moist paper towels were placed over
the gauze. A tin electrode was molded to fit the contour of the toe and was held in place by an elastic strap. Care was taken to avoid folds in the toweling under the electrode that could cause areas of excessive

current and subsequent burns.1

The tin electrode was
connected to the negative pole of a low-volt genera-torf with an alligator clip. The positive electrode was about one half the size of the negative electrode and was prepared in a similar manner but without the ion ointment. The electrode was secured over the right anterior thigh. Firm contact was maintained with a light weight sandbag. The galvanic current flow was gradually increased to 5mA and held constant for 20 minutes. The patient experienced a mild tingling and warmth under both electrodes. After 20 minutes the current was slowly reduced, the electrodes removed, and the underlying skin inspected for irritation. The skin was massaged gently with Alkolave Gel†† and dusted with talcum powder to sooth the skin and control itching.
Following iontophoresis, passive stretching and ac-tive flexion and extension were employed to achieve additional range of motion while taking advantage of the loosened scar. The patient was instructed in a home program of range-of-motion exercises and proper heel-toe gait activities to be performed several times daily. Iontophoresis was administered for five consecutive days. Evaluation at the final treatment session revealed normal range of motion in flexion and extension of all joints of the great toe and a significant increase in muscle strength to a good grade. The patient was discharged with a home pro-gram of daily exercises to increase strength further. A six-month follow-up examination of the great toe revealed normal range of motion of all joints and normal strength of flexor and extensor muscles, with a gait pattern free of deviations.

REFERENCE

1. Kahn J: Low Volt Technique. Syosset, NY, Joseph Kahn, Publisher, 1973

† Stimulator Clinic, Elmed Inc, Addison, IL 60101.
†† Alkolave Gel, Dist. by Plough, Inc, Memphis, TN 38151.

Mr. Tannenbaum was Director, of Patient Services, Fox Valley Professional Park, 860 Summit St, Elgin, IL 60120, when this paper was written. He is now Director of Physical Therapy, West Suburban
Hospital, 518 N Austin Blvd, Oak Park, IL 60302.
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* Iodex with Methyl Salicylate, Dist. by Lambda Pharmacal Labs,
Inc, Plainview, NY 11803.

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