INSTRUCTIONS FOR APPOINTMENT

- **No moisturizer or moisturizing soap 48 hours prior to treatment.**
- **Please be prepared to pay in full at the time of your appointment.**
- **All patients bill their own insurance co. (Note: Your insurance may <u>not</u> cover this procedure).**

**** 48 HOUR CANCELLATION NOTICE MUST BE GIVEN OR A CHARGE MAY BE INCURRED.**

David M. Duffy, M.D.

NEW PATIENT INFORMATION FORM

Date_____ Home Phone (_____)_____ Email_____

Name_____ Age_____ Date of Birth_____/_____/_____

Address_____

Cell Phone (_____)_____ Are you a former patient of Dr. Duffy's?_____ If Yes, what year?_____

Employer_____ Occupation_____ Work Phone (_____)_____

Employer's Address_____

Nearest Relative_____ Phone (_____)_____ City, State_____

Do you have MediCare?_____ MediCare#_____ Secondary Insurance Co. and #?_____

How did you find out about Dr. Duffy?_____ Referred by:_____

Medical History

Describe the reason for your visit today. Your problem? Where is it located? How long have you had it? Have you had treatment before for it? Are you currently using medication for it?

_____

_____

_____

Are you currently under a physician's care for a **serious medical problem**? Describe_____

Recent **surgeries or hospitalizations**? When? Describe_____

List any **oral medications** you are currently taking._____

List any **allergies or reactions** to medications, either **topical or oral**._____

Have **you or any family member** had skin cancer, or other cancers, or cancer surgery?_____

Have injuries to your skin ever healed with **raised scars, brown or white spots**? Describe._____

Do you have a history of any of the following conditions? **PLEASE CHECK ✔ ALL THAT APPLY.**

❑ Diabetes	❑ Heart Problems	❑ Seizures	❑ Epilepsy	❑ Fainting	❑ Irregular Heartbeat
❑ Tuberculosis	❑ High Blood Pressure	❑ High Cholesterol	❑ Hepatitis	❑ Jaundice	❑ Ulcers
❑ Gastric Disorders	❑ HIV Positive	❑ Respiratory Issues	❑ Hives	❑ Hay Fever	❑ Asthma
❑ Eczema	❑ Cold Sores	❑ Rashes	❑ OTHER_____		

Chronic skin problems (list)_____

Serious Illnesses (list)_____

Are you currently **pregnant or nursing**?_____ Do you plan to become pregnant?_____

Do you wear **contact lens**?_____ Have you ever had an **adverse reaction to local anesthetic**?_____

For 30 years, Dr. Duffy's practice has been dedicated to cosmetic dermatology—the pursuit of healthier, more beautiful skin at any age. Because of this, we are happy to provide any information and services you desire on rejuvenating your skin. Please let us know if you have an interest in any of the following.

Other Items of Interest (OPTIONAL)

- ☐ Botox
- ☐ General Skin Rejuvenation
- ☐ Acne Breakouts
- ☐ Neck Rejuvenation
- ☐ Home Skin Care
- ☐ Rough Patches
- ☐ Silk Peels
- ☐ Hair Removal
- ☐ Tattoo Removal
- ☐ Lip Augmentation
- ☐ Wrinkles, Sun Damage
- ☐ FRAXEL Rejuvenation
- ☐ Hand Rejuvenation
- ☐ Sunscreen Advice
- ☐ Cracked Heels
- ☐ Rejuvenating Glycolic Peels
- ☐ Medical-Grade Facials
- ☐ Fillers
- ☐ Removing Unwanted Veins
- ☐ Irregular Pigment, Brown Spots
- ☐ Rosacea, Broken Veins on the Face
- ☑ Moles I'd Like Checked
- ☐ Liver Spots/Age Spots
- ☐ Loose Skin
- ☐ Resurfacing/Retexturizing
- ☐ Scars
- ☐ Other_____

Our website **www.drdavidmduffy.com** can provide you with lots of in depth answers to your questions, anytime you're ready.

If we are treating you with any of the lasers today, please read and respond to the Pre-Laser Treatment Questionnaire carefully. We will tailor the settings we use to treat you, based on the information you provide, so be as accurate as you can.

Pre-Laser Treatment Questionnaire

Have you used any of the following products on the areas to be treated today, in the past 5 to 7 days. Circle all that apply.

Aspirin or Ibuprofen	YES	NO	**Exfoliant Scrubs**	YES	NO
Retin-A	YES	NO	**Benzoyl Peroxide**	YES	NO
Glycolic Products	YES	NO	**Benzoyl Wash**	YES	NO
Alpha Hydroxy Products	YES	NO	**Chemical Peels**	YES	NO
Anti-Acne Products	YES	NO	**Shaved** (in the past 2-3 days)	YES	NO
Anti-Wrinkle Products	YES	NO	**Sun Exposure**	YES	NO
Salicylic Acids	YES	NO	**Suntan**	YES	NO

_____ _____ _____

Signature Date Staff Initials

David M. Duffy, M.D.
Board Certified Dermatologist
4201 Torrance Blvd • Suite 710 • Torrance, CA 90503
310 370 5670

David M. Duffy, M.D.
Practice Limited to Cosmetic and Dermatologic Surgery, Specializing in Sclerotherapy
4201 Torrance Blvd., Torrance, CA 90503
Tel: 310-370-5670 Fax: 310-214-2071
E-mail: info@drdavidmduffy.com

Date: _____ E-mail _____

Last Name: _____ First Name: _____

Age: _____ Sex: _____ Height: _____ Weight: _____

Referred By: _____ Phone # (of referring doctor): _____

Have you eaten within the last few hours? _____Yes _____No
(On occasion patients who have not eaten become dizzy during or after treatment).
If this form is sent to your home, please eat something before your appointment.

Are you PREGNANT or planning on becoming pregnant in the near future? _____Yes _____No
Are you currently nursing? _____ Yes _____ No

Do you have a history of:

- ❑ Infection
- ❑ Septicemia
- ❑ Allergy to Heparin
- ❑ Allergy to Aspirin
- ❑ Migraine Headaches
- ❑ Diabetes
- ❑ Bleeding Disorders
- ❑ Chronic Fatigue
- ❑ Arthritis
- ❑ Hepatitis
- ❑ Lupus
- ❑ Collagen Vascular Disease
- ❑ Heart Problems
- ❑ Low Blood Pressure
- ❑ Pulmonary Emboli
- ❑ Autoimmune disease (e.g., lupus)
- ❑ Seizures/Convulsions/Fainting/Dizzy Spells (circle)
- ❑ Serious medical problem(s)
- ❑ Allergy to Aethoxysclerol (Polidocanol, Hydroxypoleyethoxydodecane)

Is there a personal / family (*circle*) history of the following:

- ❑ Easy Bruisability
- ❑ Thrombophlebitis (blood clot with or without swelling)
- ❑ Miscarriage(s)
- ❑ Prolonged Bleeding
- ❑ Bleeding or Clotting Disorders (explain) _____

PERSONAL HISTORY

Do you smoke? _____Yes _____No If yes, how long? _____Yrs. _____months

If yes how many packs per day? _____

Can you walk 3 miles (continuously for 1 hour) ? _____Yes _____No

After walking, have you noticed any of the following?:

- ❑ Heaviness
- ❑ Fatigue
- ❑ Leg Cramps
- ❑ Restless Legs
- ❑ Other _____
- ❑ Tiredness
- ❑ Swelling
- ❑ Leg Cramps after Walking
- ❑ Throbbing

Are you required to be on your feet for long periods of time? _____ Yes _____ No

After standing, do your legs ache? _____Slightly _____ Badly

Do you have a history of swelling of the legs and/or feet _____Yes _____No

Do you do any type of exercise that causes violent physical pounding to your legs? (aerobics, running etc.)

_____Yes _____No

Are you menopausal? _____Yes _____No

Do your veins get worse during your period? _____Yes _____No

ALLERGIES

Are you allergic to tape? _____Yes _____No If yes, what happened when you applied it?

❑ Blistering ❑ Rash ❑ Redness ❑ Other _____

Do you develop hives from cold or ice? _____Yes _____No

Are you frightened by needles? _____Yes _____No

If yes, what occurred:

❑ Light-Headed ❑ Fainting ❑ Nausea ❑ Other _____

Do you suffer from hay fever, seasonal watery eyes & nose, hives, or itchy rash? _____Yes _____No

Have you ever suffered a severe allergic reaction?

(Swollen eyes, asthma, difficulty breathing) (*circle* any that apply)

MEDICATIONS

Are you currently taking any type of hormone? _____Yes _____No What kind?

❑ Estrogens (injection, pill, or patch) ❑ Progesterone ❑ Other

How long? _____months _____years What dose? _____

Have you taken hormones in the past? _____Yes _____No How long? _____ Dosage _____

When did you stop taking them? _____

Do you take :

❑ Aspirin ❑ Advil ❑ Coumadin ❑ Minocycline
❑ Antabuse ❑ Dynacin

Are you currently taking Niacin? _____Yes _____No

Have you had breast cancer? _____Yes _____No

Are you currently taking Tamoxifen? _____Yes _____No If so, for how long? _____

PREGNANCY

How many pregnancies have you had? _____ Ages of children: _____

After which pregnancy did your veins occur or worsen most noticeably?

_____ 1st _____ 2nd _____ 3rd Other _____

During pregnancy did you develop tiny, blush-like red spider veins? _____Yes _____ No

After a blow or trauma to your leg, did you develop tiny, blush-like red spider veins? _____Yes _____No

FAMILY HISTORY

Is there a family history of spider and/or varicose veins? _____Yes _____No

Do (or did) the following people have spider veins or varicose veins?
(Please check and underline spider or varicose):

❑ Mother (spider/varicose) ❑ Sister(s) (spider/varicose) ❑ Children (spider/varicose)
❑ Aunts (spider/varicose) ❑ Father (spider/varicose) ❑ Uncle (spider/varicose)
❑ Brother(s) (spider/varicose)

Has anyone in your family had breast cancer or ovarian cancer? _____Yes _____ No

'EIN HISTORY/TREATMENT

How many years have you noticed your varicose / spider (←circle) veins? _____

Did your veins occur:

a) Before pregnancy
b) After pregnancy
c) After an accident (a fall, broken leg, a blow, surgery etc.)
d) After taking oral contraceptives, Premarin or Progesterone
e) Other _____

Are you still developing new veins? _____ Yes _____ No

If yes, are your veins: ❑ Remaining Stable ❑ Becoming Worse

Have your veins ever been treated with: (please check letter and results)

A.	❑ Injection sclerotherapy	❑ Good results	❑ Bad results
B.	❑ Laser	❑ Good results	❑ Bad results
C.	❑ Electrocautery (electric needle)	❑ Good results	❑ Bad results
D.	❑ Ligation (stripping, surgery)	❑ Good results	❑ Bad results
E.	❑ Endovenous closure	❑ Good results	❑ Bad results

When was the last treatment? _____ How many treatments? _____

Were you pleased with the results of the first series of treatments? _____Yes _____ No

Were you pleased with subsequent treatments? _____Yes _____No

Did you develop brown streaks after treatment? _____ Yes _____ No

If so, how soon after? _____

Do you have a history of scarring/ulcers after treatment of your veins? _____ Yes _____ No

Did you develop small red vessels (blush areas) after treatment? _____ Yes _____ No

If yes, where were they located? _____ How soon did they appear? _____

HOSIERY

Do you wear:

❑ Prescription hose ❑ Light support hose (Hanes Alive, Jobst Sheer, etc.)

Do you note that the hosiery helps you? _____ Yes _____ No

Do you suffer from recurring vaginal yeast infections? _____ Yes _____ No

(Support panty hose can produce these, particularly in hot weather)

Do you have trouble with your feet?:

❑ Bunions ❑ Corns ❑ Sores ❑ Foot Surgery ❑ Diabetic Feet

Do you plan on flying in the next few days or weeks? _____Yes _____ No

(If large varicose veins are treated at the time of your visit, we prefer you to wait at least 2 weeks before flying).

David M. Duffy, M.D.
Practice Limited to Cosmetic and Dermatologic Surgery
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SCLEROTHERAPY OF HAND VEINS

CONSENT TO TREATMENT

No medical technique is perfect and no two people are alike. Accordingly, no one can guarantee that you will have exactly the same results and experience the same satisfaction as other patients who were treated before you. The real drawback in treating hand veins is that they will look worse before they look better. Repeated treatments are the rule and you should not expect 100% of your veins to disappear.

Vessels on the hands are often destroyed suddenly and this destruction is followed by unattractive bumps (thrombi, clots). These are not dangerous and will not break loose but will often require incision and drainage to improve their appearance.

Swelling is common, sometimes severe. To minimize this swelling you must refrain from vigorous physical activity including carrying luggage, clapping or anything else which requires your hands to be held below your waist for a protracted period of time. Bandages or elastic gloves, which are not too tight, must be worn for at least 24 hours to minimize swelling and enhance the healing process.

Other complications similar to those seen when carrying out vein treatment (Sclerotherapy) of the legs can also occur on the hands; these include pigmentation (brown streaks or patches), matting (blush-like tiny vessels), sores, small scars and thrombophlebitis (persistent tenderness of the treated vessels).

You should also understand that this treatment is not a cure and your vessels may recur over a period of time.

Treatments must be planned during a time period when you are accessible to us for regular follow-up visits at 1-week intervals for about three weeks. If your schedule does not permit careful monitoring after treatment you should not be treated.

_____ _____

(Patient) (Witness)

_____

(Date)

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PATIENT QUESTIONNAIRE

1. Please list the family members or other persons, if any, with whom we may speak to regarding your care and treatment:

   _____

   _____

2. Please list the family members or significant others, if any, whom we may contact ONLY IN AN EMERGENCY:

   Name: _____ Phone Number: (____)_____
   Name: _____ Phone Number: (____)_____

3. Please print the address of where you would like follow-up correspondence from our office to be sent:

   _____

   _____

4. Please print the telephone number where you want to receive calls about your appointments, lab results, etc.: (____)_____

   ***I am fully aware that a cell phone is not a secure and private line.**

5. Can messages regarding your appointments and follow-up visits be left on your telephone answering machine or voicemail?

   YES _____ NO _____

PATIENT NAME _____ (guardian if under 18 years)

_____
PATIENT/GUARDIAN SIGNATURE DATE _____

DAVID M. DUFFY, M.D.
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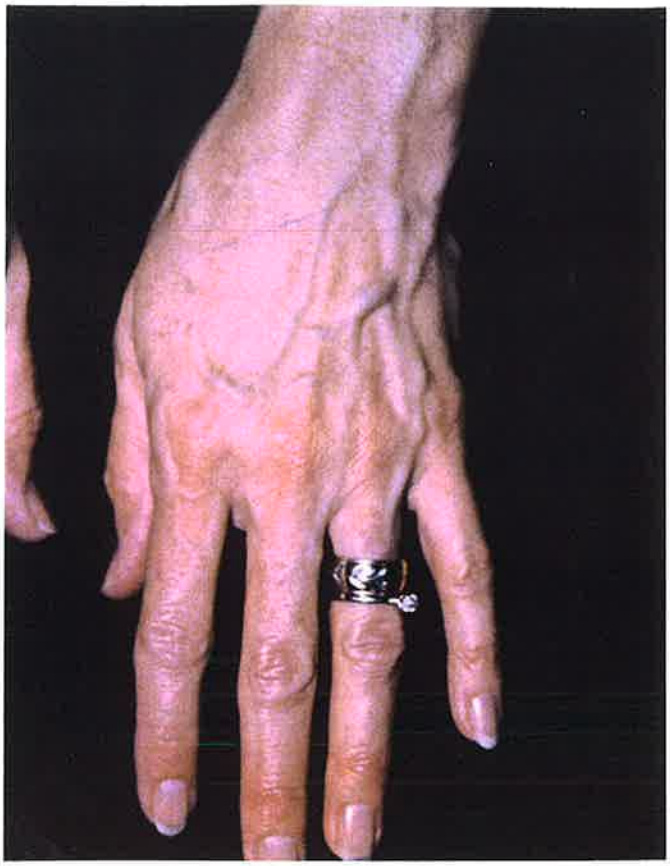

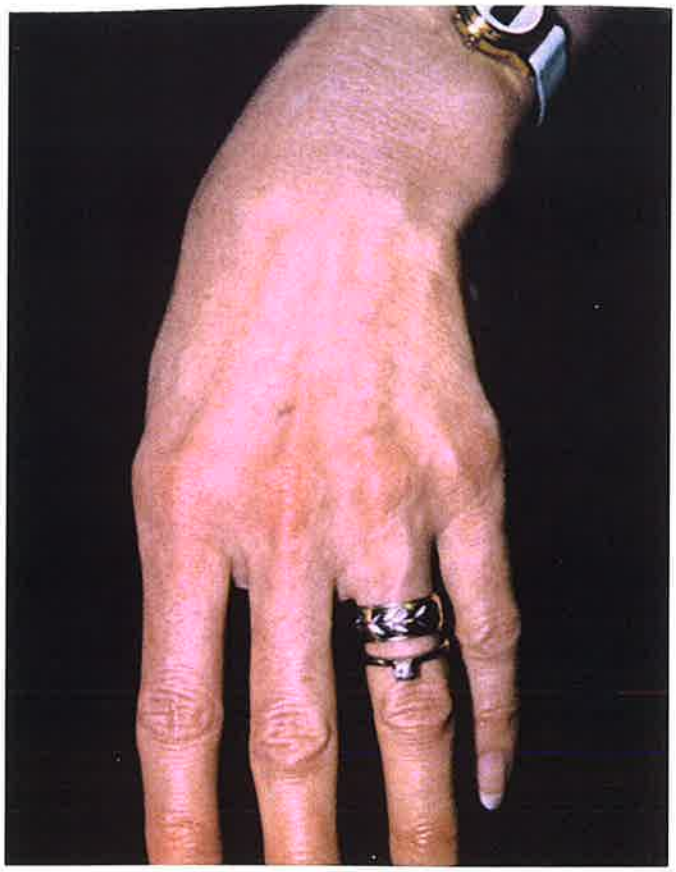

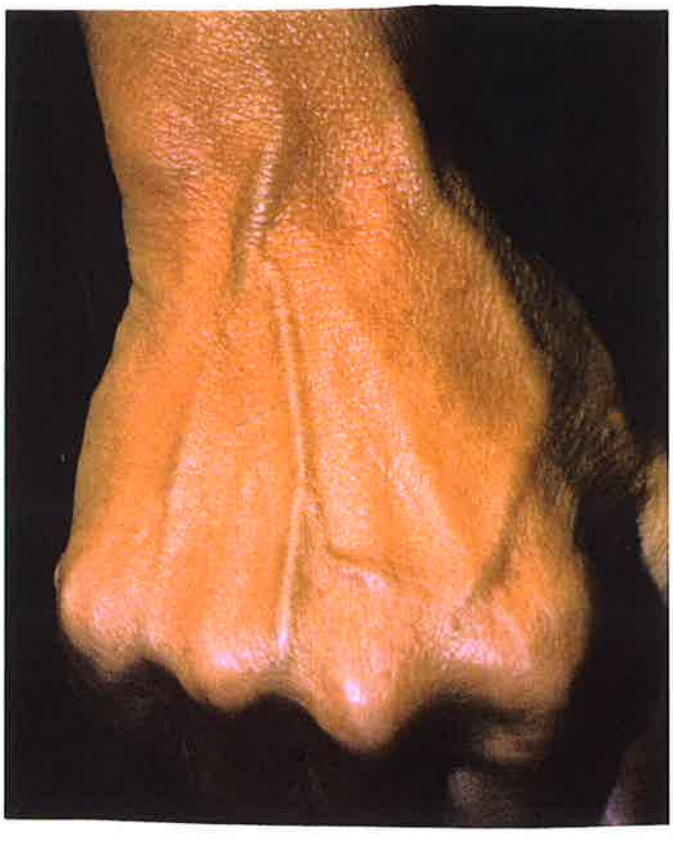

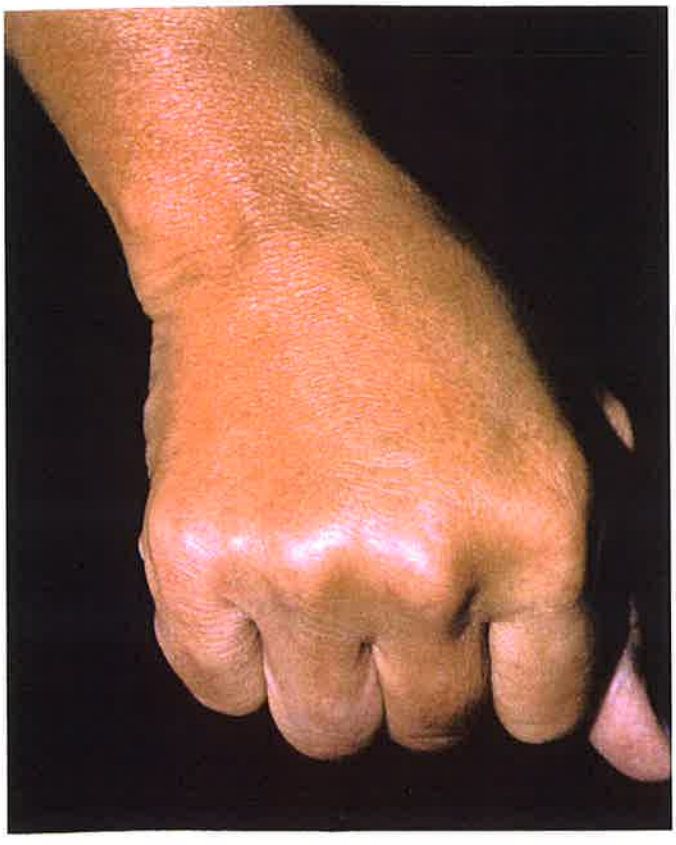

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GIVE US A HAND

INTRODUCTION

Around 15 years ago, our business manager asked me if I could treat the enlarged veins on the backs of her hands. I hesitated because, to my knowledge, no one had done this before in a systemic way. However, I remembered that during my internship and residency these veins often disappeared following intravenous therapy without ill effects. At first these veins resisted treatment[1] but when I increased the strength of my solution I was pleasantly surprised to see how quickly the veins disappeared and how long lasting the results seemed to be.[2] This brochure is aimed at answering questions you may have about this treatment.

DO I NEED THESE VEINS?

Not usually. In active, healthy individuals, adequate blood flow is maintained without the presence of surface veins. However, it is always good to spare at least one vein, perhaps somewhere on your wrist or arm, in case you do need emergency IV treatment.

WILL THE VEINS COME BACK?

Recurrences are uncommon but new veins may occur. This usually takes several years. Generally, both recurrent veins and new veins are never as large or as unattractive as the previously untreated veins.

HOW MUCH WILL THIS COST?

This varies with the number of veins, which are treated, and the number of times you are treated or the clots are drained. Costs generally range between $1,500 and $2,500. There is no charge for an examination or evaluation of your progress for three months after treatment. There is never any charge for a quick consultation if you have any concerns. If you have any problems, be sure to come in and let us look.

WILL INSURANCE PAY FOR THIS PROCEDURE?

No, this is purely a cosmetic procedure; you should not expect your insurance company to pay for it.

HOW MANY TREATMENTS WILL BE REQUIRED?

This is quite variable; most patients require at least 2 treatments. Occasionally there are those who require up to 6 treatments. The outcome of your treatment often has to do with how well you follow instructions, your individual response to treatment, and the size of your veins. Elevation of the hands and the frequent use of ice bags for the first couple of days coupled with the opening and closing of your hands as often as possible will often reduce the number of treatments necessary.

TREATMENT OPTIONS

Busy patients sometimes opt to have only one or two veins treated in both hands at weekly or biweekly intervals. This has the advantage of eliminating the need for compression dressings and also minimizes swelling. It does take many more treatments and visits. Sometimes, only one hand is treated at a time. This has the advantage of giving you one free hand to do what is necessary during your working day. We often advise patients to carry out the procedure on a Friday so that they have the weekends in which to elevate the hands and we will routinely make time on Fridays for those who have busy schedules. You will want to remove your rings before treatment; you may not be able to remove them if swelling occurs.

WHAT SHOULD I EXPECT OR DO DURING THE TREATMENT PERIOD?

When all or most of the veins on the hand are injected, a dressing is applied temporarily. Keep the dressing on when you are busy and you must be using your hands below your waist. One patient had particularly good results because she lowered the stool when she was using her computer and kept her hands elevated above her chest. Take the dressing off as soon as possible and begin elevating your hands as well as using ice bags frequently. Open and close your hands as often as possible to increase circulation. Replace your dressings when you must be using your hands. Elevation is the single best method of caring for your hands. Dressings are generally used at night for at least five days (applied lightly) after treatment when large numbers of veins are treated.

At about 24 to 48 hours, you may notice moderate swelling, bruising and aching. These problems are minimized with hand elevation. At anywhere from 2 days to 2 weeks, if you make a fist and feel the

tightly pulled skin over the treated veins, you may see and feel firm, sometimes tender, greenish bumps. These harmless clots will not break loose. Clotting (thromboses) is a good sign that your veins have been adequately treated. They are not dangerous and when they are removed, the veins are completely treated and require no further injections. Occasionally, repeated treatments are necessary to remove all of the dried blood.

REMOVING THE CLOTS

One and a half to two hours before returning for follow-up, pat on Emla Cream (do not rub it in) very thick over the treated veins and cover with Saran Wrap. Repeat this at least four times in a one and a half to two hour period. Never let the cream dry out. Leave the Emla on (do not wipe off) when you come in for your appointment. Emla permits us to drain these clots without discomfort. Smaller clots may be absorbed on their own without treatment over a 6 month to 1-year period. Follow-up visits are an important part of your treatment schedule. These are usually carried out at 1-3 week intervals post-treatment.

Do not hesitate to call us if you have any concerns. Most of these phone calls have to do with the presence of these hard clots, which is really part of the normal healing process. There is never any charge up to 3 months post-treatment for a quick examination of your hands.

HOW SHOULD I USE MY DRESSINGS?

When large numbers of veins are treated, we recommend that you apply your dressings every night for 5 days after treatment. They should not be tight enough to cause swelling or tingling of the hands. If this happens, loosen them up. Be sure to put a Kotex pad over the treated area to put more pressure on the vessels when you use the Ace bandage.

I HAVE SEVERE SWELLING. WHAT SHOULD I DO?

Elevation is still the best treatment along with ice. Advil or Motrin is often used to reduce swelling. Do not hesitate to come in and have us examine your hands just to make sure.

I NOTICED A SCAB WHERE YOU TREATED ME. SHOULD I BE CONCERNED?

You may develop a small sore. It would be good to come in and be examined.

I NOTICE NUMBNESS IN THE SKIN OVER THE TREATED VEINS.

Occasionally some of the nerves in the skin are damaged by this procedure. I have seen it once in 300 hands. This is truly a nuisance and not dangerous in any way but it does occur rarely.

I NOTICE WHAT SEEMS TO BE PERSISTENT BRUISING AT 1 MONTH FOLLOWING TREATMENT

This is a rare complication of unknown cause. To date, I have not seen this bruising or tenderness extend over 2 months but this is possible.

I NOTICE PERSISTENT TENDERNESS IN THE TREATED AREA? WHAT SHOULD I DO?

Remember not to do heavy work with your hands. Tenderness can be persistent. It has, to date, always resolved spontaneously. Be sure to call us or come in and let us know what is happening.

WHAT ACTIVITIES SHOULD I AVOID?

Avoid bone crushing handshakes and applause. Shortly after the first treatment, a former Miss America MC'd a beauty show and clapped continually through three Broadway plays. She had a great deal of swelling and discomfort. No applause, please, for at least two weeks. Patients who baby their hands for about a week have played tennis ten days after treatment.

ARE THERE PATIENTS WHO SHOULD NOT BE TREATED?

Yes. Elderly, inactive patients, those with infections on the hands, those with severe circulatory disease (diabetic arterial disease), patients in generally bad health who may require regular injections of IV medications, those with collagen vascular disease (lupus, scleroderma) and those taking certain drugs.

CAN VERY LARGE VEINS BE TREATED?

Yes. Veins up to 1 cm in size (about 1/2 inch) can be treated quite satisfactorily. These often require more treatments using higher concentrations of sclerosants.

HOW OFTEN DOES THIS TREATMENT FAIL?

About 2-3% of treated patients simply do not respond to multiple treatments.

CAN YOU DO ANYTHING FOR THE BROWN SPOTS THAT SEEM TO LOOK WORSE ONCE THE VEINS ARE GONE?

We certainly can. These involve fruit acids and electro-cautery or lasers and in the case of certain types of spots (actinic keratoses, pre-malignancies) your insurance may pay for this.

REFERENCES

1. Duffy, David M., Sclerotherapy: Broader Horizons, J Cutaneous Aging & Cosmetic Derm., Vol 1, Number 4, 263-268, 1991.

2. Duffy, D.M., Garcia, C., Clark, R. The Role of Sclerotherapy in Abnormal Varicose Hand Veins". Journal of Plastic and Reconstructive Surgery, Revised May 28, 1999.

By David M. Duffy, M.D.

THE ROLE OF SCLEROTHERAPY IN THE REJUVENATION OF AGING HANDS

A recent magazine article refers to hands "which can give away your age like the rings of a tree" as "the last virgin body part."[1] Women who have peeled, suctioned, lifted and tucked away years of facial and body wear and tear are demanding equal opportunities for their hands. This article highlights sclerotherapy for the treatment of enlarged hand veins, a simple technique which has produced extraordinary patient satisfaction.

Gravity, trauma and sunlight subject the hands to unique combinations of physiologic and environmental stresses. With age comes gauntness. The skin of the hands becomes looser as the hands lose volume due to muscle atrophy, bone demineralization and loss of adipose tissue. This loosening process is accentuated by sun-induced losses in cutaneous and vessel wall elasticity, resulting in wrinkled dyschromic skin and the ballooning of convoluted surface veins.

Is Hand Vein Treatment Safe?

Several years ago our business manager asked me if I could inject the enlarged veins on the backs of her hands. At first I hesitated because, to my knowledge, no one had performed this type of treatment in a systematic way before. However, I remembered that, during my internship and residency, these veins often disappeared following intravenous therapy without ill effects. At first, these veins resisted treatment[2]; but when newer and less toxic sclerosing agents permitted the use of higher concentrations; the veins disappeared quickly and the results seemed to be long-lasting.

Other than the need to use relatively high concentrations of sclerosants, treatment is straightforward and parallels techniques used for lower extremity venous disease.

Patient Selection

In healthy, active individuals with adequate circulation, excellent blood flow is maintained without the presence of surface veins. Patients with collagen vascular disease, coagulopathies or severe circulatory dis-

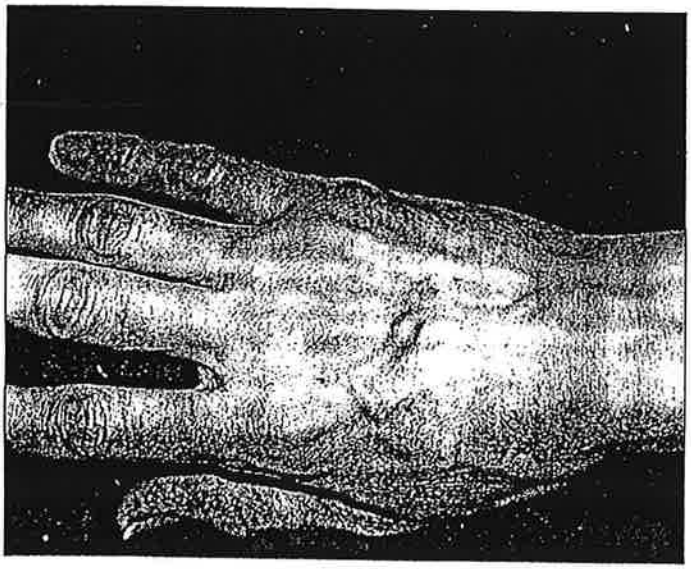

Figure 1a: Pretreatment appearance of the hand with elevated 4- to 6-mm veins.

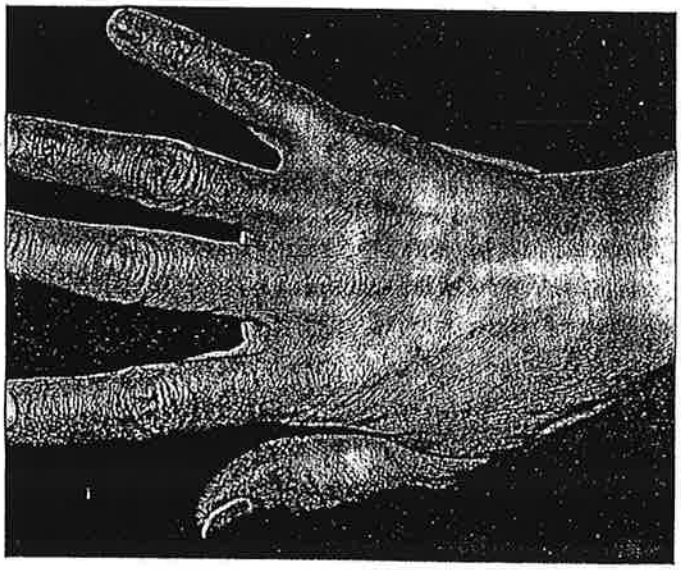

Figure 1b: Small thrombi, which are drained

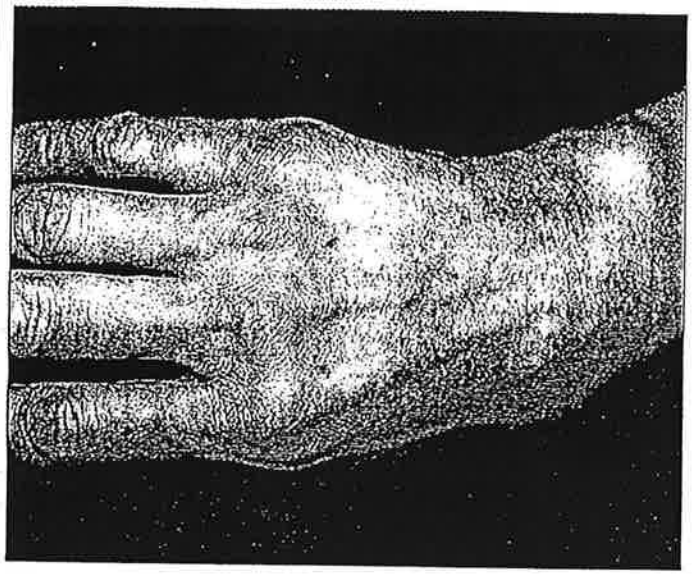

Figure 1c: The hand 6 months after the third and final treatment

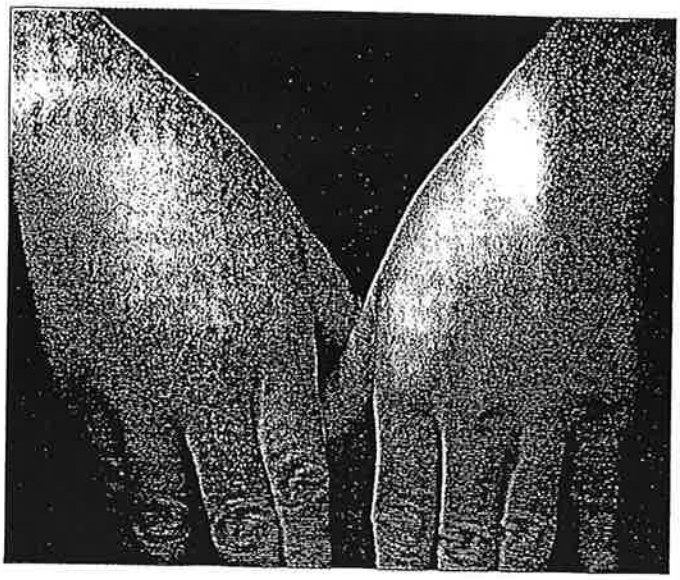

Figure 2: Moderate to severe hand edema

ease; those in poor health; those who require regular injections of intravenous medications; those who are inactive; and those who have severe hand pain or arthritis are excluded from treatment. At least one vein is spared on the hands of those patients who have no other easily accessible veins, in case an emergency may arise where immediate intravenous treatment is necessary.

Clinical Course

Other than the need to use relatively high concentrations of sclerosants, treatment is straightforward and parallels techniques used for lower extremity venous disease. Compression dressings are routinely employed for vessels of all sizes.

The occurrence of tender thrombi and the need to evacuate them result in more temporary discomfort and patient dissatisfaction than do the actual injection treatments.

Results are often rapid. Sclerosis commonly occurs within several days after treatment, inevitably accompanied by palpable, unimportant but tender and unattractive thrombi (see Figures 1a through 1c) as well as some degree of hand edema. Although some patients prefer the appearance of their hands while they are swollen to their pretreatment "normal" appearance, others have enough swelling or hand tenderness to prompt phone calls (see Figure 2).

The number of treatments (range 1 to 6) varies a great deal from one person to the next. It does not seem to be related to the size of the veins treated. Smaller vessels, particularly on younger patients, can be more resistant and require more treatments than larger vessels. Veins up to 1 cm in diameter have been successfully treated.

Complications

Although unimportant in terms of risk, the occurrence of tender thrombi and the need to evacuate them result, at least initially, in more temporary discomfort and patient dissatisfaction than do the actual injection treatments. Incision and drainage, which are simple on the lower extremities, are much more difficult on the hands, particularly on the fingers where veins are extraordinarily mobile. Topical lidocaine 2.5% and prilocaine 2.5% (EMLA® Cream; Astra USA, Inc.; Westboro, Mass.) can be used to make thrombectomies more comfortable.

Patient Variability

Posttreatment edema varies considerably from patient to patient. One of the most severe episodes of edema

we have noted in a review of over 60 patients occurred when a former Miss America emceed a beauty show and clapped continuously through three Broadway plays. However, another patient, a woman in her six-

Posttreatment edema varies considerably from patient to patient.

ties who participated in a television commercial in which she pummeled a punching bag, had superb results with no edema or clotting noted. A 45-year-old woman developed severe and persistent (6 weeks) edema of one finger possibly related to the wearing of a ring that was somewhat tight while vigorously weightlifting in a local gym.

Our patients are told that the best results have occurred in those who were able to keep their hands almost continually elevated for 24 hours after treatment while using ice bags and anti-inflammatories (ibuprofen) on a regular basis for 48 hours after treatment. One case of superficial thrombophlebitis involving the volar forearm responded over a 2-week period to anti-inflammatories, elevation and icing.

To date, no pigmentation has occurred and only two cases of minimal neovascularization have been observed. Two patients developed transient hypopigmentation and minimal hypertrophic scaring at incision sites. These resolved to the patient's satisfaction over a period of 6 months. Recurrence of smaller vessels has been noted in four patients followed over a 5-year period.

Summary

Sclerotherapy for enlarged hand veins is proving to be safe and successful. It has been greeted enthusiastically by patients and will probably become routine and even more popular with the passage of time. ▲

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The Role of Sclerotherapy in Abnormal Varicose Hand Veins

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Large, tortuous veins involving the dorsa of the hands often become more prominent with the passage of time and are a common source of patient dissatisfaction. The objective was to evaluate the results of sclerotherapy in the management of unsightly varicose veins of the dorsum of the hand. From January of 1987 to August of 1998, 100 healthy, ambulatory female patients with a mean age of 56.5 years (range, 35 to 78 years) underwent sclerotherapy treatment for abnormally dilated veins on the dorsum of the hands. Patients were divided into two groups: group A consisted of 20 patients treated with 0.5% sodium tetradecyl sulfate (Sotradecol Elkins-Sin, Inc., Cherry Hill, N.J.) or 1.5% polidocanol (Aethoxysklerol Kreussler, Chemische-Fabrik, Wiesbaden, Germany). Group B consisted of 80 patients treated with 3% polidocanol. Postsclerotherapy compression was utilized in all cases. Failure was observed in 16 patients (80 percent) in group A. Successful elimination of varicose veins was obtained in 76 of 80 patients (95 percent) in group B. The diameter of treated vessels ranged from 1 to 6 mm (mean, 3 mm). Adverse events observed included pain, ecchymosis, various degrees of edema, and thrombosis of the treated veins. One patient (1 percent) developed transient neuropraxia of the superficial branch of the radial nerve following treatment of vessels located on the thenar web. Eleven of the 76 patients (14.5 percent) treated successfully with higher concentration developed microscopic neovascularization (matting). In conclusion, (1) low concentrations of sclerosing agents were associated with a high incidence of failure (80 percent); (2) the use of higher concentrations of polidocanol (3%) produced good results in 95 percent of treated patients; (3) adverse events common to sclerotherapy were observed in 90 percent of the treated patients—there were no serious adverse events; and (4) when appropriate sclerosant concentrations were employed, compression sclerotherapy proved to be an effective method of treatment for varicose veins involving the dorsum of the hand. (*Plast. Reconstr. Surg.* 104: 1474, 1999.)

Although numerous reports in the scientific literature deal with skin changes occurring with age in different parts of the body, including the hands,[1–14] strategies for the management of dilated varicose veins of the dorsum of the hand rarely appear in the medical literature.[15–19]

For upper-extremity primary varicose veins, surgical excision of all dilated varicose clusters has produced excellent long-term results.[20] However, the excision of abnormally dilated veins of the dorsum of the hands remains controversial. Some authors[4] consider dilated veins of the dorsum of the hands to be "normal" and stress their preservation to avoid vascular compromise and to provide venous access should medical emergencies occur. Conversely, there is the argument that bulging, unsightly veins of the hands are varicose veins by definition and could be treated safely following the same principles employed to treat varicose veins of the lower extremities without compromising circulation. This study analyzed our experience in the management of abnormally dilated veins of the dorsum of the hand using the same techniques and principles of sclerotherapy employed in the management of varicose veins of the lower extremities.

Gravity, trauma, and sunlight subject the hands to unique combinations of physiologic and environmental stress. The skin of the hands is thinner, has fewer adnexal structures, and heals more slowly than facial skin.[1–3] With the passage of time, the hands lose volume as a result of muscle atrophy, bone demineralization, and loss of adipose tissue. As a consequence, the skin and superficial vessels lose elasticity. This process is accelerated by solar-induced damage, which results in wrinkled, dyschromic skin and increasingly prominent and tortuous varicosities of the superficial veins of the hand. In this setting, dorsal hand veins

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represent the equivalent of varicose veins of the lower extremities. Patients commonly complain about unsightly veins on their hands, which they consider unflattering and cosmetically unacceptable.[1-4]

Patients and Methods

Over an 11-year period (1987 to 1998), 100 active female patients ranging in age from 35 to 78 years (mean, 56.5 years) underwent compression sclerotherapy to treat abnormally dilated dorsal hand veins ranging in size from 1 to 6 mm (mean, 3 mm). An informed consent was signed stressing that this treatment should be considered a cosmetic procedure. Patients suffering from any of the preexisting conditions listed in Table I were excluded from treatment. At least one vein was spared (usually a tributary of the cephalic vein) to ensure easy access for intravenous medication should the situation arise.

Technique

Based on the lifestyle and preference of the patients, several treatment approaches were utilized. Some patients elected to have only one vessel treated at one time, a process that required many more treatment visits. Most patients underwent treatment for all of the vessels involving one hand at each treatment session, with the exception of those that were spared for emergency treatments should the need arise. Other patients, usually those who were on vacation, elected to have all of the vessels on both hands treated at the same time, subject to volume limitations of the sclerosants employed.

Two sclerosing agents were employed: Sotradecol (sodium tetradecyl sulfate) and Aethoxysklerol (polidocanol). After cleansing the hand with alcohol, patients were treated in either the sitting or recumbent position with the treated hand placed below the level of the treatment table to facilitate vein distention. A 3-ml non-Luer-Lock plastic syringe using a 0.5-inch, 30-gauge needle was employed. After vein cannulation, the hand was elevated, and the sclerosing agent was slowly injected using the "empty vein" technique. Compression was immediately applied using an elastic bandage applied over cotton balls or maxi-pads. Patients were instructed to maintain hand elevation for at least 2 days after treatment. During this period, if the patients were able to maintain elevation of the hands, they were urged to remove their dressings and apply ice bags while opening and closing the hands as much as possible. Compression was reapplied during the periods in which the hands could not be elevated. Nightly use of compression was recommended for 5 days after treatment. Patients were advised to loosen or remove the dressings they felt were too tight or if significant swelling or paresthesias occurred. An anti-inflammatory drug (ibuprofen) was recommended for pain or discomfort. Treatment was repeated at weekly intervals on previously treated vessels that had not exhibited shrinkage or the development of thrombi. We initially anticipated that smaller vessels and the use of higher concentrations would lead to a reduced number of treatments. This was usually but not always the case. In certain cases, veins 3 mm and smaller required more treatments than those that were larger than 4 mm.

During the follow-up period, firm, palpable, tender thrombi were usually observed (Fig. 1). Microthrombectomy was performed through mini-stab incisions using a no. 11 scalpel blade after applying a topical anesthetic for 1.5 hours under occlusion (EMLA cream, Astra Pharmaceutical Products, Westborough, Mass.). Postthrombectomy compression was maintained for several hours using Coban (3M, Medical Surgical Division, St. Paul, Minn.). Microthrombectomy was repeated on subsequent visits if considered necessary. Color photographs, using a 35-mm camera with a 105 macro lens, were taken before treatment and at weekly intervals during the treatment process.

TABLE I
Sclerotherapy Contraindications

Allergies to the sclerosing agents
Use of sclerosant interactive drugs (anticoagulants, Disulfiram, Antabuse)
Connective tissue disease
Blood dyscrasias
Disabling arthritis
Severe asthma, allergies
Presence of soft-tissue infection
Poor general health
Severe circulatory or neurologic disease
Chronic hand pain, weakness, edema, carpal tunnel syndrome
Need for regular intravenous medications
Cognitive impairment/inability to understand and comply with instructions

Results

As summarized in Table II, treatment failures were the rule following treatment for

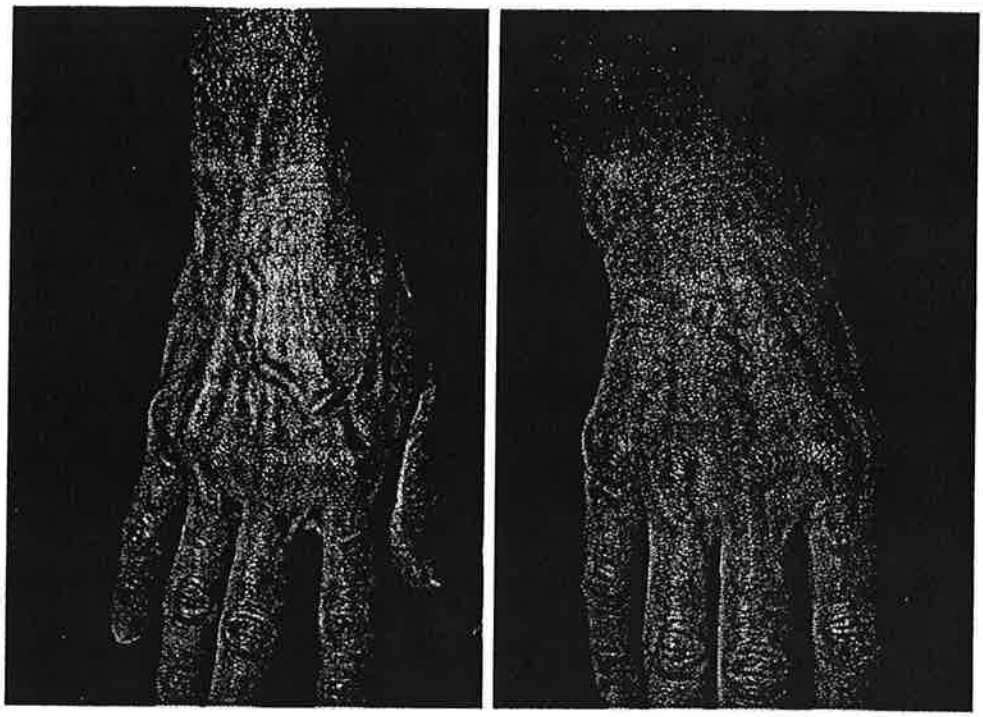

FIG. 1. (*Left*) Pretreatment 3- to 5-mm hand veins. (*Right*) Appearance after three treatments using 3% polidocanol followed by incision and drainage of thrombi.

veins larger than 4 mm in diameter using low concentrations of sclerosants for patients under 60 years of age. When higher concentrations of sclerosants were employed in a second larger group of patients, excellent results were observed and demonstrated by a 95-percent disappearance rate of vessels up to 5 mm in size. All treatment failures using 3% polidocanol occurred in patients with vessels between 5 and 6 mm in size.

Treatment Course and Complications

Resolution of treated vessels without thrombosis was very rare; 95 percent of all patients successfully treated developed thrombi; 5 percent of all successfully treated patients (4 patients) experienced resolution without thrombi. This usually occurred following the treatment of vessels under 2.5 mm in size with equal frequency using both high and low sclerosant concentrations.

Mild edema, usually resolving within 10 days (Fig. 2), occurred in 82 percent (82) of all patients treated using both high and low concentrations. Severe edema occurred in six patients (7.5 percent) with or without successful results following treatment with 3% polidocanol.

Moderate discomfort associated with thrombi was noted in 50 percent of all patients using high and low concentrations. Severe dis-

TABLE II
Variables Affecting Treatment Outcomes

Agent	Concentration	No. of Patients	Vessel Size (1–6 mm)	Patient Age (35–78)	No. of Treatments (2–6)	Outcome (%)
Group A: Low Concentrations						
Sotradecol	0.5%	2	<4 mm	>60	4	Successful (20)
Sotradecol	0.5%	8	<4 mm	<60	6	Failure (80)
Aethoxysklerol (polidocanol)	1.5%	2	<4 mm	>60	4	Successful (20)
Aethoxysklerol (polidocanol)	1.5%	8	4–5 mm	<60	6	Failure (80)
TOTAL		20				
Group B: High Concentrations						
Aethoxysklerol (polidocanol)	3%	76	1–6 mm	35–78	4	Successful (95)
Aethoxysklerol (polidocanol)	3%	4	5–6 mm	<60	6	Failure (5)
TOTAL		80				

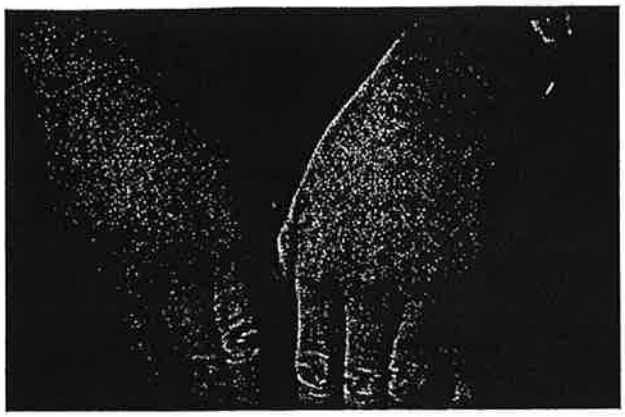

FIG. 2. Posttreatment edema usually resolving over 7 to 10 days.

comfort associated both with and without thrombosis was observed in 20 patients (20 percent). Severe discomfort associated with the thrombosed area occurred more commonly following the use of high concentrations of sclerosants and was observed in 19 of 80 patients (24 percent) treated with 3% polidocanol and in 1 patient (5 percent) following treatment with a lower concentration of sclerosant.

Pigmentation, a common event following treatment of lower-extremity varicose veins, was not observed. Mild neovascularization (matting) consisting of vessels under 0.2 mm in size visible only with magnification did not appear in the group treated with the lower concentrations but occurred in 11 patients (14 percent) following treatment with 3% polidocanol. Two patients (25 percent) of those *successfully* treated with low concentrations and four patients (5 percent) of those *successfully* treated with 3% polidocanol developed new venules smaller than those for which they originally sought treatment. Recurrences, allergies, and thromboembolic phenomena were not observed.

One patient (1 percent) developed blanching of the thumb, index, and middle finger of the right hand immediately following treatment of a 2-mm vessel located in the thenar web using 3% polidocanol. Although blanching disappeared spontaneously within 10 minutes, numbness and paresthesia persisted for 2 weeks. Multiple ecchymoses were observed in the treated area 3 days after treatment followed by shallow ulcerations that healed completely within several weeks with complete return of neurological function and minimal textural changes in the treated skin.

DISCUSSION

Sclerotherapy is a widely used method for treatment of varicose and spider veins of the lower extremities with clearly defined indications and contraindications. Treatment success, although affected by many factors, is closely related to vessel size and concentration of the sclerosing agent. Small veins (1 to 3 mm in diameter) involving the hands of older patients responded well to lower concentrations of sclerosants as noted in Table II. However, vessels of all sizes (1 to 6 mm in diameter) involving the hands of younger patients often required higher concentrations of sclerosing agents. Although sclerotherapy for treatment of lower-extremity varicosities is used worldwide, there are very few reports in the medical literature dealing with the management of varicose veins of the upper extremity. Primary varicose veins of the upper extremity are rare and have been treated successfully by removal through small, multiple incisions.[20] In striking contrast, sclerotherapy of abnormally dilated, tortuous veins involving the dorsum of the hand remains controversial even though by definition these vessels are varicose veins. Those who argue against the treatment of these vessels emphasize the fact that dorsal hand veins may be an important access for intravenous therapy. Accordingly, the risks and benefits of their removal should be considered carefully. After all, the eradication of dorsal hand veins is an elective procedure that is usually done for cosmetic reasons in patients who complain bitterly of their unsightly appearance. We were very careful in accepting patients for this form of treatment. This is illustrated by the fact that only 100 patients have been treated for this condition in the past 11 years, whereas several thousand patients have been treated with unsightly varicosities of the lower extremities during the same period. Before treatment, patients were advised extensively of the cosmetic nature of this procedure both orally and in writing, and an informed consent was obtained in every case.

The results of this study revealed that low concentrations of sclerosing agents (Sotradecol 0.5% and Aethoxysklerol 1.5%) were generally ineffective in the treatment of veins ranging in size from 3 to 5 mm. When the concentration of polidocanol was increased to 3%, a 95-percent success rate was recorded. It should be mentioned that low concentrations

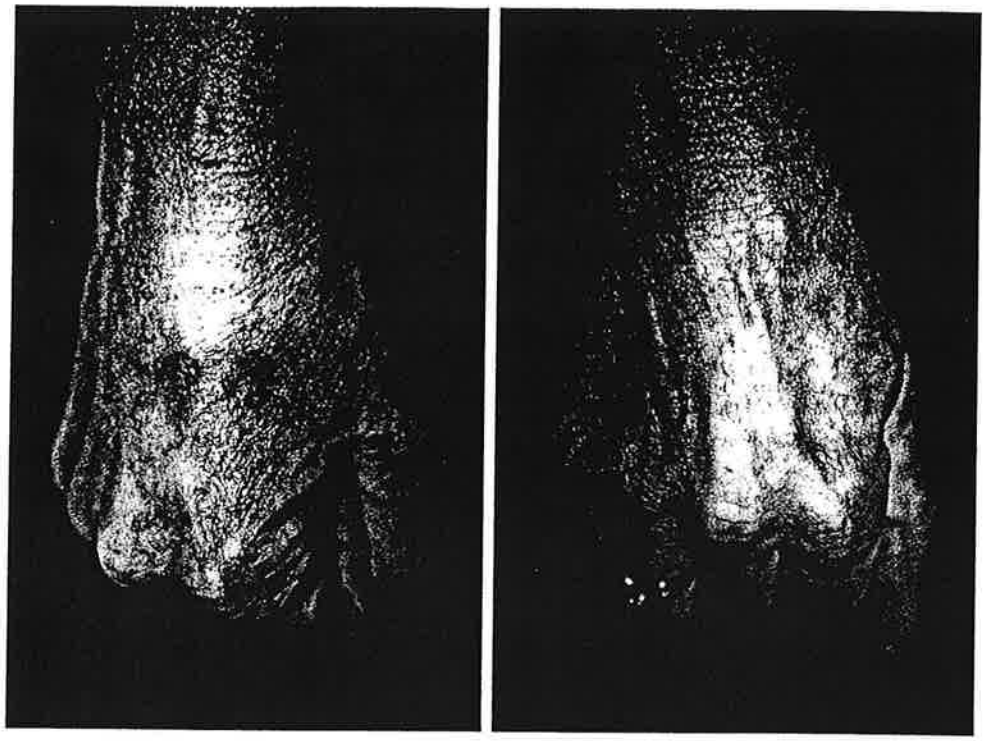

FIG. 3. These photographs demonstrate the evolution of a small ulcer followed by neovascularization (matting). In this case, temporary paresthesias and blanching occurred when the superficial branch of the radial nerve was exposed to sclerosant solution, possibly on the basis of extravasation.

of sclerosing agents were successful in a small group of patients over 60 years of age in this series. This may be explained by the fact that vascular fragility is known to increase with age, as evidenced by the common occurrence of spontaneous senile ecchymosis. It was also observed in this study that varicose veins located on the dorsum of the hands often required higher concentrations of sclerosing agents and a greater number of treatments than those necessary for the treatment of similar caliber vessels involving the lower extremities.

Observed Adverse Events

Adverse events noted in this study are similar to the reported complications of sclerotherapy used to treat lower extremity veins. Adverse events are better understood when classified as immediate or delayed. Pain, allergic manifestations such as hives, erythema, and pruritus, fainting, visual disturbances, hypotension, and cardiovascular collapse are considered as immediate adverse effects. Superficial venous thrombosis involving the injected vessels, ecchymosis, pigmentation, ulceration, and neovascularization are the most commonly observed delayed adverse events. Hyperpigmentation, which is observed in about 30 percent[7] of patients treated with sclerotherapy for varicose veins of the lower extremity, was not observed in this series. The mechanism underlying the complete absence of this adverse event is speculative; however, previous clinical experience[15] suggesting that anatomic location of the injected veins plays an important role in the development of this complication was further substantiated by a recent study that noted important structural differences in biopsies of vessels taken from different areas of the vascular tree.[21] Although only one potentially serious complication was observed in this study, the possibility of severe complications inherent in all sclerotherapy procedures must be weighed against the benefits and risks to selected patients. No sclerosing agent is absolutely safe, and the possibility of complications following this procedure as described in the literature should be kept in mind.[22–24]

One complication observed in this series is worth discussing. Blanching of the thumb, index, and middle fingers of the right hand was observed immediately after injecting a 2-mm vessel located on the thenar web. Although vasospasm spontaneously disappeared within

10 minutes, numbness and paresthesia remained for 2 weeks. The presence of shallow ulceration that developed following treatment suggests that extravasated sclerosing agent induced neuropraxia of the sensory branch of the radial nerve whose cutaneous branches lie in the superficial subcutaneous tissue on the dorsal-radial side of the hand as illustrated in Figure 3. Doppler evaluation of veins involving the thenar web also suggest the possibility that arterial superficiality or arteriovenous malformations may also occur in this area.[25] At this writing, at least one lawsuit has been brought against a physician who carried out injection of superficial hand veins that was followed by erythema, persistent edema, and carpal tunnel syndrome.[26]

A high rate of success in the management of varicose veins of the dorsum of the hand employing concentrations of sclerosing agents commensurate with patient age and vascular fragility reveals that injection sclerotherapy of abnormally dilated veins on the dorsum of the hand can be performed safely and effectively in carefully selected patients using modifications of the same techniques employed for varicose veins of the lower extremities.

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